Zeta Solar and Battery Energy Storage System Project
Draft Environmental Impact Report

SCH: 2023070088
October 2024

Stantec

Prepared for:
County of Merced
2222 M Street
Merced, CA 95340

Prepared by:
Stantec Consulting Services Inc.
300 Montgomery St #1200
San Francisco, CA 94104

Contents

1.0 INTRODUCTION 1-1
1.1 Purpose 1-1
1.2 Project Overview 1-1
1.3 Lead Agency Determination 1-1
1.4 Scope of the Draft EIR 1-2
1.5 Organization of the Draft EIR 1-4
1.6 Public Review and Comment 1-6
2 PROJECT DESCRIPTION 2-1
2.1 Project Overview 2-1
2.2 Location 2-1
2.3 Existing Conditions 2-2
2.4 Project Purpose and Need 2-9
2.5 Project Objectives and Approvals 2-9
2.6 Description of Proposed Project 2-10
2.7 Project Characteristics and Facilities 2-11
2.8 Water Requirements and Waste Generation 2-19
2.9 Construction Activities 2-22
2.10 Operation and Maintenance 2-27
2.11 Decommissioning and Site Reclamation 2-28
3.0 ALTERNATIVES TO THE PROPOSED PROJECT 3-1
3.1 Introduction 3-1
3.2 Requirements for the Consideration of Alternatives 3-1
3.3 Alternatives Considered and Rejected from Further Consideration 3-4
3.4 Alternatives Considered 3-7
4.0 ENVIRONMENTAL IMPACT ANALYSIS 4.1
Overview 4.1

Environmental Resource Areas 4.1
Level of Significance 4.3
Format Used for Impact Analysis and Mitigation Measures 4.3
Cumulative Impacts 4.5
Related Plans and Projects 4.7
4.1 Aesthetics 4.1.1
4.2 Agriculture and Forestry Resources 4.2.1
4.3 Air Quality 4.3.1
4.4 Biological Resources 4.4.1
4.5 Cultural Resources 4.5.1
4.6 Energy 4.6.1
4.7 Geology and Soils 4.7.1
4.8 Greenhouse Gas Emissions 4.8.1
4.9 Hazards and Hazardous Materials 4.9.1
4.10 Hydrology and Water Quality 4.10.1
4.11 Land Use and Planning 4.11.1
4.12 Noise 4.12.1
4.13 Public Services 4.13.1
4.14 Transportation 4.14.1
4.15 Tribal Cultural Resources 4.15.1
4.16 Utilities and Service Systems 4.16.1
4.17 Wildfire 4.17.1
5 COMPARISON OF ALTERNATIVES 5-1
5.1 introduction 5-1
5.2 Project Objectives 5-5
5.3 Alternative 1: No Project 5-5
5.4 Alternative 2: Reduced Acreage Alternative 5-9
5.5 Alternative 3: Distributed Power 5-14

5.6 Conclusion 5-19
5.7 Environmentally Superior Alternative 5-23
6.0 EFFECTS FOUND NOT TO BE SIGNIFICANT 6.1
6.1 Population and Housing 6.1
6.2 Mineral Resources 6.2
6.3 Recreation 6.2
7.0 OTHER CEQA CONSIDERATIONS 7-1
7.1 Growth-Inducing Impacts 7-1
7.2 Significant and Unavoidable Impacts 7-3
7.3 Significant Irreversible Environmental Changes 7-3
7.4 Significant Effects That Cannot Be Avoided 7-4
8.0 LIST OF PREPARERS 8.1
Lead Agency 8.1
Consultant 8.1
Applicant Team 8.1
9.0 REFERENCES 9.1
9.1 Alternatives 9.1
9.2 Environmental Impact Analysis 9.1
9.3 Aesthetics 9.1
9.4 Agriculture and Forestry Resources 9.1
9.5 Air Quality 9.2
9.6 Biological Resources 9.4
9.7 Cultural Resources 9.7
9.8 Energy 9.9
9.9 Geology and Soils 9.10
9.10 Greenhouse Gas Emissions 9.12
9.11 Hazards and Hazardous Materials 9.13
9.12 Hydrology and Water Quality 9.15

9.13 Land Use 9.17
9.14 Noise 9.17
9.15 Public Services 9.18
9.16 Transportation 9.18
9.17 Tribal Cultural Resources 9.19
9.18 Utilities and Service Systems 9.19
9.19 Wildfire 9.20
9.20 Comparison of Alternatives 9.21
9.21 Effects Found Not to be Significant 9.22
9.22 Other CEQA 9.22

Figures

Figure 2-1. Project Location 2-4
Figure 2-2. Project Site – Conceptual Site Plan 2-5
Figure 2-3a. Representative Site Photos..... 2-6
Figure 2-3b. Representative Site Photos..... 2-7
Figure 2-4a. Project Substation Layout Drawing 2-14
Figure 2-4b. Project Substation Layout Drawing 2-15
Figure 3-1. Reduced Acreage Alternative..... 3-9
Figure 4.0-1. Cumulative Impact Analysis Projects 4.12
Figure 4.1-1. Project Site and Key Observation Points 4.1.7
Figure 4.1-2. Key Observation Point 1 ..... 4.1.8
Figure 4.1-3. Key Observation Point 2 ..... 4.1.9
Figure 4.1-4. Key Observation Point 3 ..... 4.1.10
Figure 4.2-1. Important Farmland..... 4.2.8
Figure 4.2-2. USDA Soils 4.2.10
Figure 4.2-3. Zone of Influence 4.2.15
Figure 4.2-4. Protected Resource Lands..... 4.2.16
Figure 4.10-1. Groundwater Subbasins..... 4.10.9
Figure 4.11-1. Zoning 4.11.4
Figure 4.12-1. Configuration of the Zeta Solar Proposed Equipment and Location of Property Line Receptor Calculation Points 4.12.15
Figure 4.12-2. Noise Contour Map of Zeta Solar BESS Site to Adjacent Receptors. 4.12.17

Tables

Table 2-1. Project Soils 2-8
Table 2-2. Anticipated Project Water Demand 2-19
Table 2-3. Project Construction Equipment 2-26
Table 4.0-1. Environmental Issue Abbreviations 4.4
Table 4.0-2. Geographic Scope of Cumulative Impact and Method of Evaluation 4.6
Table 4.0-3. List of Projects Included in Cumulative Analysis 4.8
Table 4.2-1. California LESA Model Scoring Thresholds 4.2.17
Table 4.2-2. California LESA Model Scoring Results for the Project Site 4.2.17
Table 4.3-1. California and National Ambient Air Quality Standards 4.3.2
Table 4.3-2. San Joaquin Valley Air Basin Attainment Status 4.3.16
Table 4.3-3. Merced-S. Coffee Monitoring Station Air Quality Data 4.3.17
Table 4.3-4. San Joaquin Valley Air Pollution Control District Significance Thresholds 4.3.21
Table 4.3-5. Construction Emissions in Tons per Year 4.3.25
Table 4.3-6. Operational Emissions 4.3.26
Table 4.3-7. Localized Concentrations of Emissions for Construction (Pounds Per Day) 4.3.29
Table 4.3-8. Localized Concentrations of Emissions for Operation (Pounds Per Day) 4.3.31
Table 4.4-1. Biological Field Survey Dates 4.4.5
Table 4.4-2. Special-Status Plant Species Potentially Occurring on the Project Site 4.4.9
Table 4.4-3. Special-Status Wildlife Species Known or Potentially Occurring on the Project Site 4.4.11
Table 4.5-1. Cultural Resources in or Within 0.5- Mile of the Study Area 4.5.11
Table 4.6-1. Construction Off-Road Fuel Consumption 4.6.10
Table 4.6-2. Construction On-Road Fuel Consumption 4.6.10
Table 4.6-3. Long-Term Operational Vehicle Fuel Consumption 4.6.12

Table 4.6-4. Decommissioning Off-Road Fuel Consumption 4.6.13
Table 4.6-5. Decommissioning On-Road Fuel Consumption 4.6.13
Table 4.7-1. Soil Map Units within the Project Site 4.7.7
Table 4.8-1. Construction Greenhouse Gas Emissions 4.8.16
Table 4.8-2. Operational Greenhouse Gas Emissions 4.8.16
Table 4.8-3. Project Consistency with 2022 Scoping Plan Greenhouse Gas Reduction Strategies 4.8.18
Table 4.8-4. Project Consistency with 2030 Merced County General Plan Greenhouse Gas Reduction Strategies 4.8.19
Table 4.9-1. Listing of Nearby Local Site 4.9.13
Table 4.10-1. Current and Projected Groundwater Budgets in the Delta-Mendota Subbasin Accounting for Implementation of Projects and Management Actions and Climate Change Factors 4.10.17
Table 4.10-2. Projected Annual Average Groundwater Budget in the Merced Subbasin with Climate Change Impacts (WY1969–2018) 4.10.18
Table 4.10-3. Projected Annual Average Groundwater Budget in the Merced Subbasin During Sustainability Period (WY2041-2090) with Implementation of Projects and Management Actions and Climate Change Factors 4.10.19
Table 4.10-4. Current and Future Groundwater Budgets in the North San Benito Subbasin 4.10.19
Table 4.11-1. General Plan Consistency Analysis 4.11.8
Table 4.12-1. Typical A-Weighted Sound Levels 4.12.2
Table 4.12-2. Definition of Sound Measurements 4.12.2
Table 4.12-3. Guideline Vibration Annoyance Potential Criteria 4.12.4
Table 4.12-4. Guideline Vibration Damage Potential Criteria 4.12.5
Table 4.12-5. Reference Vibration Source Levels for Construction Equipment 4.12.5
Table 4.12-6. 2030 Merced County General Plan Table HS-1 – Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise 4.12.8
Table 4.12-7. 2030 Merced County General Plan Table HS-2 – Non-Transportation Noise Standards Median (L50) / Maximum (Lmax)1 ..... 4.12.9
Table 4.12-8. Construction Tasks and Equipment 4.12.13

Table 4.12-9. FHWA RCNM Source Noise Levels 4.12.13
Table 4.12-10. Calculated Noise Level for Each Construction Task 4.12.14
Table 4.12-11. Noise Data for Battery Segments and Inverters 4.12.16
Table 4.12-12. Receptor Noise Levels 4.12.18
Table 4.12-13. Estimated Vibration Levels for Construction Equipment 4.12.19
Table 4.14-1. Construction Trip Generation 4.14.6
Table 5-1. Project Alternatives Impacts Comparison 5-19
Table 5-2. Project Alternatives Comparison to Project Objectives 5-21

EXECUTIVE SUMMARY

Longroad Development Company, LLC (Applicant), has applied to the Merced County Department of Community and Economic Development (County) for a Conditional Use Permit (Application No. CUP22-015) to construct, operate, maintain, and decommission the Zeta Solar and Battery Energy Storage System Project (Project), a photovoltaic (PV) solar power generation facility with a battery energy storage system (BESS) and onsite Project substation. The Project would generate up to approximately 75 megawatts (MW) alternating current (AC) renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW of AC. The Project is located on all or portions of several contiguous parcels, totaling approximately 650 acres (Project site), plus an additional 1,700-foot-long generation-tie (gen-tie) line to deliver power from the Project to Pacific Gas and Electric's (PG&E's) existing Mercy Springs Substation (point of interconnection) in unincorporated Merced County, located approximately 0.25 mile north of the Project site.

ES-1 PROJECT LOCATION

The Project is located on privately owned land in southwestern Merced County, approximately 9 miles south of Los Banos. The Project generation facility would occupy all or portions of three parcels identified by Merced County as Assessor Parcel Numbers (APNs) 090-130-018, 090-130-044, and 090-130-060. The gen-tie line would extend north through APN 088-180-063 to the point of interconnection in APN 090-103-059. Poleline Road abuts the southwestern Project site boundary. The California Aqueduct and United States (U.S.) Interstate 5 (I-5) run parallel to the southwest Project boundary about 300 feet and 800 feet to the west of the Project site, respectively. An unpaved access road (First Lift Canal) lies along the western boundary of the Project site, and the eastern boundary abuts an unnamed dirt/gravel road. The Project site consists of fallow agricultural lands, and there has been no agricultural production on the Project site for over 10 years. Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre) developed area to the south housing a cell tower and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 miles northwest of the Project site, respectively.

ES-2 SUMMARY OF PROJECT

The Project would involve the construction, operation, maintenance, and decommissioning of a PV solar power generation facility, BESS, onsite Project substation, and other associated infrastructure. The Project would generate approximately 75 MW AC of renewable energy and include a storage capacity of up to 8 hours of 75 MW AC. The Project site is located on 650 acres of privately owned land, plus an additional 1,700-foot-long gen-tie line route to deliver power to the existing Mercy Springs Substation, which is owned and operated by PG&E.

The Project would include a solar array area surrounded by an up to 8-foot-tall security fence. Solar PV modules mounted in rows on single-axis trackers and racking equipment would occupy most of the

Project site. The Project would also include, among other things, an underground DC collector system, up to 21 electrical equipment pads with inverters and transformers within the PV facility, an approximately 15-acre BESS with regularly spaced battery units and 70 electrical equipment pads, an underground or above-ground AC collector system, an approximately 5-acre Project substation, an approximately 1,700-foot-long 70 kilovolt (kV) gen-tie line, an approximately 0.8-acre operation and maintenance (O&M) area including an O&M office and adjacent O&M warehouse, and access roads. As part of construction, an approximately 10-acre staging area/laydown yard would be located within the Project site and accessed via internal graveled or compacted earth access roads.

As part of the interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker to an existing 70 kV ring bus at the Mercy Springs Switching Station.

Construction of the Project facilities would occur over 24 consecutive months, including civil work (including site preparation and grading) and facility construction with the use of heavy equipment (e.g., backhoes, pile drivers, and excavators), followed by testing and commissioning (e.g., equipment testing and calibration, etc.). Project operation would commence after completion of the testing and commissioning task.

Once operational, the Project would employ 10 full-time and up to 10 part-time employees for occasional maintenance on the site. The staff would work weekdays (sunrise to sunset) and as needed after hours and on weekends.

The Project has an anticipated operational life of approximately 40 years. At the end of the Project's operational term, the Applicant or Project proponent would determine whether the Project site should be decommissioned and deconstructed or if it would seek an extension of the Project's CUP and repower the facilities. If any portion of the Project site is decommissioned, it would be restored to its pre-development function.

ES-3 PROJECT OBJECTIVES AND APPROVALS

ES-3.1 Objectives

In accordance with California Environmental Quality Act (CEQA) guidelines, the specific objectives of the Project are as follows:

- Construct and operate a solar PV and BESS power-generating facility capable of producing and transmitting up to 75 MW of renewable energy in a cost-competitive manner.
- Locate a power-generating facility in close proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.
- 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) by developing and constructing a new solar power generation facility.

- Assist the State of California in reducing its greenhouse gas (GHG) emissions as required by the California Global Warming Solutions Act.
- Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).
- Develop a commercially viable solar power generation and BESS facility that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to Merced County.

ES-3.2 Approvals

The Applicant submitted an application to Merced County for a Conditional Use Permit (CUP) (Application No. CUP22-015) to construct, operate, maintain, and decommission the Project. Additional permits and approvals may be required for the Project, including those listed below.

State

- California Public Utilities Commission authorization under General Order 131-D
- California State Water Quality Control Board, National Pollutant Discharge Elimination System (NPDES) Construction General Permit

Local

- Merced County Conditional Use Permit and Certification of Final Environmental Impact Report
- Merced County Mitigation Monitoring and Reporting Program
- Merced County Building and Grading Permits and Right-of-Way Encroachment Permit
- Merced County Agricultural Preserve Amendment
- Merced County Onsite Wastewater Treatment Systems Permit
- San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII, Dust Control Plan
- SJVAPCD Rule 9510, Indirect Source Review
- SJVAPCD Authority to Construct and Permit to Operate

ES-4 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

Areas of controversy were identified through written agency and public comments received during the scoping period. Public comments received during the scoping period are provided in Appendix A. In summary, the following issues were identified during the scoping period and are addressed in the appropriate sections of Chapter 4, Environmental Impact Analysis, of this Draft Environmental Impact Report (EIR):

- Impacts related to agriculture:
- Impacts related to biological resources;
- Impacts related to air quality, and
- Impacts related to water supply.

ES-5 ALTERNATIVES TO THE PROJECT

The project alternatives and their potential impacts are discussed in Section 3, Alternatives, and Section 5, Comparison of Alternatives, respectively, of this EIR. As authorized under CEQA, the alternatives are discussed in less detail than the project. The No Project Alternative reflects a reasonably foreseeable view of the project site's future use.

ES-5.1 No Project Alternative (Alternative 1)

CEQA Guidelines Section 15126.6(e)(1) requires that the No Project Alternative be described and analyzed "to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project." The no project analysis is required to discuss "the existing conditions at the time the notice of preparation is published ... as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Section 15126.6(e)(2)).

The No Project Alternative assumes that no development would occur on the project site. The area would likely remain fallow. According to the Merced County Zoning Code, other allowable uses that could occur in the current zone would potentially be other agriculture, ranching operations, well drilling, game preserves, public parks and recreation areas, wildlife management, equipment maintenance, on-site energy generation facilities, residence, produce stand, kennel, county or publicly-owned facilities, truck parking, and wireless communication towers.

ES-5.2 Reduced Acreage Alternative (Alternative 2)

Under the reduced acreage alternative, the footprint of the project would be reduced. The total MW capacity at the project site would be reduced from 75 MW to 23.4 MW, and the project footprint would be reduced by approximately 462 acres to remove the project area that currently consists of Prime Farmland. Figure 3-1 in Section 3.0, Alternatives, provides the site layout for this alternative.

Elimination of the area with Prime Farmland would result in including only assessor's parcel numbers (APNs) 090080028, 090130060, and 090130044 as the Reduced Acreage Alternative. This would reduce the project size from 650 acres to approximately 186 acres.

Under this alternative, the other 462 acres of the project site would remain undeveloped and fallow, with periodic use of grazing sheep and goats for weed control, as it is currently used. The gen-tie interconnection would remain unchanged. In addition to the solar panels, development on the project site would still include construction of an onsite collector substation, a BESS on an approximately 15-acre portion of the Project site, and associated infrastructure, as under the proposed project. Similar to the proposed project, this alternative would require a CUP for the project.

ES-5.3 Distributed Power Alternative (Alternative 3)

Distributed power generation refers to a variety of technologies that generate electricity at or near where it will be used. Distributed power resources may be standalone or grid connected and may preclude the need for transmission lines. The distributed power alternative assumes the 75-MW production capacity of the Project would be provided by solar panels placed on the roofs of residential, commercial, industrial, and institutional buildings throughout the County.

The Distributed Power Alternative would involve the development of a number of geographically distributed small to medium solar PV systems (e.g., 100 kWh to 1 MW each) within existing developed areas, typically on the rooftops of commercial and industrial facilities situated throughout unincorporated Merced County. Under this alternative, no undeveloped land would be developed or altered. However, depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage (i.e., greater than 650 acres of total rooftop area) would be required to attain the proposed project's capacity of 75 MW of solar PV generating capacity. Because of space or capital cost constraints, many rooftop solar PV systems would be fixed-axis systems or would not include the same type of sun-tracking equipment that would be installed in a freestanding utility-scale solar PV project and, therefore, would not attain the same level of efficiency with respect to solar PV generation.

Alternative 3 would generate 75 MW of electricity, but it would be for onsite use only and no BESS would be available to store the unused solar energy; therefore, the solar power could only be used during daylight hours.

The distributed power alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, relatively flat roof areas necessary for efficient solar installations. Similar to the project, this alternative would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Power generated by such distributed solar PV systems would be consumed onsite by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

ES-6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table ES-1, Executive Summary of Impacts and Mitigation Measures, summarizes the potential environmental effects of the Project, the recommended mitigation measures, if applicable, and the level of significance after mitigation. Per CEQA Section 15093, should the project be approved as proposed, any impact noted in the summary as "significant" after mitigation would require the adoption of a statement of overriding considerations.

Additionally, CEQA requires public agencies to establish a monitoring report program for the purpose of ensuring compliance with those Mitigation Measures adopted as conditions of approval to mitigate or avoid significant environmental impacts identified in an EIR. A Mitigation Monitoring and Reporting Program (MMRP), incorporating the mitigation measures set forth in this document, will be adopted at the time of certification of the Final EIR.

Table ES-1. Executive Summary of Impacts and Mitigation Measures

Impacts	Mitigation Measures	Level of Significance
Section 4.1 – Aesthetics		
Impact AES-1 The Project would not have a substantial adverse effect on a scenic vista.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AES-2 The Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	No mitigation is necessary.	No Impact.
Impact AES-3 The Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AES-4 The Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.2 – Agriculture		
Impact AG-1 The Project would not convert Prime, Unique, or Farmland of Statewide Importance to a non-agricultural use.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AG-2 The Project would not conflict with existing zoning for agricultural use or a Williamson Act contract.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AG-3 The Project would not involve other changes in the existing environment that, due to their location or nature, would result in conversion of Farmland to non-agricultural use (or conversion of forest land to non-forest use).	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
Impact AG-4 The Project would not conflict with existing zoning for, or cause rezoning of forest land (as defined in PRC section 12220(g)) or timberland (as defined in PRC section 4526) or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).	No mitigation is necessary.	No Impact.
Impact AG-5 The Project would not result in the loss of forest land or conversion of forest land to non-forest uses.	No mitigation is necessary.	No Impact.
Section 4.3 – Air Quality		
Impact AQ-1 The Project would not conflict with or obstruct implementation of the applicable air quality plan.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AQ-2 The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact AQ-3 The Project would not expose sensitive receptors to substantial pollutant concentrations.	**MM AQ-1: Valley Fever Management Plan.** Prior to the initiation of ground disturbing activities, a Valley Fever Management Plan shall be provided to the County for review and approval. The Valley Fever Management Plan shall include a program to limit the potential for exposure to *C. immitis* from construction activities and to identify appropriate worker training, dust management, and safety procedures that shall be implemented. In addition to awareness and recognition training, these measures include performing job hazard assessments (JHAs) for all job classifications employed on site during construction. These	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	JHAs shall identify the potential for exposure as well as the appropriate precautions and controls to minimize exposure.	
Impact AQ-4 The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.4 –Biological Resources		
Impact BIO-1 The proposed Project would not 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.	**MM BIO-1: Lead Biologist During Construction and Decommissioning.** • Prior to the issuance of grading or building permits and prior to decommissioning, the project operator will designate a lead biologist with the qualifications (i.e., relevant training and experience with special-status species that could potentially occur on-site) to oversee compliance with protection measures for all listed and other special-status species. The lead biologist or another qualified biologist will be on the project site during initial vegetation clearing and grading. • After grading is complete, the lead biologist or another qualified biologist will visit the project site at least weekly during construction activities throughout the construction phase, and as-needed during decommissioning. • The lead biologist and qualified biologists will have the right to halt all activities to avoid impacts on special-status species and to establish no-disturbance buffers. Work will proceed only after hazards to special-status species are removed, and the species is no longer at risk. While on-site, the lead biologist or qualified biologist will carry a copy of all compliance measures and appropriate plans. **MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources.**	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	During construction, operation and maintenance, and decommissioning of the facility, the operator or contractor will implement the following general avoidance and protective measures to protect special-status wildlife species: • Prior to the start of construction, a Vegetation and Soil Management Plan will be prepared for the project that includes an end of construction revegetation approach and operation phase vegetation and soil management practices. The plan will include details on 1) soil testing and soil amendments if deemed necessary by test results; 2) site preparation; 3) the seed mixture to be used on-site, including native and desirable non-native low-stature species, and application methods; 4) areas to be reseeded; 5) weed identification and control measures; 6) vegetation and soil maintenance procedures; 7) implementation timing; 8) vegetation and soil condition goals and monitoring protocols; 9) adaptive management guidelines and success criteria; and 10) a clear prohibition of the use of toxic rodenticides. During operation, steps will be taken to establish and maintain a ground cover of low-stature (e.g., less than 18 inches tall) native and desirable non-native grasses and other plants. The seed mix will be determined through consultation with a vegetation restoration professional with local knowledge and in consideration of soil test results. Phased seeding may be used if a phased construction approach is used (i.e., the entire site need not be seeded all at the same time). The revegetation of the site will be monitored annually following restoration activities that occur post-construction and post-decommissioning. The monitoring program is intended to help achieve a ground cover of	

Impacts	Mitigation Measures	Level of Significance
	native and desirable non-native low-stature species, where feasible. • The operator will limit the areas of disturbance to the extent feasible. Parking areas, new roads, staging, storage, excavation, and disposal site locations will be confined to the smallest areas possible. All project disturbance areas will be clearly demarcated with signs, stakes, and/or flagging prior to construction to avoid non-project areas and natural resources where possible. • Spoils will be stockpiled in disturbed areas that lack native vegetation. BMPs will be employed to prevent erosion in accordance with the project's approved Stormwater Pollution Prevention Plan (SWPPP). All detected erosion will be remedied within two days of discovery or as described in the SWPPP. • All personnel entering the project site will attend worker environmental awareness training provided by the lead biologist or their designee before beginning work on-site. The primary worker environmental awareness training will occur before construction activities begin and as-needed thereafter. The worker environmental awareness training will include the following topics: • Information on the potential special-status species and the habitats that may be found within or adjacent to the project site, including (but not limited to) American badger, burrowing owl, Crotch's bumble bee, and SJKF. • Impact avoidance and reporting requirements of federal and state laws pertaining to potential special-status species. Workers will be instructed to notify the site supervisor and/or lead or qualified biologist right away if any of these species are present on-site.	

Impacts	Mitigation Measures	Level of Significance
	• Identification of measures implemented to conserve the special-status species and habitats within or adjacent to the project site will occur. • A fact sheet conveying this information shall be distributed to all personnel who may enter the project site. • Control on Noxious Weeds: Noxious weed control is important to the success of site stabilization and vegetation management overall and aids in the protection and conservation of native plant species, as well as improving wildlife habitat. To control noxious weed populations during routine operations, the Applicant shall complete the following: • Operational personnel will monitor the site for noxious weeds and be trained on identifying common, highly invasive species that are known to occur in the project area. • Weed control measures will be flexible and adaptive depending on the invasive plants and intensity of the weed infestation. Measures will include a combination of mechanical, manual, and chemical controls. • To avoid and minimize impacts, herbicides will be applied according to best management practices (e.g., favorable precipitation and wind conditions, when rain is not predicted for 24-48 hours, avoid native vegetation or other sensitive biological resources and active seasons where practicable), and as outlined in the Hazardous Materials Business Plan and Vegetation and Soil Management Plan. • Performance and success shall be based upon the maintained digital records, including photographs	

Impacts	Mitigation Measures	Level of Significance
	and written summaries, that document compliance and include details about water year and subsequent herbicide application timing. • To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth will 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. All holes and trenches, whether covered or not, will be inspected by workers for trapped wildlife at the start and end of each workday. Before such holes or trenches are filled, they will be thoroughly inspected by workers for trapped animals. If trapped animals are observed, escape ramps or structures will be installed immediately to allow escape. If a common or non-listed special-status species is found trapped, all work in the vicinity of the animal will cease immediately. If the animal is not injured, then the lead biologist or other qualified biologist will directly supervise the provision of escape structures and/or trench modification to allow the trapped animal to escape safely. Work will not resume in the vicinity of the animal, and it will be allowed to leave the work area and project site on its own. If a listed animal or species of special concern is injured, then the lead biologist will immediately contact USFWS and/or CDFW to identify an individual with the appropriate permit or authorization to handle listed species and to determine who will bring the animal to a pre-identified wildlife rehabilitation or veterinary facility for care. • 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 will be thoroughly inspected for special-status wildlife or	

Impacts	Mitigation Measures	Level of Significance
	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 will not be moved until the lead or another qualified biologist has been consulted. If the animal is a special-status species, then work will immediately halt in the vicinity, and the animal will be allowed to move from the structure and the work area of its own accord. The lead biologist or qualified biologist will direct work stoppages near the animal to allow it to freely move out of the pipe and away from the work area. Special-status species will not be handled or captured by anyone without the appropriate permit or authorization. If the animal is not a special-status species, work will halt until the animal has been captured and relocated by the lead biologist or another qualified biologist. • Drivers/operators of vehicles and equipment parked at worksites will inspect the ground beneath the vehicle or equipment for the presence of wildlife prior to moving the vehicle/equipment. If an animal is present, the lead biologist or another qualified biologist will be notified and the animal will be left to move on its own. • Project vehicles and equipment will use existing routes of travel. Cross-country vehicle and equipment use beyond the demarcated project disturbance areas will be prohibited. • A speed limit of 20 miles per hour will be enforced within all construction areas. • A long-term trash abatement program will be established for construction, operation and maintenance, and decommissioning. The plan will be submitted to the County prior to construction. Personal trash and food items will be placed in a central, closed container and removed from worksites daily to reduce	

Impacts	Mitigation Measures	Level of Significance
	the attraction of wildlife, such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs. • Workers will be prohibited from bringing pets and firearms to the project site and from feeding wildlife in the vicinity. • Intentional killing or collection of any wildlife species will be prohibited. **MM BIO-3: Preconstruction Surveys and Protective Measures for Special-Status Species.** A qualified biologist will conduct pre-construction surveys for special-status species prior to construction and decommissioning activities. No special-status species surveys would be required during operation and maintenance activities. Preconstruction surveys do not need to be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur prior to disturbance of any particular portion of the project site. The biologist will record observations of all special-status species and establish no-disturbance buffers as appropriate. Species-specific and general details are as follows: • **American Badger:** A qualified biologist will conduct a preconstruction survey for American badger no more than 14 days prior to the beginning of ground disturbance related to construction and decommissioning activities, or any other project activity with a potential to impact American badger (such as staging, mowing, vegetation clearing). If no American badger dens are identified on the project site, no further mitigation is necessary. If American badger dens are located within a project work area and cannot be avoided, a qualified biologist will determine if the dens are occupied.	

Impacts	Mitigation Measures	Level of Significance
	If unoccupied, the dens will be collapsed under the supervision of the lead biologist. If occupied, the lead biologist will determine if it is a natal/pupping den or a solitary badger den. Natal/pupping dens will be avoided by establishment of a no-disturbance buffer around the den, as determined by the lead biologist and based on site-specific conditions, until the young are old enough to leave the den and survive on their own. CDFW must be contacted to determine the appropriate no-disturbance buffer distance. A 50-foot, no-disturbance buffer will be established around dens occupied by a solitary badger. For active solitary dens, an on-site passive relocation program will be implemented with prior concurrence from CDFW. This program will consist of excluding badgers from occupied burrows by installation of one-way doors at burrow entrances and monitoring of the burrow for one week to confirm usage has been discontinued. After the qualified biologist determines that the badgers have stopped using active dens within the project site, the dens will be collapsed under the supervision of the lead biologist or another qualified biologist. • **Crotch's Bumble Bee:** If, at the commencement of project construction, Crotch's bumble bee is still considered a CESA candidate species or has been listed as threatened or endangered under CESA, the project will implement the following measures to avoid, minimize, and offset project impacts to the species: • A qualified biologist will conduct a preconstruction survey for Crotch's bumble bee and nests in project areas with suitable nesting habitat prior to initial ground-disturbing activities, such as staging, mowing, vegetation clearing. There will be multiple	

Impacts	Mitigation Measures	Level of Significance
	surveys during the nesting season. The surveys can be phased with project build-out. The purpose of the surveys will be to identify active nest colonies inside of permanent and temporary impact areas. • If active Crotch's bumble bee nests are observed within the project site or within a 50-foot buffer surrounding the site, an appropriate no-disturbance buffer (as determined by a qualified biologist) will be established around the nest to reduce the risk of disturbance or accidental take. The buffer will provide at least 50 feet of clearance around active nest entrances. (Note: inaccessible areas outside of the project site can be surveyed using binoculars from the project edge or from public roads.) • If establishment of a no-disturbance buffer is feasible, construction activities will not occur within the buffer until a qualified biologist determines that the colony is no longer active (i.e., no Crotch's bumble bees are seen flying in or out of the nest for three consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). Once the nest has been determined to be inactive, construction activities within the no-disturbance buffer(s) will be allowed to resume. • If avoidance of a no-disturbance buffer is not feasible, the lead biologist will consult with CDFW regarding potential encroachment into the no-disturbance buffer with other measures implemented. Work would not begin in the no-disturbance buffer without CDFW approval. • If avoidance of the nest is not feasible, the lead biologist will consult with the CDFW regarding the potential for project activities to result in take of the	

Impacts	Mitigation Measures	Level of Significance
	Crotch's bumble bee and will comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any incidental take permit issued for the project by CDFW. • **San Joaquin Kit Fox:** A qualified biologist will conduct a preconstruction survey for SJKF to determine whether potential SJKF dens are present in or within 200 feet of the project site no fewer than 14 days and no more than 30 days prior to beginning of ground disturbance (such as staging, mowing, and vegetation clearing) related to construction and decommissioning activities, or any other project activity with the potential to impact SJKF. (Note: inaccessible areas outside of the project site can be surveyed using binoculars or spotting scopes from the project edge or from public roads). The surveys will be conducted in all areas of suitable habitat for SJKF. If potential dens are observed and avoidance of the dens is determined to be feasible, then a no-disturbance zone of 100 feet will be established around an active den. If the den is natal/pupping den, USFWS must be contacted to determine the appropriate no-disturbance zone (USFWS 2011). Exclusion zone establishment will follow the USFWS Standardized Recommendations for Protection of the Endangered SJKF Prior to or During Ground Disturbance (USFWS 2011) under "Exclusion Zones." If active, non-natal/pupping dens are found within the project site by the qualified biologist, an on-site passive relocation program will be implemented with prior concurrence from USFWS. This program will consist of excluding SJKFs from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. This would be implemented only during non-breeding season for SJKF	

Impacts	Mitigation Measures	Level of Significance
	(September 1 to February 1). After the qualified biologist determines that the SJKFs have stopped using active dens within the project site, the dens will be excavated by hand with a shovel to prevent foxes from re-using them during construction. • **Other Special-Status Species**: If other special-status species are detected during preconstruction surveys, the qualified biologist will implement appropriate no-disturbance buffers around the individual animal, burrow, den, or nest, as determined by the biologist and based on site-specific conditions. The buffer will provide at least 50 feet of clearance, or a distance recommended by the appropriate agency from the protected resource. The lead biologist will contact CDFW and/or USFWS to determine appropriate next steps, including identifying an individual with the appropriate permit or authorization to handle a listed species, if that becomes necessary. The applicant will comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any incidental take permit issued for the project by CDFW authorizing take of the species. **MM BIO-4: Nesting Bird Protection Measures.** Nesting bird surveys would only be required for construction and decommissioning activities, not during operation and maintenance activities. If construction work is scheduled to take place outside of the bird nesting season (September 16 through January 31), no action would be required to protect nesting birds. To avoid impacts on nesting birds within or near the project site during the bird nesting season (February 1 through August 31, or through September 15 for Swainson's hawk), the following measures will be implemented:	

Impacts	Mitigation Measures	Level of Significance
	• A qualified wildlife biologist will conduct preconstruction surveys for nesting birds no more than 14 days prior to the beginning of ground disturbance (such as staging and vegetation clearing) related to construction and decommissioning activities. Surveys may be phased as construction is phased so that each work area is surveyed no more than 14 days prior to the start of construction in that area. • If active nests are found during preconstruction surveys (or during construction by a construction crew), a suitable no-disturbance buffer will be established around the nests until it is determined that all young have fledged or until the recognized nesting season has ended (i.e., generally August 31 except Swainson's hawk which would be September 15). The size of any employed no-disturbance buffers will vary based on the species that is nesting (e.g., 200–300 feet for common raptors; 0.5 mile for Swainson's hawk; 50 feet for passerine species). For species that are not state or federally listed as threatened or endangered, encroachment into the no-disturbance buffer may occur at the discretion of a qualified biologist; however, for state and federally listed species, consultation with CDFW and/or USFWS will occur prior to encroachment into the no-disturbance buffers. • If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Shrubs, trees, and other vegetation within the construction site determined to be unoccupied by nesting birds or that are outside the no-disturbance buffer for active nests can be removed. Vegetation removal will be scheduled for outside of the nesting season, as feasible.	

	MM BIO-5: Burrowing Owl Protection Measures. A qualified biologist will conduct a preconstruction survey for burrowing owls within 330 feet of the project site in areas with suitable burrowing habitat to locate any occupied burrows (e.g., active breeding burrows or wintering burrows) no more than 14 days prior to the beginning of ground equipment staging or ground-disturbing activities. No burrowing owl surveys would be required during operation and maintenance activities. If, at the commencement of project construction, burrowing owl is present and listed as candidate, threatened, or endangered under CESA, then the lead biologist will consult with CDFW to determine if an incidental take permit is needed for the project, unless avoidance is feasible. To protect burrowing owls, the following conditions will be met prior to construction within each successive work area: • Surveys will include the project site and areas within 330 feet of the project site. Inaccessible areas outside of the project site can be surveyed using binoculars or spotting scopes from the project edge or from public roads. The survey methodology will be consistent with the methods outlined in the CDFW (2012) Staff Report on Burrowing Owl Mitigation. • If inactive (unoccupied) burrowing owl burrows are detected any time of the year, the burrows may be excavated with a shovel to prevent burrowing owls from re-using them during construction. The burrows 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, will be permitted within a no-disturbance buffer around the burrow. The size of any employed no-disturbance buffers will be 330 feet from the active burrow if during the breeding season (February 1 to August 31) and 165	

Impacts	Mitigation Measures	Level of Significance
	feet from the active burrow if during the nonbreeding (winter) season, unless otherwise authorized by a qualified biologist as described below. • Depending on the level of disturbance, a smaller buffer may be established by a qualified biologist based on the visibility and sensitivity responses of each individual burrowing owl. • If burrow avoidance is infeasible during the nonbreeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juvenile burrowing owls are foraging independently and capable of independent survival, a qualified biologist will implement a passive relocation program in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation. Exclusion would involve installation of one-way doors at burrow entrances after the qualified biologist has determined that the burrow is not an active nest or that juvenile burrowing owls are not dependent on the burrow. After the authorized biologist has determined through monitoring that the burrows are unoccupied, the burrows may be excavated with a shovel to prevent burrowing owls from re-using them during construction. **MM BIO-6: Reduce Potential for Bird Collisions and Electrocutions with Power Lines.** • APLIC guidelines in accordance with *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012) and *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) will be incorporated into the powerline design to minimize the likelihood of bird collisions and electrocutions. Transmission lines and all electrical components will be designed, installed, and maintained in accordance with APLIC guidance to reduce the	

Impacts	Mitigation Measures	Level of Significance
	likelihood of large bird collisions and electrocutions. This measure would be implemented during construction and operation and maintenance activities. **MM BIO-7: Reduce Potential for Bird Collisions with Photovoltaic Array.** • At night, the panels will be positioned where they last tracked the sun or pre-positioned toward the east to capture sunrise (i.e., panels should be in a close to vertical position). This measure would be implemented during operation and maintenance activities.	
Impact BIO-2 The Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	No mitigation is necessary.	No Impact.
Impact BIO-3 The Project would not have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	No mitigation is necessary.	No Impact.
Impact BIO-4 The Project would not 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 wildlife nursery sites.	**MM BIO-8: Reduce Impacts on Nocturnal Wildlife from Lighting.** • Lighting will be designed to provide the minimum illumination needed to achieve safety and security. Lights should be off during the night, which will be the default setting. The lights will be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. This measure would be implemented during operation and maintenance activities.	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	• Narrow spectrum bulbs will be used to limit the range of species affected by Project lighting.	
Impact BIO-5 The Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	No mitigation is necessary.	No Impact.
Impact BIO-6 The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.	No mitigation is necessary.	No Impact.
Section 4.5 – Cultural Resources		
Impact CUL-1 The Project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.	**MM CUL-1: Retain a Qualified Archaeologist and Training.** The Applicant/contractor shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology, to carry out all Mitigation Measures related to archaeological and historical resources prior. All personnel entering the Project site shall attend a Cultural Resources Awareness Training provided by the qualified archaeologist before beginning work onsite. The primary Cultural Resources Awareness Training shall occur before construction activities begin, and as-needed thereafter. The training shall include an overview of potential cultural resources that could be encountered during ground-disturbing activities. This will facilitate worker recognition, avoidance, and subsequent immediate notification of the qualified archaeologist for further evaluation and action, as appropriate. The training will also cover penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. If construction is phased,	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	additional trainings shall be conducted for all new construction personnel. The training sessions shall focus on the recognition of the types of archaeological resources that could be encountered at the Project site and the procedures to be followed if they are found. Documentation shall be retained demonstrating that all construction personnel attended the training. **MM CUL-2: Inadvertent Discovery of Historic or Archaeological Resources.** If prehistoric or historic-era cultural resources, including tribal resources, are encountered during the course of grading or construction, all ground-disturbing activities within 50 feet of the find shall cease. The qualified archaeologist shall evaluate the significance of the resources and recommend appropriate treatment measures. Per CEQA Guidelines Section 15126.4(b)(3)(A), Project redesign and preservation in place shall be the preferred means to avoid impacts to significant archaeological sites. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures in consultation with Merced County, which may include data recovery or other appropriate measures. Merced County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. If an artifact must be removed during project excavation or testing, curation may be an appropriate action. The qualified archaeologist shall prepare a report documenting evaluation and additional treatment of the resource (if needed). A copy of the report shall be provided to Merced County and to the CCaIC. Construction can recommence based on direction of the qualified archaeologist.	

Impacts	Mitigation Measures	Level of Significance
Impact CUL-2 The Project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.	**MM CUL-1: Retain a Qualified Archaeologist and Training.** **MM CUL-2: Inadvertent Discovery of Historic or Archaeological Resources.**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact CUL-3 The Project would not disturb any human remains, including those interred outside of formal cemeteries.	**MM CUL-3: Inadvertent Discovery of Unmarked Burials.** If human remains are uncovered during Project construction, the Project operator shall immediately halt work within 50 feet of the find, contact the Merced County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4 (e)(1). If the County Coroner determines that the remains are Native American in origin, the NAHC will be notified in accordance with Health and Safety Code Section 7050.5(c) and PRC 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per PRC Section 5097.98. The landowner shall ensure that the immediate vicinity where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred (as prescribed in PRC Section 5097.98) with the MLD regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et seq.) directing identification of the next-of-kin will apply.	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
Section 4.6 – Energy		
Impact EN-1 The Project would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact EN-2 The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.7 – Geology and Soils		
Impact GEO-1 The Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: i. Rupture of a known earthquake fault ii. Strong Seismic Ground Shaking iii. Seismic-related ground failure, including liquefaction iv. Landslides	**MM GEO-1: Geotechnical Analysis and Report.** Prior to issuance of a grading or building permit, the Applicant shall submit detailed, design-level geotechnical report prepared by a registered engineer to identify foundation, structural, and other development design standards to be implemented to the Merced County Building and Safety Department. This geotechnical report shall identify specific engineering methods to address any seismic shaking, potential liquefaction hazards, and unstable soils issues. The geotechnical survey would conduct soil pit testing to determine the depth of the restrictive layer (greater than 80-inches per the National Resources Conservation Service). The geotechnical report shall have performance standards that shall include a fault map, which shows location of fault traces and potential for surface rupture and ground shaking potential, the maximum considered earthquake and associated ground acceleration for design, moderate to high shrink swell potential, and erosion potential, among others. Final Project designs shall be consistent with applicable federal, State, and local seismic standards, and the Applicant shall incorporate the recommendations from the	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	geotechnical report into the final design of the Project. Building plans and design drawings shall be subject to review and approval by the Merced County Building Department for consistency with the recommendations of the geotechnical report and building codes prior to issuance of a building permit.	
Impact GEO-2 The Project would not result in substantial soil erosion or the loss of topsoil.	**MM GEO-1: Geotechnical Analysis and Report.** **MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources.**	Less-Than-Significant Impact with Mitigation Incorporated
Impact GEO-3 The Project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	**MM GEO-1: Geotechnical Analysis and Report.**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact GEO-4 The Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact GEO-5 The 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.	**MM GEO-1: Geotechnical Analysis and Report.**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact GEO-6 The Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**MM GEO-2: Retain a Qualified Paleontologist.** A qualified paleontologist, defined as one meeting professional standards as defined by Murphey et al. (2019) shall be retained by the applicant prior to the issuance of grading permits to serve as the designated Project Paleontologist. The Project Paleontologist shall provide technical and compliance oversight of all work as it relates to	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	paleontological resources, attend the Project kick-off meeting and Project progress meetings on a regular basis, and report to the site if potential paleontological resources are encountered. **MM GEO-3: Paleontological Resources Awareness Training.** The Project Paleontologist shall develop a paleontological resources Workers' Environmental Awareness Program training that communicates requirements and procedures for the inadvertent discovery of paleontological resources during construction, as well as the penalties for unauthorized collection or disturbance of paleontological resources, to be delivered by the Project Paleontologist or their designee to the construction crews prior to the onset of initial ground disturbance, and as-needed thereafter. Training materials in the form of handouts or a recording shall be provided by the Project Paleontologist for training additional staff. Documentation in the form of a sign-in sheet shall be collected to document the training and will be provided to Merced County for compliance purposes. **MM GEO-4: Inadvertent Discovery of Paleontological Resources.** Should a potential paleontological resource be identified in the Project site, work should halt in a safe radius around the find (50 feet, unless the Paleontologist determines a shorter distance is sufficient) until the Project Paleontologist can assess the find and, if significant, salvage the fossil for laboratory preparation and curation at an appropriate repository such as the Natural History Museum of Los Angeles County, along with a report documenting the conditions of discovery and all relevant data required by the repository. In addition to this treatment of the fossils identified, the Project Paleontologist may make recommendations for additional mitigation actions, such as paleontological resource monitoring, to commence at the	

Impacts	Mitigation Measures	Level of Significance
	site for the remainder of construction activities. If recommended, monitoring shall consist of a qualified paleontological monitor (see standards in Murphey et al. [2019]) observing construction activities into potentially fossiliferous sediments from a safe distance, collecting data on the lithology encountered, and stopping work should additional fossils be encountered, at which point the Paleontologist would treat the fossils as described above. **MM GEO-5: Paleontological Monitoring.** Project activities that exceed the depth of younger alluvium and extend into older alluvium, estimated to occur at depths of 5 feet or greater, should be monitored by a paleontologist meeting professional standards as a Field Paleontologist as defined by Murphey et al. (2019) working under the supervision of the Project Paleontologist. The duration and extent of monitoring should be determined by the Project Paleontologist based upon final Project plans. Following completion of the monitoring program, the Project Paleontologist should oversee drafting of a Paleontological Resources Mitigation Report that documents completion of the monitoring and other paleontological mitigation activities. This report will be delivered to the Lead Agency and, should fossils have been collected, the repository.	
Section 4.8 – Greenhouse Gas Emissions		
Impact GHG-1 The Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	**MM GHG-1: Circuit Breakers.** Prior to construction activities, the applicant will ensure that breakers used for the Project shall have a manufacturer-guaranteed sulfur hexafluoride (SF_6) leakage rate of 0.5 percent per year or less.	Less-Than-Significant Impact with Mitigation Incorporated.
Impact GHG-2 The Project would not conflict with an applicable plan, policy or regulation adopted for the	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
purpose of reducing the emissions of greenhouse gases.		
Section 4.9 – Hazards and Hazardous Materials		
Impact HAZ-1 The Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	**MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact HAZ-2 The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving a hazardous materials release into the environment.	**MM HAZ-1: Fire Protection Plan.** The Applicant shall prepare a Fire Protection Plan for construction, operation, and decommissioning of the project prior to issuance of construction permits, and will coordinate with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training. The Fire Protection Plan shall be submitted to and approved by Merced County to include but not be limited to the following measures: • Internal combustion engines, stationary and mobile, shall be equipped with spark arresters in good working order. • All personnel shall be trained in fire safety practices relevant to their duties. • All construction and maintenance personnel shall be trained and equipped to extinguish small fires. • Work crews shall have fire-extinguishing equipment on hand, as well as emergency numbers and cell phones or other means of contacting the Fire Department. • Security gates shall be approved by the Fire Department and shall include the installation of a key switch or padlock, whichever is most appropriate.	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
	• Smoking shall be prohibited while operating equipment and shall be limited to paved or graveled areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents). Smoking shall be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the Project area.	
Impact HAZ-3 The Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	No mitigation is necessary.	No Impact.
Impact HAZ-4 The Project would not 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, would not create a significant hazard to the public or the environment.	No mitigation is necessary.	No Impact.
Impact HAZ-5 The Project would not be 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, the project would not result in a safety hazard or excessive noise for people residing or working in the project area.	No mitigation is necessary.	No Impact.
Impact HAZ-6 The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
Impact HAZ-7 The Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	**MM HAZ-1: Fire Protection Plan.**	Less-Than-Significant Impact with Mitigation Incorporated.
Section 4.10 – Hydrology and Water Quality		
Impact HYD-1 The Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	**MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources.** **MM GEO-1: Geotechnical Analysis and Report.**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact HYD-2 The 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.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact HYD-3 The 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 through the addition of impervious surfaces, in a manner that would i. Result in substantial erosion or siltation on- or offsite; ii. Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite; iii. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
iv. Impede or redirect flood flows.		
Impact HYD-4 The Project would not be exposed to flood hazard, tsunami, or seiche zones that would risk release of pollutants due to Project inundation.	No mitigation is necessary.	No Impact.
Impact HYD-5 The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.11 – Land Use and Planning		
Impact LUP-1 The Project would not physically divide an established community.	No mitigation is necessary.	No Impact.
Impact LUP-2 The Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.12 – Noise		
Impact NOI-1 The proposed Project would not result in the generation of a substantial temporary or permanent increase in noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact NOI-2 The proposed Project would not result in the generation of excessive groundborne vibration or groundborne noise levels.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact NOI-3 For a project located within the vicinity of a private airstrip or an airport land use plan	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?		
Section 4.13 – Public Services		
Impact PUB-1. The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.14 – Transportation and Traffic		
Impact TRA-1 The proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact TRA-2 The proposed Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).	No mitigation is necessary.	Less-Than-Significant Impact.
Impact TRA-3 The proposed 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).	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
Impact TRA-4 The proposed project would not result in inadequate emergency access.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.15 – Tribal Cultural Resources		
TRIB-1 The project would not cause a substantial adverse change in the significance of a TCR, defined in PRC 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 1. listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or 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 subdivision (c) of PRC Section 5024.1.	**MM CUL-1: Retain a Qualified Archaeologist and Training.** **MM CUL-2: Inadvertent Discovery of Historic or Archaeological Resources.** **MM CUL-3: Inadvertent Discovery of Unmarked Burials.**	Less-Than-Significant Impact with Mitigation Incorporated.
Section 4.16 – Utilities and Service Systems		
Impact USS-1 The Project would not result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact USS-2 The Project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	No mitigation is necessary.	Less-Than-Significant Impact.

Impacts	Mitigation Measures	Level of Significance
Impact USS-3 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?	No mitigation is necessary.	Less-Than-Significant Impact.
Impact USS-4 The 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.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact USS-5 The Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	No mitigation is necessary.	Less-Than-Significant Impact.
Section 4.17 – Wildfire		
Impact WF-1 The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan.	No mitigation is necessary.	Less-Than-Significant Impact.
Impact WF-2 The Project would not exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors.	**MM HAZ-1: Fire Protection Plan.**	Less-Than-Significant Impact with Mitigation Incorporated.
Impact WF-3 The Project would not 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.	**MM HAZ-1: Fire Protection Plan.** **MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources.**	Less-Than-Significant Impact with Mitigation Incorporated.

Impacts	Mitigation Measures	Level of Significance
Impact WF-4 The 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 mitigation is necessary.	No Impact.

ES-7 REVIEW OF 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. During the public review period, the Draft EIR, including the technical appendices, is available for review at the Merced County Department of Community and Economic Development in Merced, California, and online at https://www.countyofmerced.com/414/Environmental-Documents.

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 regular mail and email, as further described in Section 1.0, Introduction. 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.

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Draft Environmental Impact Report (EIR) is to analyze the potential environmental impacts of the Zeta Solar and Battery Energy Storage System Project (Project), indicate ways to reduce or avoid potential environmental impacts, and identify alternatives to the proposed project that would meet most of the project objectives while reducing potential environmental impacts. This Draft EIR has been prepared pursuant to the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations [CCR] 1500 et seq.). Additionally, this Draft EIR discloses the proposed project's environmental effects, including those that cannot be avoided, growth-inducing effects, effects found not to be significant, and cumulative impacts. CEQA requires that each public agency mitigate or avoid the significant environmental effects of a project it approves or implements whenever feasible.

The analysis documented in this Draft EIR is based on information submitted to the Lead Agency, Merced County (County), bolstered by information from independent resource-specific technical studies, reviews, and research conducted by the Draft EIR preparers. The purpose of this Draft EIR is not to recommend approval or denial of the proposed project, but rather to inform the Lead Agency's decision whether to approve or to deny the project. The Lead Agency may approve a proposed project even if it would result in significant and unavoidable environmental impacts (the process is further described in Section 1.6.3).

1.2 PROJECT OVERVIEW

Longroad Development Company, LLC (Applicant), has applied to the Merced County Department of Community and Economic Development (County) for a Conditional Use Permit (Application No. CUP22-015) to construct, operate, maintain, and decommission the Zeta Solar and Battery Energy Storage System Project (Project), a photovoltaic (PV) solar power generation facility with a battery energy storage system (BESS) and onsite Project substation. The Project would generate up to approximately 75 megawatts (MW) alternating current (AC) renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW of AC. The Project is located on all or portions of several contiguous parcels, totaling approximately 650 acres (Project site), plus an additional 1,700-foot-long generation-tie (gen-tie) line to deliver power from the Project to Pacific Gas and Electric's (PG&E's) existing Mercy Springs Substation (point of interconnection) in unincorporated Merced County, located approximately 0.25 mile north of the Project site.

A complete description of the proposed project and its components is provided in Section 2.0, Project Description, of this Draft EIR.

1.3 LEAD AGENCY DETERMINATION

The County is designated the Lead Agency for the proposed project. CEQA Guidelines Section 15367 defines the Lead Agency as "...the public agency, which has the principal responsibility for carrying out or

approving a project." Other public agencies may use this document in their decision-making or permitting processes.

This Draft EIR was prepared by the County with technical assistance provided by Stantec Consulting Services Inc. (Stantec), an environmental consulting firm. Prior to public review, this Draft EIR was reviewed and evaluated by staff at the County; the Draft EIR reflects the independent judgment and analysis of the County, as required by CEQA.

1.4 SCOPE OF THE DRAFT EIR

1.4.1 Notice of Preparation

On July 14, 2023, the County published and distributed a Notice of Preparation (NOP) to advise interested local, regional, and state agencies; nearby neighbors; and the public that an EIR would be prepared for the proposed project. The NOP solicited both written and oral comments on the EIR's scope during the 30-day comment period ending August 14, 2023. Additionally, the NOP presented the background, purpose, description, location, and potential issues to be addressed in the EIR and contact information for additional information regarding the proposed project. During the scoping period, interested parties were encouraged to submit written comments on the scope of issues to be included in the EIR for the proposed project. Four written comments and were submitted during the NOP comment period. A scoping meeting was held on March 12, 2024. One additional comment letter was received after this scoping meeting. Appendix A to this Draft EIR contains a copy of the NOP and all written comments received.

1.4.2 Environmental Issues Determined Not To Be Significant

Pursuant to CEQA, the discussion of the potential effects on the physical environment is focused on those impacts that may be significant or potentially significant. CEQA allows the Lead Agency to limit the details of discussion of the environmental effects that are not considered potentially significant (Public Resources Code [PRC] Section 21100, CCR Sections 15126.2[a] and 15128). CEQA requires that the discussion of any significant effects on the environment be limited to substantial or potentially substantial adverse changes in the physical conditions of the affected area, as defined in PRC Section 21060.5 (statutory definition of "environment"). Effects dismissed in an analysis as clearly insignificant and unlikely to occur need not be discussed further in the Draft EIR unless the Lead Agency subsequently receives information inconsistent with the finding that certain impacts are unlikely to occur (CCR Section 15143).

As part of the NOP scoping process, it was determined that implementation of the proposed project would result in no impact to the following environmental topic areas:

- Population and Housing
- Mineral Resources
- Recreation

With the exception of a cursory impact discussion in Section 6.0, Effects Found Not To Be Significant, these environmental resources areas are not discussed further in this Draft EIR. An explanation of why each of the issues above was determined not to be significant is provided in Section 6.0, Effects Found Not To Be Significant.

1.4.3 Effects Determined to Be Potentially Significant

The NOP found the following resource areas may contain potentially significant environmental issues that would require further analysis in the Draft EIR. In accordance with Appendix G of the CEQA Guidelines, the following resource areas are evaluated in this Draft EIR:

- Aesthetics
- Agriculture and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Public Services
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire

The environmental analysis for each of these resource areas is provided in Section 4.0, Environmental Impact Analysis.

1.5 ORGANIZATION OF THE DRAFT EIR

This Draft EIR is arranged into the following sections, which contain the contents of an EIR as required by CEQA Guidelines Sections 15120 through 15132.

Executive Summary. The Executive Summary section provides a summary of the proposed project and the project alternatives, including a summary of project impacts, recommended mitigation measures, and the level of significance after mitigation for each environmental issue.

Section 1.0: Introduction. The Introduction section provides an overview of the proposed project and the CEQA process and describes the purpose, scope, and components of this Draft EIR.

Section 2.0: Project Description. The Project Description section provides a detailed description of the proposed project, including the location and project characteristics. The intended uses of this Draft EIR, project background, project objectives, and required project approvals are also addressed.

Section 3.0: Discussion of Alternatives. Provides a comparison between the impacts associated with the proposed project and the alternatives that were evaluated. This section also discusses the alternatives that were considered and deemed to be infeasible.

Section 4.0: Environmental Impact Analysis. The Environmental Impact Analysis section analyzes the environmental effects of the proposed project. Impacts are organized into major environmental topic areas. Each topic area includes a description of the regulatory setting, environmental setting, significance criteria, project impacts, mitigation measures, and level of significance after mitigation. This section also addresses the cumulative impacts and alternative impacts for each resource. The specific environmental topic areas that are addressed in Section 4.0, Environmental Impact Analysis, include the following:

- Section 4.1, Aesthetics
- Section 4.2, Agriculture and Forest Resources
- Section 4.3, Air Quality
- Section 4.4, Biological Resources
- Section 4.5, Cultural Resources
- Section 4.6, Energy
- Section 4.7, Geology and Soils
- Section 4.8, Greenhouse Gas Emissions
- Section 4.9, Hazards and Hazardous Materials
- Section 4.10, Hydrology and Water Quality
- Section 4.11, Land Use and Planning

- Section 4.12, Noise
- Section 4.13, Public Services
- Section 4.14, Transportation
- Section 4.15, Tribal Cultural Resources
- Section 4.16, Utilities and Service Systems
- Section 4.17, Wildfire

Section 5.0: Comparison of Alternatives. The Comparison of Alternatives section provides decision-makers and the public with a reasonable number of feasible project alternatives that could attain most of the proposed project's objectives, while avoiding or reducing any of the proposed project's significant adverse environmental effects.

Section 6.0: Effects Found Not To Be Significant. The Effects Found Not To Be Significant section provides a summary of project impacts that have been determined, through preparation of the NOP, to result in less than significant impacts or no impacts.

Section 7.0: Other CEQA Considerations. The Other CEQA Considerations section provides a summary of significant environmental effects, including unavoidable, irreversible, and growth-inducing impacts.

Section 8.0: List of Preparers. The List of Preparers section provides a list of the individuals who contributed to the preparation of this Draft EIR. This section also includes a listing of the Lead Agency personnel and technical consultants used to prepare the Draft EIR.

Section 9.0: References. List of references used to prepare the Draft EIR.

Appendices. The appendices contain the NOP (including comments) and technical studies prepared to support the analyses and conclusions in this Draft EIR.

1.5.1 Documents Prepared for the Proposed Project

The following technical studies and analyses were prepared for the Project by Stantec Consulting Services:

- Aquatic Resources Survey Report
- Agricultural Land Conversion Study
- Air Quality and Greenhouse Gas Impact Assessment
- Biological Resources Assessment
- Botanical Resources Survey Report

- Cultural Resources Evaluation Report
- Glare Hazard Analysis
- Noise Assessment
- Paleontological Resources Assessment
- Traffic Impact Analysis
- Visual Resources Assessment
- Water Supply Assessment

These technical studies have been reviewed and incorporated into this Draft EIR as needed to support the environmental impact analysis.

1.6 PUBLIC REVIEW AND COMMENT

1.6.1 Public Comment on the Draft EIR

Upon completion of this Draft EIR, the County filed a Notice of Completion (NOC) with the State Office of Planning and Research to begin the public review period (PRC Section 21161). Concurrent with the filing of the NOC, this Draft EIR has been distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the Draft EIR in accordance with PRC 21092(b)(3). During the public review period, the Draft EIR, including the technical appendices, is available for review at the Merced County Department of Community and Economic Development in Merced, California, and online at https://www.countyofmerced.com/414/Environmental-Documents.

Written comments may be submitted to the County during the 45-day public review period, which starts on October 4, 2024, and ends on November 18, 2024. Written comments on this Draft EIR will be accepted via regular mail and email and should be addressed to:

> Merced County Department of Community and Economic Development
> Attention: Tiffany Ho
> 2222 'M' Street
> Merced, CA 95340
> tiffany.ho@countyofmerced.com

All comments received will be addressed in a response to comments document that, together with this Draft EIR, will constitute the Final EIR for the proposed project. Written responses to all environmental issues raised will be made available for review by the commenting agencies at least 10 days prior to any public hearing on the proposed project, at which the certification of the Final EIR will be considered. Comments received and the responses to comments will be included as part of the record for consideration by decision makers for the proposed project.

1.6.2 Effectively Commenting on an EIR

Readers are invited to review and comment on the adequacy and completeness of this Draft EIR in describing the potential impacts of the proposed project, the level of significance, the mitigation measures being proposed to reduce or avoid those impacts, and the project alternatives being considered. The most effective comments are those that focus on the adequacy and completeness of the environmental analysis and that are supported by factual evidence. Comments that focus on whether the proposed project should be approved or denied are not comments on the adequacy of this Draft EIR.

1.6.3 Final EIR

After the end of the review period, the County will review the comments received, prepare written responses to those comments, make any related revisions to the Draft EIR, and publish the Final EIR.

The Final EIR will be considered at a separate publicly noticed meeting with the County Planning Commission. If the Project is approved, CEQA requires the County to adopt findings describing how each of the significant impacts identified in the EIR is being mitigated. CEQA requires that a Lead Agency shall neither approve nor implement a project, as proposed, unless the significant environmental impacts have been reduced to an acceptable level. An acceptable level is defined as eliminating, avoiding, or substantially lessening significant environmental effects to below a level of significance. The findings will describe the reasons for why significant unavoidable impacts, if any, cannot be mitigated. The findings will also describe the reasons for why the project alternatives that were analyzed in the EIR have not been adopted.

If the Lead Agency approves a project even though significant impacts identified in the Final EIR cannot be fully mitigated, the Lead Agency must state in writing the reasons for its action. In such a case, findings and a Statement of Overriding Considerations must be included in the record of project approval and mentioned in the Notice of Determination (NOD). Lastly, the County will adopt a Mitigation Monitoring and Reporting Plan (MMRP), which describes how the proposed project will ensure that the required Mitigation Measures will be carried out.

2 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

Longroad Development Company, LLC (Applicant), has applied to the Merced County Department of Community and Economic Development (County) for a Conditional Use Permit (Application No. CUP22-015) to construct, operate, maintain, and decommission the Zeta Solar and Battery Energy Storage System Project (Project), a photovoltaic (PV) solar power generation facility with a battery energy storage system (BESS) and onsite Project substation. The Project would generate up to approximately 75 megawatts (MW) alternating current (AC) renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW of AC. The Project is located on all or portions of several contiguous parcels, totaling approximately 650 acres (Project site), plus an additional 1,700-foot-long generation-tie (gen-tie) line to deliver power from the Project to Pacific Gas and Electric's (PG&E's) existing Mercy Springs Substation (point of interconnection) in unincorporated Merced County, located approximately 0.25 mile north of the Project site.

The Project would include a solar array area surrounded by an up to 8-foot-tall security fence. Solar PV modules mounted in rows on single-axis trackers and racking equipment would occupy most of the Project site. The Project would also include, among other things, an underground DC collector system, up to 21 electrical equipment pads with inverters and transformers within the PV facility, an approximately 15-acre BESS with regularly spaced battery units and 70 electrical equipment pads, an underground or above-ground AC collector system, an approximately 5-acre Project substation, an approximately 1,700-foot-long 70 kilovolt (kV) gen-tie line, an approximately 0.8-acre operation and maintenance (O&M) area including an O&M office and adjacent O&M warehouse, and access roads. As part of construction, an approximately 10-acre staging area/laydown yard would be located within the Project site and accessed via internal graveled or compacted earth access roads.

As part of the interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker to an existing 70 kV ring bus at the Mercy Springs Switching Station.

Construction of the Project facilities would occur over 24 consecutive months. The Project would operate year-round to generate electricity from the PV facilities during daylight hours and dispatch additional electricity during either daylight or non-daylight hours, depending on the application of the BESS portion of the Project.

2.2 LOCATION

The Project is located on privately owned land in southwestern Merced County, approximately 9 miles south of Los Banos. The Project generation facility would occupy all or portions of three parcels identified by Merced County as Assessor Parcel Numbers (APNs) 090-130-018, 090-130-044, and 090-130-060. The gen-tie line would extend north through APN 088-180-063 to the point of interconnection in APN 090-103-059. Poleline Road abuts the southwestern Project site boundary. The California Aqueduct and

United States (U.S.) Interstate 5 (I-5) run parallel to the southwest Project boundary about 300 feet and 800 feet to the west of the Project site, respectively. An unpaved access road (First Lift Canal) lies along the western boundary of the Project site, and the eastern boundary abuts an unnamed dirt/gravel road. The Project site consists of fallow agricultural lands, and there has been no agricultural production on the Project site for over 10 years. Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre) developed area to the south housing a cell tower and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 miles northwest of the Project site, respectively.

The Project site location and surrounding uses are shown on Figure 2-1.

2.3 EXISTING CONDITIONS

2.3.1 Land Use

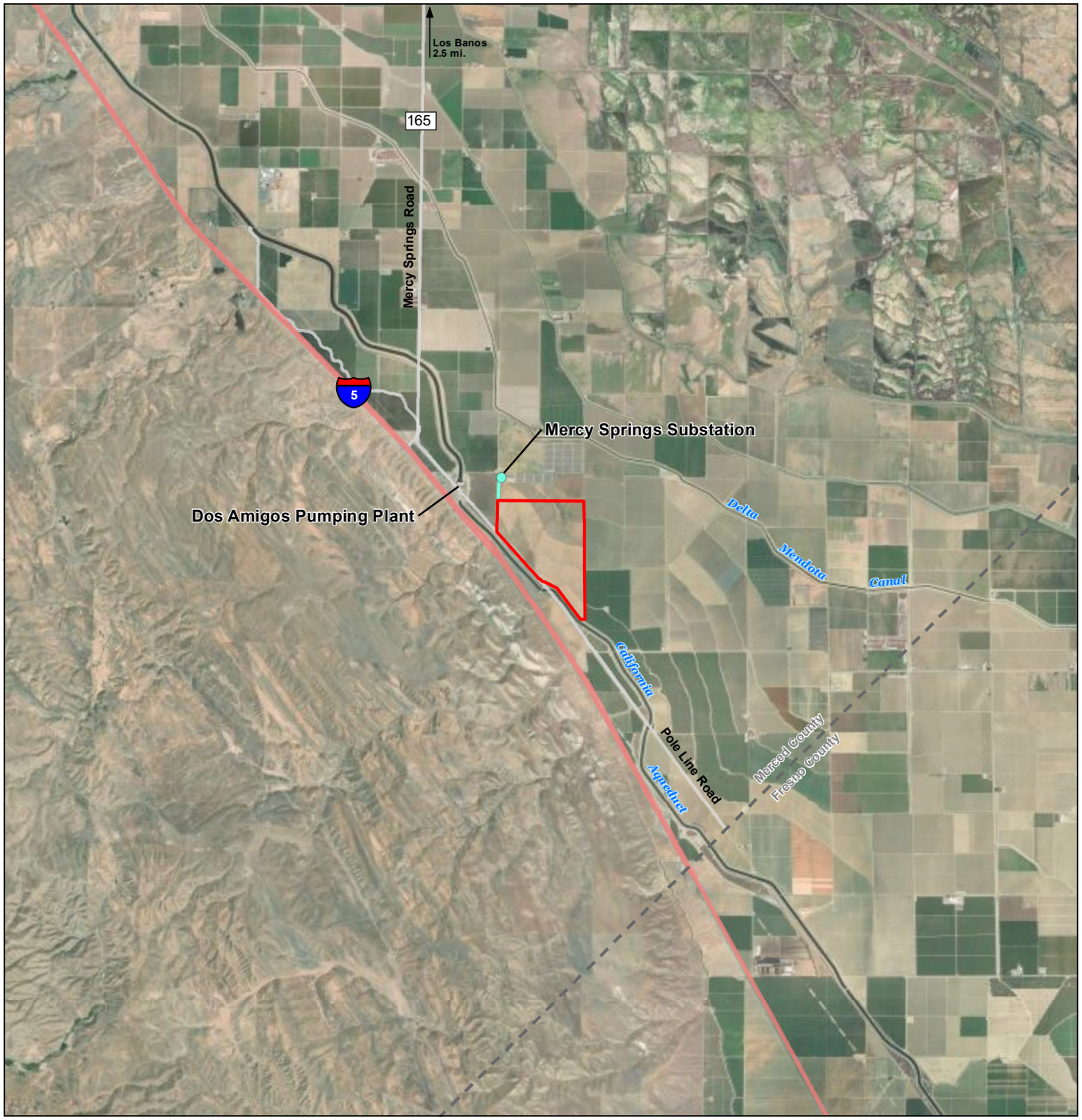
The land use designation for the Project site is Agricultural under the County General Plan. The Agricultural land use designation provides for cultivated agricultural practices that rely on good soil quality, adequate water availability, and minimal slopes. This is the largest land use designation by area in Merced County and is applied to areas on the valley floor. The Agricultural designation also allows for the development of energy generation facilities. The Project site is zoned Exclusive Agricultural (A-2) under the County Zoning Code. Pursuant to Zoning Code Section 18.10.020, energy generation facilities, including solar facilities, are allowed in the A-2 zone with approval of a Conditional Use Permit.

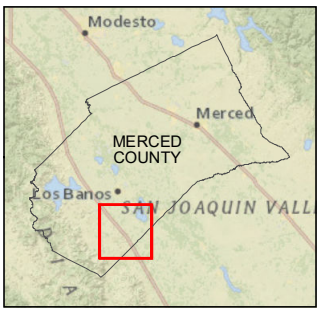
The Project site consists of 462.01 acres of Prime Farmland, 185.47 acres of Farmland of Local Importance, 0.65 acres of Grazing Land, and 1.77 acres of Vacant or Disturbed Land. According to the Department of Conservation Farmland Mapping and Monitoring Program, the Prime Farmland classification includes lands with the soil quality, growing season, and moisture supply needed to produce sustained high yields. However, the Project site has been subject to a Water Administration Agreement and a Restrictive Covenant Prohibiting Irrigation with the San Luis Water District (SLWD) since 2011 (recorded March 30, 2011, as instrument 2011-011545 and recorded March 30, 2011, as instrument 2011-011542, Official Records, respectively), and the land has not been irrigated since that time. As such, the surface water associated with the land has been reallocated and is not currently available for agricultural use on the Project site. Without access to surface water for irrigation, production of high-value agricultural crops is not feasible and has not occurred on the Project site for more than 10 years. From 2012 to 2018, dryland plants were planted on the Project site as a weed-control measure, but these plants were not irrigated. The land lay fallow for 3 years between 2018 and 2020. Grazing sheep have been used on the Project site periodically since 2021 as a weed-control measure. The Project site is undeveloped and consists largely of patches of common wheat (not grown for harvest), along with other non-native grass species. The Project site also includes unvegetated areas, such as unpaved roads, paved roads, and sections of riprap. The Project site and surrounding land are in a relatively flat-lying plain and exhibit little topographic variation.

The Project site is not contracted under the California Land Conservation Act of 1965 (Williamson Act). However, all Project parcels except APN 090-130-044 are in Merced County's agricultural preserve. An

Agricultural Preserve Amendment would be required to remove the parcels from the agricultural preserve and allow for development of the Project.

The Project site conceptual plan is shown on Figure 2-2. Figure 2-3a and Figure 2-3b provide representative photographs of the Project site.





Project Site Boundary

Gen-tie

Point of Interconnection

0 1 2
Miles
(At original document size of 8.5x11)
1:120,000

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-18
TR by GG on 2024-07-18

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

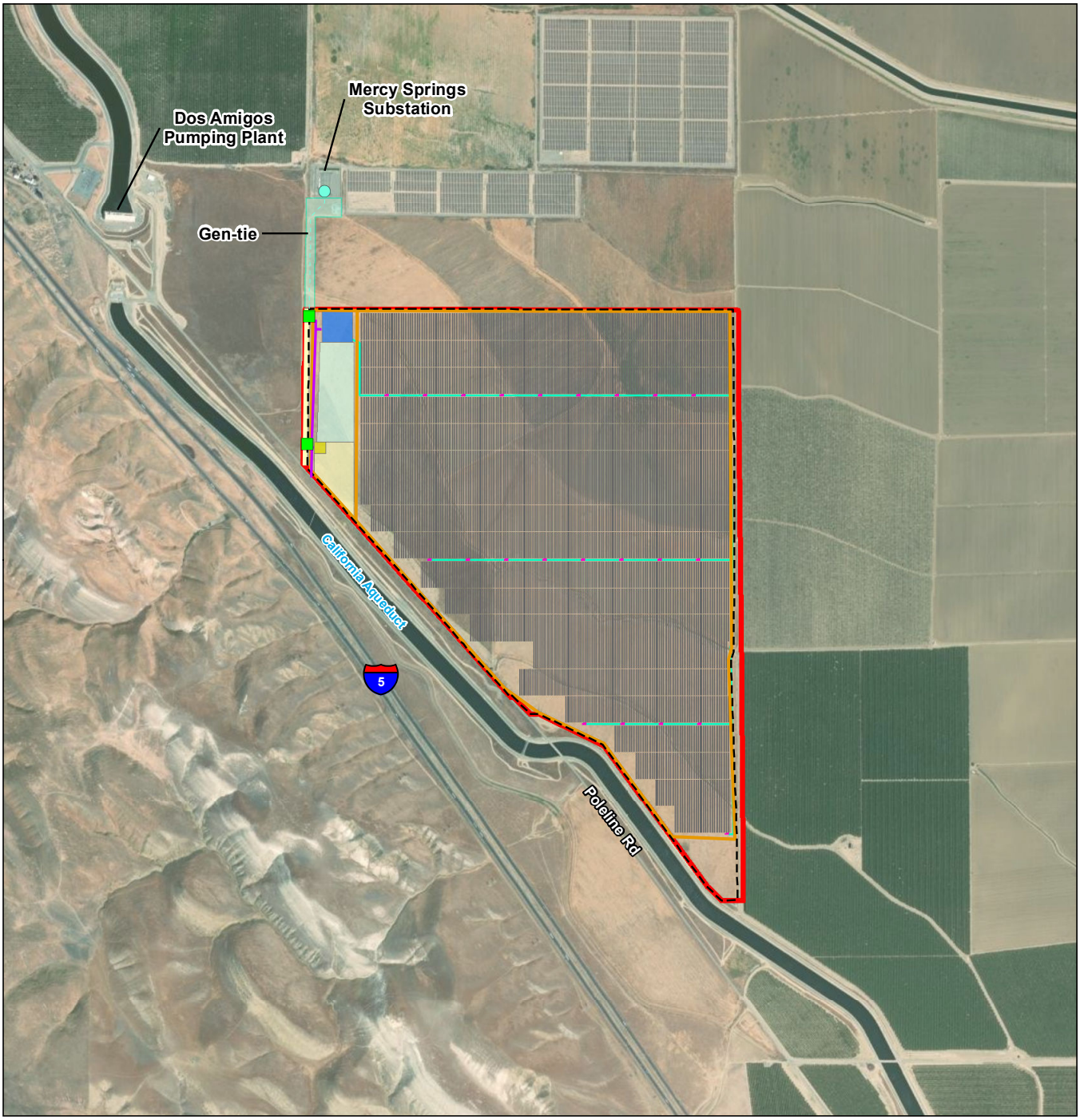
Figure 2-1

Title
Project Location

Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\Figures\VisualNoise\Fig_2-1_ProjectLocation.mxd Revised: 2024-07-24 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.





- Project Site Boundary
- Gen-tie
- Gen-tie Corridor
- Point of Interconnection
- Zeta Substation
- Panel Layout
- Inverters
- O&M Building
- Laydown Yard
- BESS
- Mv Collectors
- Fence
- Access Road
- Perimeter Road
- Utility Lines
- Gate

0 0.25 0.5 Miles
(At original document size of 8.5x11)
1:24,000

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2023-06-09
TR by TR on 2023-06-09

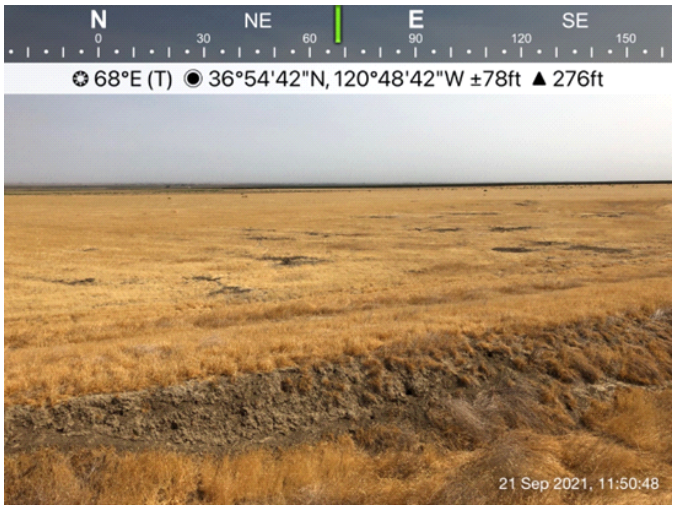
Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2-2

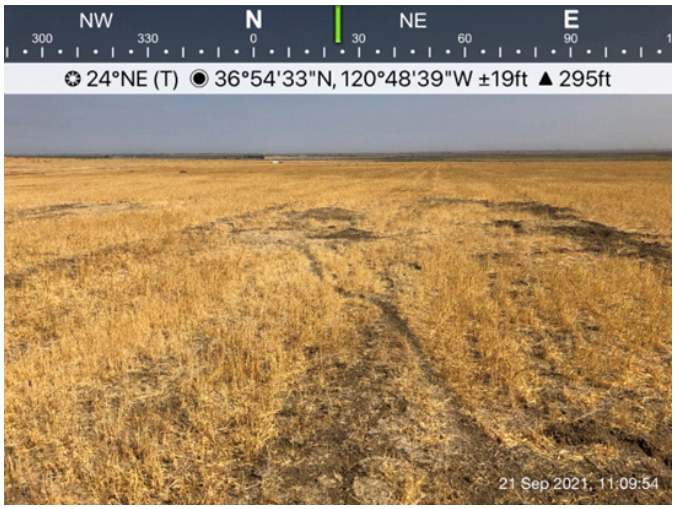
Title
Project Site — Conceptual Plan

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\Figures\Fig2-2_ProjectSitePlan.mxd Revised: 2024-06-19 By: pglendening

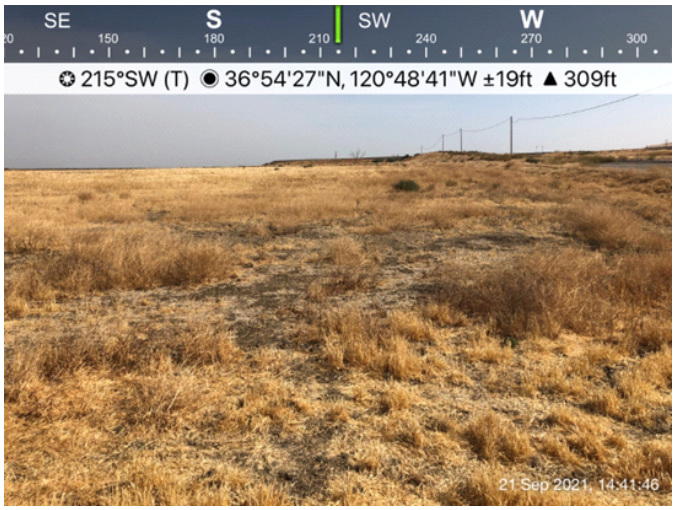
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.













Project Site

Photo Location and View Direction

Stantec

Project Location
Merced County, CA

Prepared by PG on 2023-06-08
TR by JD on 2023-06-14

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2-3a

Title
Representative Site Photos

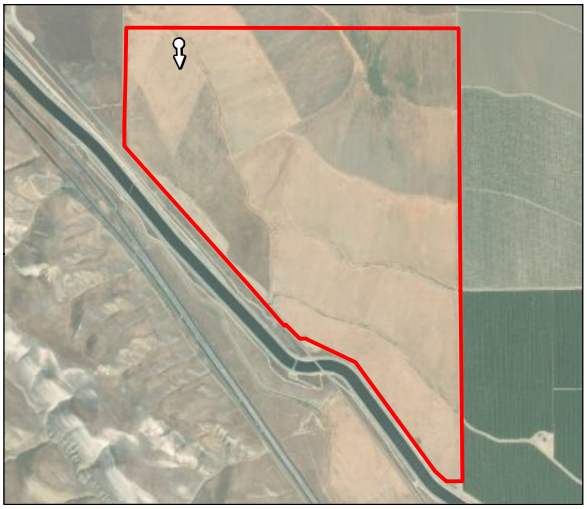
V:\1857\Active\185705411103_data\gis_cad\gis\mxd\Figures\Fig2-3a_SitePhotos.mxd Revised: 2023-06-14 By: pglendening

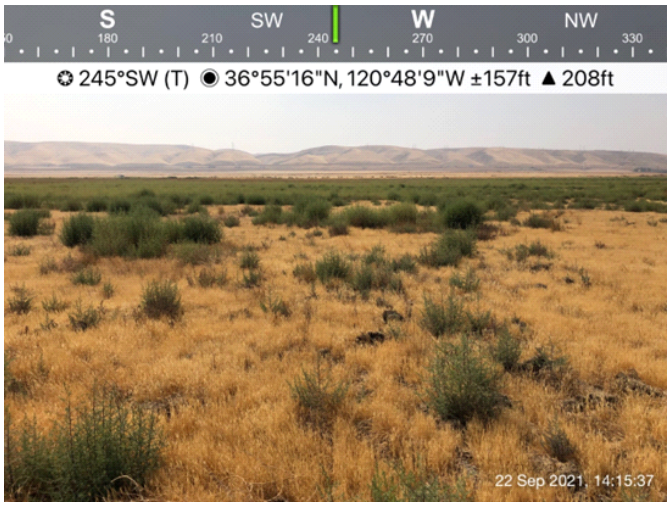
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

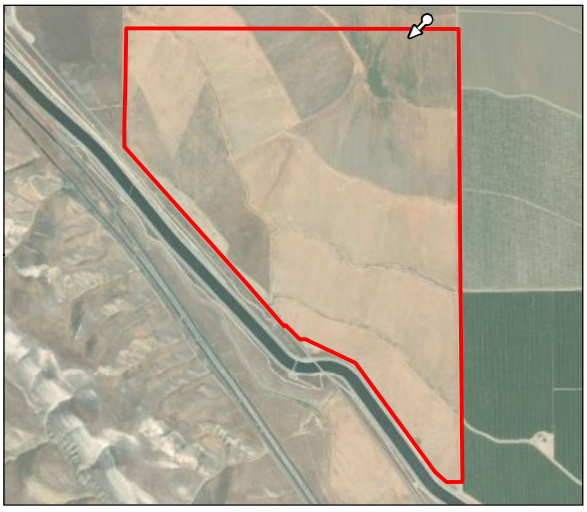












Project Site

Photo Location and View Direction

Stantec

Project Location
Merced County, CA

Prepared by PG on 2023-06-08
TR by JD on 2023-06-14

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2-3b

Title
Representative Site Photos

V:\1857\Active\185705411103 data\gis cad\gis\mxd\Figures\Fig2-3b SitePhotos.mxd Revised: 2023-06-14 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

2.3.2 Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS's) Web Soil Survey (WSS) was used to determine soil types on the Project site (USDA 2021). According to the WSS, soils described for the Project site consist of Deldota clay, Paver clay loam, and Woo clay, as further described in Section 4.2, Agricultural Resources. Table 2-1 provides the soil types found on the Project site and their acreages.

Table 2-1. Project Soils

Soil Map Unit	Acres
167 – Deldota clay, partially drained	223.54
230 – Paver clay loam, 2–5% slopes	161.99
280 – Woo clay, 0–2% slopes	264.37

Note that much of the Project site is on the Deldota soil type, a partially drained soil that is considered drainage impaired. In addition, all soils on the Project site are formed in clays deposited in marine environments, which are high in salinity. Agricultural benefit from these soils is largely dependent on the development of drainage and flushing native salts. The massive salt discharges associated with these soils have led to the need for covenants to restrict irrigation in the area to reduce salinity impacts on the water system.

2.3.3 Irrigation Infrastructure

There is currently no access to water on the Project site. There are 40 unmaintained ditch segments and culverts onsite and a non-producing and unmaintained well. The Project site has been subject to a non-irrigation covenant with the SLWD since 2011, and the Project site has not been irrigated since that time. This agreement prohibits agricultural irrigation in perpetuity. The Project site's rights to water allocations from the SLWD have been indefinitely transferred to the SLWD to distribute to other water users. The restrictive covenant can be terminated by written notice, but any water allocation to the Project site would be limited based on the water district's resources available at that time.

2.3.4 Water Quality

Groundwater quality within the subbasin is characterized by mixed sulfate to bicarbonate water types in the northern and central portions of the subbasin with areas of sodium chloride and sodium sulfate waters in the central and southern portions (DWR 2006). The subbasin was assessed in the Northern and Central Delta-Mendota Region GSP (NCDMR 2022) and San Joaquin River Exchange Contractors Group GSP (SJREC Group 2022). Constituents showing elevated concentrations in the subbasin include total dissolved solids (TDS), as well as localized areas of nitrate, selenium, boron, hexavalent chromium, and arsenic.

2.4 PROJECT PURPOSE AND NEED

The California Renewable Portfolio Standard (RPS) legislation enacted in 2002 (Senate Bill [SB] 1078) and accelerated in 2006 required retail sellers of electricity to obtain 20 percent of their supply of electricity from renewable energy sources, such as solar, by 2010. In 2011, Executive Order S-21-09 directed the California Air Resources Board, under its Assembly Bill (AB) 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020 (CEC 2014). SBX1-2, including the 33 percent goal, was signed into law by California Governor Jerry Brown on April 13, 2011. In 2015, further increasing demand for utility-scale renewable energy generation, Governor Brown signed SB 350 into law, requiring that utilities procure 50 percent of their electricity from renewables by 2030. In 2018, Governor Brown signed SB 100, which revised the renewable percentage for 2030 to 60 percent and committed California to obtaining all its electricity from clean sources, such as solar, wind, and hydropower, by 2045.

Power generated by the Project would be delivered directly via the California Independent System Operator (CAISO) electrical transmission system and would provide Merced County, as well as the State of California, with a renewable energy source that would assist the State of California in complying with the RPS under SB 100 and other similar renewable and reliability programs in the state.

2.5 PROJECT OBJECTIVES AND APPROVALS

2.5.1 Project Objectives

In accordance with California Environmental Quality Act (CEQA) guidelines, the specific objectives of the Project are as follows:

- Construct and operate a solar PV and BESS power-generating facility capable of producing and transmitting up to 75 MW of renewable energy in a cost-competitive manner.
- Locate a power-generating facility in close proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.
- 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) by developing and constructing a new solar power generation facility.
- Assist the State of California in reducing its greenhouse gas (GHG) emissions as required by the California Global Warming Solutions Act.
- Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).
- Develop a commercially viable solar power generation and BESS facility that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to Merced County.

2.5.2 Project Approvals

The Applicant submitted an application to Merced County for a Conditional Use Permit (CUP) (Application No. CUP22-015) to construct, operate, maintain, and decommission the Project. Additional permits and approvals may be required for the Project, including those listed below.

State

- California Public Utilities Commission authorization under General Order 131-D
- California State Water Resources Control Board, National Pollutant Discharge Elimination System (NPDES) Construction General Permit

Local

- Merced County Conditional Use Permit and Certification of Final Environmental Impact Report
- Merced County Mitigation Monitoring and Reporting Program
- Merced County Building and Grading Permits and Right-of-Way Encroachment Permit
- Merced County Agricultural Preserve Amendment
- Merced County Onsite Wastewater Treatment Systems Permit
- San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII, Dust Control Plan
- SJVAPCD Rule 9510, Indirect Source Review
- SJVAPCD Authority to Construct and Permit to Operate

2.6 DESCRIPTION OF PROPOSED PROJECT

The Project would involve the construction, operation, maintenance, and decommissioning of a PV solar power generation facility, BESS, onsite Project substation, and other associated infrastructure. The Project would generate approximately 75 MW AC of renewable energy and include a storage capacity of up to 8 hours of 75 MW AC. The Project site is located on 650 acres of privately owned land, plus an additional 1,700-foot-long gen-tie line route to deliver power to the existing Mercy Springs Substation, which is owned and operated by PG&E.

The Project would include a solar array area surrounded by an up to 8-foot-tall security fence. Rows of solar modules mounted on single-axis trackers and racking equipment would occupy most of the Project site. The modules would extend up to 12 feet above the ground at maximum tracker tilt. The Project would also include an underground DC collector system; up to 21 electrical equipment pads within the PV facility, each with inverter and transformer equipment; an approximately 15-acre BESS area with regularly spaced battery units and 70 electrical equipment pads; underground utility lines; an approximately 5-acre Project substation with riser equipment in the northwest part of the Project; an approximately 1,700-foot-long gen-tie consisting of 65-foot tall wooden poles; a 0.8-acre O&M area with an O&M office and an

adjacent O&M warehouse; an approximately 10-acre staging area/laydown yard; and internal graveled access roads. Construction of the Project facilities would occur over 24 consecutive months, including civil work (including site preparation and grading) and facility construction with the use of heavy equipment (e.g., backhoes, pile drivers, and excavators), followed by testing and commissioning (e.g., equipment testing and calibration, etc.). Project operation would commence after completion of the testing and commissioning task. Figure 2-2 depicts the layout of Project components.

Up to approximately 10 full-time and up to 10 part-time employees would operate the Project. The staff would work weekdays (sunrise to sunset) and as needed after hours and on weekends.

The Project has an anticipated operational life of approximately 40 years. At the end of the Project's operational term, the Applicant or Project proponent would determine whether the Project site should be decommissioned and deconstructed or if it would seek an extension of the Project's CUP and repower the facilities. If any portion of the Project site is decommissioned, it would be restored to its pre-development function.

2.7 PROJECT CHARACTERISTICS AND FACILITIES

2.7.1 PV Module Configuration

The Project would primarily consist of solar arrays, covering approximately 518.5 acres, that would generate electricity directly from sunlight. A solar array consists of a row of PV modules electrically connected and supported by a common tracking structure.

The modules would be mounted on single-axis trackers that rotate along a fixed axis, allowing the PV modules to track the sun's east/west movement throughout the day. The length of each row of PV modules could be up to 365 feet along the north/south axis. The PV module currently selected for the Project would measure approximately 90 inches tall and 55 inches wide. When the PV modules are at their steepest angle of tracker rotation, the tops of the modules would be up to 12 feet above the ground, and their lower edges would be approximately 20 inches above the ground.

The PV modules would be mounted on a corrosion-resistant metal racking system and steel support posts that are driven into the ground (4–6 feet deep). Concrete foundations would not be required to stabilize the tracker structures on this Project.

The general characteristics of the final PV modules are such that they would be covered with dark, high-light-absorbing, and low-reflective glass. The final configuration of PV modules and number of modules and rows would depend on the final technology selected. Once the final composition of varying technologies is selected, the Applicant would produce an optimized layout that takes landscape features, drainage considerations, and maintenance access into account.

2.7.2 DC Collection System and Electrical Equipment Pads

Electricity produced by each PV module row would be collected by a DC collector system and delivered through conductors to electrical equipment pads with inverters and transformers. The inverters would convert the DC power to three-phase AC and deliver it to adjacent medium voltage transformers, where

the power would be stepped up in voltage from the output of the solar modules (below 1500 volts) to 34.5 kV. Each electrical equipment pad would have a concrete or steel pile foundation and would support encased units of inverters and transformers. Up to 21 electrical equipment pads, each approximately 20 feet by 8 feet, would be spaced across the PV facility. In addition, the BESS would include approximately 70 electrical equipment pads, each approximately 20 feet by 8 feet.

2.7.3 AC Collector System

Electricity exiting the electrical equipment pads would be transported by a 34.5 kV AC collector system and delivered through approximately 3.5-to-4-feet-deep underground conductors or above-ground conductors to an onsite substation (refer to Figure 2-4a and Figure 2-4b). The Applicant expects that most of the AC collector system would be installed underground. If an above-ground option is selected, it would consist of up to 20 wooden distribution line poles, each 35 to 55 feet tall.

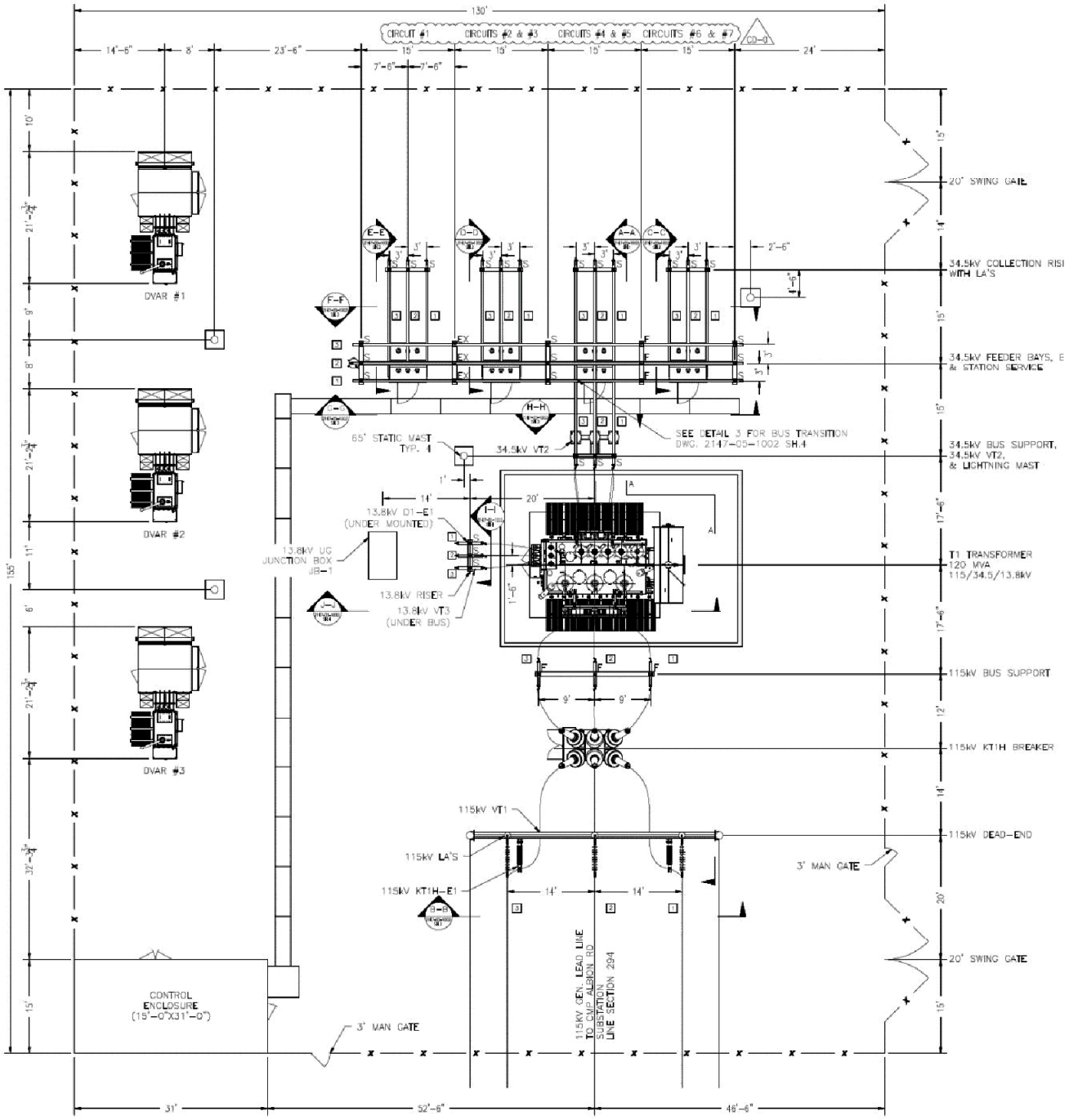
2.7.4 Battery Energy Storage System

The Project would include construction of an up to 75 MW BESS with a discharge duration of up to 8 hours on the Project site. The BESS would be located approximately 15 acres in the northwest part of the Project site. The BESS would consist of up to 1,500 modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The BESS modules, which could include commercially available lithium or flow batteries, consist of modular metal structures but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of a dedicated structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on off-taker/power purchase agreement requirements and on County building standards. Heating, ventilation, and air conditioning (HVAC) systems are required and would be integrated into the containers. In accordance with relevant safety standards, the containers would be equipped with appropriate fire safety systems (see Section 2.7.12). The BESS would include an emergency backup generator to power the HVAC system in the unlikely event of primary power loss. The Project could use any commercially available battery technology, including but not limited to lithium ion, sodium sulfur, sodium hydride, and nickel hydride. The batteries would be pre-packaged in factory-tested shipping containers, secured on a flatbed truck trailer, and transported to the Project site. All equipment would be tested and labeled to the proper transportation regulations, such as UN38.3.

The BESS would also include approximately 70 electrical equipment pads with inverters and transformers, each approximately 20 feet by 8 feet. Power for the BESS would be required to cool the batteries, and would require approximately to 5 MW peak load served from the PG&E Mercy Springs substation.

The final configuration of BESS modules and electrical equipment pads and number of BESS modules and rows would depend on the final technology selected when equipment procurement is set to commence. Once the final composition of varying technologies is selected, the Applicant would produce an optimized layout that takes landscape features, drainage considerations, and maintenance access into account. No operational water demand is expected for the BESS. The batteries are designed to last the

lifetime of the project; however, some batteries may be repaired or replaced as part of regular maintenance activities if needed.



Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-24
TR by LC on 2024-07-24

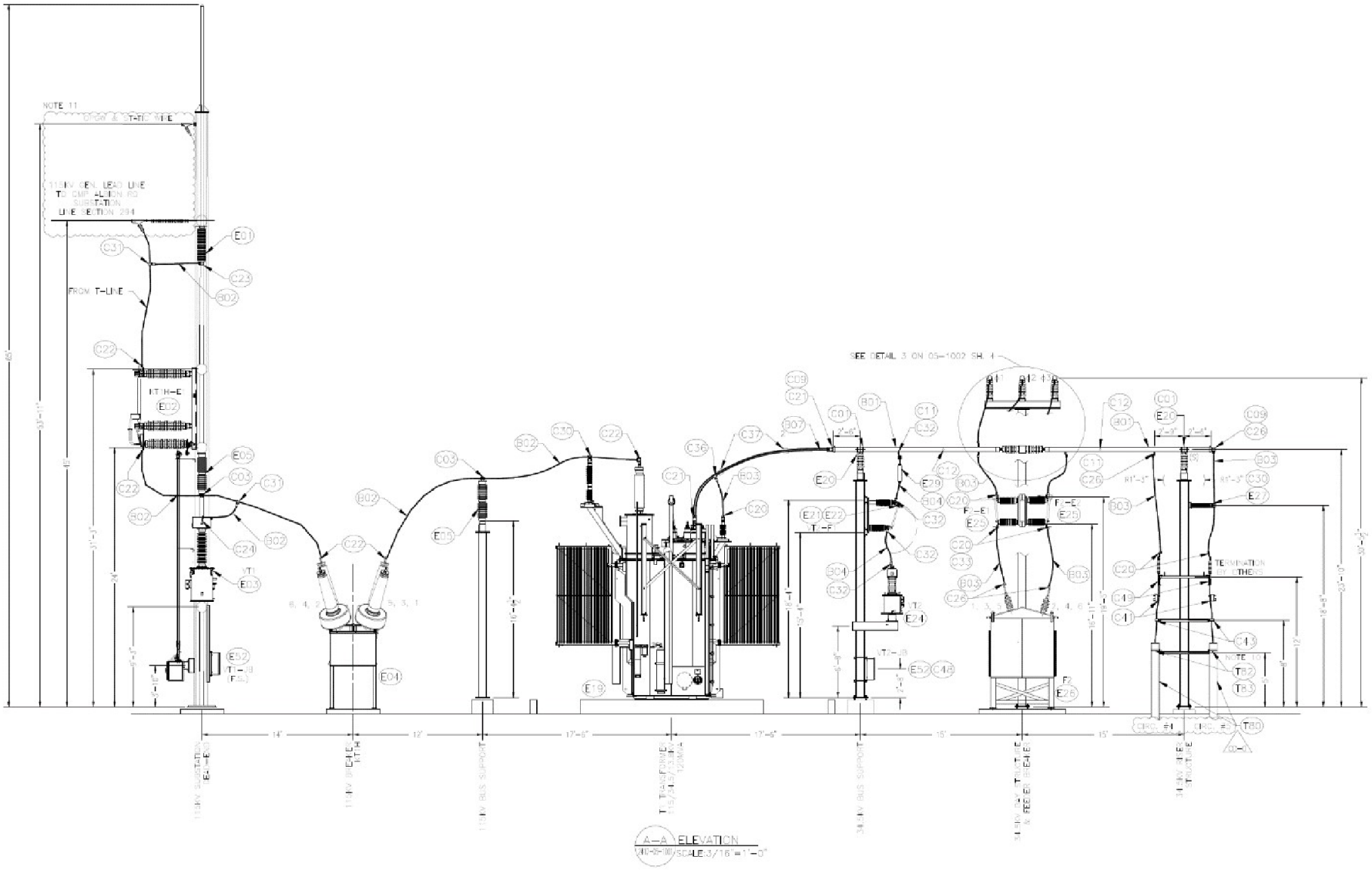
Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2-4a

Title
Project Substation Layout Drawing

V:\1857\Active\185705411103 data\gis cad\gis\mxd\Figures\Fig2-4a SubstationLayout.mxd Revised: 2024-07-24 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-24
TR by JD on 2024-07-24

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy
Storage System Project

Figure 2-4b

Title
Project Substation Layout Drawing

V:\18571\Active\185705411\03_data\gis_cad\gis\mxd\Figures\Fig2-4b_SubstationLayout.mxd Revised: 2024-07-24 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

2.7.5 Onsite Project Substation

The Project would include a new onsite Project substation located in a 5-acre area in the northwest corner of the Project site, as shown on Figure 2-4a and Figure 2-4b. The Project substation would consist of a new main power transformer that would increase the voltage from 34.5 kV to 70 kV. In addition, the Project substation would include 34.5 kV breakers (five to six breakers for this size of project), a 70 kV breaker and switch, bus work (rigid conductors), and capacitor banks/reactors, as required. The maximum height for this equipment would be 25 feet. Support structures and riser equipment would be up to 65 feet tall to match the height of the gen-tie line. The Project substation would also include a control building, which would be a metal-clad building approximately 12 feet by 40 feet (480 square feet). The building would be up to 25 feet tall and painted in a neutral color (e.g., beige or gray). The transformer type would be non-polychlorinated biphenyl (non-PCB) oil filled.

2.7.6 Gen-tie Line

The Project would include a new 70 kV overhead gen-tie line, which would extend approximately 1,700 feet north from the Project substation to the Mercy Springs Substation, which is the Project point of interconnection to the grid. From riser equipment in the substation area, the power would be delivered via a single-circuit conductor supported by 65-foot-tall wooden poles to the Mercy Springs Substation. The poles would be spaced approximately 250 feet apart within the gen-tie corridor, depending on terrain and alignment (e.g., angles would require more poles). Disturbance in the gen-tie corridor would be limited to pole placement (with an approximate pole diameter of 18 to 24 inches and depth of approximately 15 feet) and a 20-foot by 20-foot temporary work area buffer around each pole. The entire corridor would not be disturbed. The gen-tie would be developed within a dedicated utility easement.

2.7.7 Interconnection

The Mercy Springs Substation is owned and operated by PG&E. PG&E would incorporate upgrades to Mercy Springs Substation to support interconnection of the gen-tie line. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities. Activities would include installation of gen-tie line terminal equipment and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation, as well as up to approximately three, 65-foot wooden pole and up to approximately 1,000 feet of overhead gen-tie line from the Project's point of interconnection to the substation, subject to final engineering. Approval of the improvements would fall under the permitting jurisdiction of the California Public Utilities Commission (CPUC). Because the CEQA requires analysis of the environmental impacts of the full Project, the Project Description includes the interconnection upgrades, which are considered in the scope of this document and Project. PG&E implements standard measures and best management practices (BMPs) during construction and operation of projects in its service territory. Applicable measures would be implemented by PG&E during construction and operation of the PG&E improvements. These measures would likely include environmental awareness trainings and pre-activity surveys to determine presence of biological species. PG&E would also outline the procedures should unanticipated cultural resources or human remains be encountered during project activities. Construction management measures related to vehicle idling, fugitive dust, hazardous waste management, and noise management would also be implemented.

2.7.8 Control System and Telecommunications

The Project would include an onsite Supervisory Control and Data Acquisition (SCADA) system that would allow for remote monitoring and control of inverters and other critical Project components. The SCADA system would monitor Project power output and availability and run diagnostics on the equipment. Access to the Project's SCADA system would be accomplished with wireless and/or hard-wired connections to locally available commercial service providers (e.g., a local exchange carrier). The SCADA system would be located in the O&M office and/or the Project Substation Control Building.

2.7.9 Onsite Meteorological Station

The Project would include one or more onsite solar meteorological stations (weather stations), which would consist of various sensors to measure solar energy (irradiance), air temperature, wind temperature and direction, humidity, and precipitation. Power for the meteorological stations would be provided by the plant auxiliary power system or a dedicated PV module with a small battery. Data from each sensor would be collected by the station's data-logger and transmitted to the Project's SCADA system for monitoring and reporting purposes. The meteorological stations would likely be mounted on structures that are expandable from 6 to 15 feet in height.

2.7.10 Site Access and Access Roads

Access to the Project site would be from an unpaved primary access road to be constructed on the west side of the Project. The primary access road would connect to the paved Poleline Road south of the Project. The main entrance gate would be in the western portion of the Project site, about 400 feet north of Poleline Road on the primary access road, and near the O&M area. A secondary access gate would be installed on the primary access road near the Project substation. Both gates would be locked, and signs would be posted to inform visitors of the presence of high-voltage equipment. If required by local first responders and emergency services authorities, lockboxes with keys would be placed next to each gate to allow access for emergency vehicles. The primary access road would have a finished width of approximately 20 to 24 feet.

The Project would include internal access roads for ingress and egress to the Project site and for access to individual Project components and among the PV module rows to facilitate installation, maintenance, and cleaning of the solar modules. These roads would include an inner fence perimeter road; roads from the two Project entrances to the O&M area, BESS area, and Project substation; and roads to the solar arrays and electrical equipment pads. The perimeter road would function as a fire buffer, accommodate Project O&M activities, and facilitate onsite circulation for emergency vehicles. The perimeter access would be constructed in conformance with the state and Merced County design requirements for fire safety. Internal access roads running from the Project entrances to the O&M area, the BESS area, and Project substation, as well as the perimeter road, would be 16 to 24 feet wide. Both the perimeter road and primary access roads would be compacted native earth. If required, the main access roads would be graveled using approximately 8 to 12 inches of aggregate base on a compacted subgrade. The Project would include unpaved access roads between the blocks of module rows (i.e., at the ends of rows), which would be up to 16 to 24 feet wide and used to access the solar arrays, electrical equipment pads, and

collector systems. In addition, the PV module rows would be spaced about 20 feet apart, creating access routes that would allow vehicle access to individual PV module locations.

Final module row spacing depends on final module design. The access roads would be installed during construction and remain in place during the operation task. Final road alignments would depend on the final placement of the module rows, topography, and any other specific details to be incorporated into the final design.

2.7.11 Operation and Maintenance Structures

The Project would include an approximately 0.8-acre O&M area south of the BESS area, with an O&M office and an adjacent O&M warehouse that would be used for storage and maintenance work (Figure 2-2). The O&M office would be a modular office complex style building approximately 30 feet by 70 feet (2,100 square feet). The O&M warehouse would be a metal-clad pole barn style building approximately 40 feet by 75 feet (3,000 square feet). Both buildings would be up to 25 feet tall and be painted in a neutral color (e.g., beige or gray). The two O&M structures would be located approximately 20 to 50 feet apart. The O&M area would include up to 10 parking spaces. The O&M office building may include an office, control room, restroom, kitchen, and electrical and communications utilities. The O&M office building may include one or more sinks and toilets that are connected to a septic system, including a septic tank and leach field. Septic system design will be determined during final project design. At least 200Amp electrical service power for the O&M facility would be supplied from the Project substation.

Roads, driveways, and parking lot entrances would be constructed in accordance with Merced County improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

2.7.12 Fire Safety Systems

The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction. At a minimum these safety systems will include a mix of thermal, smoke, and gas detectors along with explosion prevention per National Fire Protection Association (NFPA) standards 68 or 69. The BESS will undergo extensive testing and will be certified to UL9540, which is a safety standard for energy storage systems. The O&M office and warehouse and substation control building will be constructed in accordance with the applicable county, state, and federal fire codes and regulations.

Prior to commercial operation, a Fire Protection Plan will be prepared to outline known hazards and provide information and instructions to guide site personnel and first responder to safely respond to any onsite incident, as described in Mitigation Measure HAZ-1 (see Section 4.9, Hazards and Hazardous Materials).

2.7.13 Project Site Security and Fencing

The Project site would be enclosed within an up to 8-foot-tall chain-link security fence, measured from finished grade. Fence posts would be drilled and grouted or driven pneumatically depending on site-

specific soil characteristics. Vehicle access gates would be installed as necessary, with the gates to remain locked when not in use. Additionally, the Project may include additional security measures including but not limited to barbed wire, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the Project.

Controlled access gates would be maintained at the main entrance to the Project site. Access to the Project site would be provided to offsite emergency response teams that respond in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

2.7.14 Project Site Lighting

The Project would include external safety lighting for both normal and emergency conditions at the main Project gate, the Project substation, the BESS area, and the O&M area. Lighting would be designed to provide the minimum illumination needed to achieve safety and security. The lights would be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. Unless there were a known risk to the Project, lighting would be placed into motion detection mode at night to limit illumination at night when not required.

2.8 WATER REQUIREMENTS AND WASTE GENERATION

2.8.1 Water Demand

During construction, approximately 75 acre-feet per year (AFY) (approximately 66,956 gallons per day) would be used over the project's 24-month construction period (approximately 150 AF or 48,877,650 gallons total) for dust control, soil compaction, and other similar activities.

During operation, approximately 0.06 AFY (19,551 gallons per year) of potable water would be used by staff in the O&M office. In addition, approximately 0.18 AFY (58,653 gallons per year) of non-potable water would be used for herbicide application and up to 2.53 AFY (824,403 gallons per year) for three panel cleanings. The maximum water use during operation would be up to 2.77 AFY or a total of 902,607 gallons per year. Decommissioning of the Project would require water use for dust control at amounts similar to those used during construction. Table 2-2 summarizes anticipated water demand.

Table 2-2. Anticipated Project Water Demand

Phase	Non-Potable Water Demand	Potable Water Demand	Description
Construction (2 years)	75 AFY (150 AF or 48,877,650 gallons total)	-	Dust control, soil compaction, and other similar activities
Operation	2.71 AFY (883,056 gallons per year)	0.06 AFY (19,551 gallons per year)	Herbicide application (0.18 AFY), panel cleanings (2.53 AFY), and O&M building (0.06 AFY)

Phase	Non-Potable Water Demand	Potable Water Demand	Description
Decommissioning (1 year)	75 AFY (24,438,825 gallons total)	-	Dust control, soil compaction, and other similar activities

Sources: Longroad Development Company, LLC
Notes: AFY = acre-feet per year; 1 acre foot = 325,851 gallons

Non-potable water for construction and operations would be sourced from SLWD supplies or a new or existing private well located within the Delta-Mendota subbasin, approximately 25 miles from the Project area; however, groundwater from the Merced and North San Benito subbasins were also analyzed. Pumped water would be transported to the Project using 6,000-gallon water trucks and stored onsite. One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M area. The storage tank(s) near the O&M area would have the appropriate fire department connections to be used for fire suppression purposes. Additionally, a potable water storage tank with a total capacity of up to 5,000 gallons would be installed onsite near the O&M building to serve potable water demands such as hand washing and toilet flushing. Potable water is expected to come from a supplier located within the Delta Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin. The Project may also source surface water from another water district or private water supplier in the area from the supplier's existing sources for potable or non-potable water needs.

Should SLWD provide water, SLWD would deliver the water to the Project via an existing underground water pipeline along the western edge of the Project. The Project water delivery point would be an existing or new tap on the pipe near the O&M area, within the Project site. Information regarding water supply and demand is analyzed in Section 4.16, Utilities and Service Systems.

2.8.2 Waste and Wastewater

Sanitary waste during construction would be contained in portable toilet and sink facilities, collected at least weekly, and disposed of at an offsite disposal or treatment facility. An onsite septic system with septic tank and leach field would be constructed to treat sanitary waste during operation. Sanitary waste is expected to average approximately 80 gallons per day during operation of the project. The septic system would be regularly maintained, pumped, and inspected by a qualified service provider. The septic tank would have an estimated wastewater capacity of approximately 2,000 gallons. Construction and design of the septic system would be subject to the federal and state regulations and Merced County permit and design requirements. No wastewater would be generated during panel washing, as the water would be absorbed into the surrounding soil or would evaporate.

2.8.3 Hazardous and Non-Hazardous Materials Storage and Waste Disposal

2.8.3.1 HAZARDOUS MATERIALS

Herbicides, fuel, and other hazardous materials needed for the Project would be stored in appropriate containers in secure areas. Most energy storage systems, such as lithium ion, do not require secondary containment since all cells are hermetically sealed and are factory installed in modules and containers. However, energy storage systems using flow batteries may have hazardous liquid electrolyte that can

leak through hoses and fittings. Therefore, if a flow battery is selected, secondary containment would be included in the project design. Some hazardous materials would be stored appropriately in the O&M warehouse during operation. Onsite staff would be trained annually on safe handling, storage, and disposal of hazardous materials. The batteries comprising the BESS would be recycled or disposed of at a hazardous waste facility in accordance with applicable regulations for the disposal of hazardous materials.

Hazardous waste generated during construction, operation, and decommissioning would be removed from the Project site by a licensed hazardous waste recycling or disposal firm. Typical hazardous waste would include spent oil, hydraulic fluid, household batteries, and materials used in certain BESS battery technologies and PV panels. The transformers proposed to be located at the Project substation would use non-hazardous mineral oil for cooling purposes. The Project would include a Hazardous Materials Business Plan, which 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 ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to maintenance workers and/or the public. Additionally, components would be included as part of a comprehensive spill prevention, control, and countermeasure (SPCC) plan, in accordance with all applicable federal, State, and local regulations.

Disposal of all hazardous materials would occur in accordance with applicable regulations and as described in the Project-specific Hazardous Materials Business Plan.

2.8.3.2 NON-HAZARDOUS MATERIALS

Solid waste generated during construction would include debris such as concrete, wood, brick, glass, plastics, and scrap metal. Soils from drilling, trenching, or excavation would be screened and separated for use as backfill at the site of origin, to the maximum extent feasible. A construction waste recycling program would be implemented pursuant to the California Green Building Standards Code (California Green Building Standards Code 2016). All solid construction waste would be disposed of or recycled by qualified service providers. To accommodate directing of construction materials to proper end-point destinations, contractors and workers would be trained on waste sorting, appropriate recycling storage areas, and measures to reduce landfill waste.

Solid waste generated during operation would consist of paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid waste. During normal operation, PV panels, BESS batteries, and inverters would produce no waste. The operator would remove solid waste on a regular basis and dispose of it in local landfills in accordance with applicable regulations. Merced County Regional Waste Management Authority owns and operates two active solid waste disposal/landfill facilities in Merced County: the SR-59 Landfill and the Billy Wright Landfill (BWL), located within proximity to the Project site, and have available capacity as further described in Section 4.16, Utilities and Service Systems.

At the end of the Project's life, the PV panels and remaining Project components would be resold or recycled. Poured concrete pads would be removed and recycled or reused as clean fill.

2.9 CONSTRUCTION ACTIVITIES

2.9.1 Construction Schedule

The construction period for the Project, from site preparation through construction, testing, and commercial operation, is expected to commence as early as Q1 2025 and would extend for approximately 24 months.

Construction of the Project would require three construction tasks, including the following activities:

- Civil Work
  - Site preparation
  - Grading and earthwork
- Facility Construction
  - Concrete foundations
  - Structural steel work, including PV posts, BESS, and substation
  - Electrical/module racking and instrumentation work
  - Collector and gen-tie line installation
  - Architecture and landscaping
- Testing and Commissioning
  - Testing and calibration of installed equipment

Construction traffic would access the Project site from I-5 via Mercy Springs Road/Highway 165 (Exit 391) to Poleline Road or from I-5 via Nees Avenue (Exit 385) to Poleline Road. It is estimated that an average of 40 to 50 workers per day with a maximum of 150 workers per day, the latter during peak construction periods, would be required during the construction of the Project. An average of 40 workers per day is expected for the commissioning period of construction. Peak construction periods are expected from construction months 6 to 18.

Construction would occur between 7 a.m. and 6 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities in accordance with applicable Merced County standards. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may potentially occur between the hours of 10 p.m. and 6 a.m. Nighttime activities could potentially include but would be limited to refueling equipment, staging material for the following day's construction activities, quality assurance and control, and commissioning. During any nighttime construction, lighting would be designed to provide the minimum illumination needed to achieve safety and security. The lights would be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area.

Materials and supplies would be delivered to the Project site by truck. Truck deliveries would occur during daylight hours. However, there may be offloading and/or transporting to the Project site on weekends and during evening hours.

Earth-moving activities would be limited to the construction of the access roads, O&M structures, inverters, BESS, and any stormwater protection or storage (detention) facilities (if required). Final grading may include revegetation with low-lying grass or applying earth-binding materials to disturbed areas.

2.9.2 Site Preparation

Site preparation activities would comprise the activities needed to prepare the Project site for installation of facility infrastructure, including site surveying, vegetation clearing, and grading. The Project site would be secured with the installation of chain-link fencing and gates around the Project site perimeter and staging and laydown areas. No pipelines would require removal as part of the site preparation and construction activities. Coordination with Underground Service Alert (USA) North 811 would occur prior to commencing any digging.

2.9.3 Staging and Other Temporary Work Areas

Construction of the Project would require a 10-acre temporary laydown area for staging and storage areas for materials and equipment during the construction process. The laydown area would be located within the western portion of the Project site south of the BESS area. Following construction, the laydown and staging areas would be fully restored to as close to pre-construction conditions as possible. Temporary construction trailers would be provided onsite. In addition, sanitary waste would be managed using portable toilets located at a reasonably accessible onsite location, as further described in Section 2.8.2.

2.9.4 Erosion and Sediment Control and Pollution Prevention

During grading, erosion prevention measures would be implemented, including separating topsoil and stockpiling and stabilizing it separately from subsoil. When Project construction is complete, the stripped subsoil and topsoil would be replaced as required. Other erosion and sediment control measures would include watering for dust control and soil compaction during grading and throughout construction activities (see Section 4.7, Geology and Soils and 4.10, Hydrology and Water Quality).

In conformance with industry standards, an erosion and sediment control plan would be prepared for the Project. Because the Project would result in disturbance of an area greater than 1 acre, the Project would be required to enroll (under the State Construction General Permit) in the NPDES program. Sediment and erosion controls would be installed in accordance with an approved Stormwater Pollution Prevention Plan (SWPPP)..

To help with post-construction dust control, the Project would develop and implement a revegetation plan to mitigate temporary disturbance from installation activities and to inform long-term site vegetation management (see Section 4.4, Biological Resources).

2.9.5 Panels and Trackers

PV panels would be manufactured offsite and shipped to the Project site ready for installation. The PV solar panels would be made from Cadmium telluride. A Cadmium telluride PV module is composed of Cadmium telluride solar cells, metal contacts between the cells, an encapsulation layer that encloses the cells, a front glass plate, and a back-side foil or a second glass plate on the back side. Often the module is framed with aluminum and contains a contact box. Cadmium Telluride is a semiconductor used in solar cells to convert solar energy into electricity.

If necessary, concrete pads for the drive motors or other equipment would be poured using concrete from an offsite local batch plant, located within approximately 20 miles from the Project site, and electrical equipment for the array would be set in place.

The trackers and PV modules are supported by H-shaped piles made of galvanized steel. The piles are usually driven with hydraulic or impact/vibratory equipment to approximately 6 to 10 feet below grade. Approximately 4 to 5 feet of the pile would remain above grade. Soil disturbance is limited to the pile location and temporary disturbance by the hydraulic ram during construction. No blasting or rock breaking is anticipated to occur during Project construction. Small truck-mounted cranes or all-terrain forklifts would move materials through the Project site and support tracker construction. Array construction would include small all-terrain vehicles to transport materials and workers on access roads and array aisles.

The process and procedures for installation of the racking system and assembly of modules would be in accordance with final engineering design details but would generally include these tasks:

- Installation of support piles using a hydraulic/vibratory technique for the racking system;
- Installation of tracking system components;
- Installation of a galvanized metal racking system for solar PV modules;
- Mounting of PV solar modules to the racking system;
- Installation of the PV solar module strings' wire harnesses and associated hardware;
- Installation of the inverters and equipment control enclosures;
- Installation of the DC collector wires from string locations to inverter locations;
- Installation of cable from the inverters to the Project substation;
- Construction of the Project substation and O&M facilities;
- Construction of PG&E transmission system interconnection facilities;[1]

[1.] PG&E would construct the project's interconnection facilities. Activities would include installation of gen-tie line terminal equipment and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation. In each resource section included in this document, a subsection called "PG&E Interconnection Infrastructure" analyzes

- Installation and interconnection of the communications system;
- Connection to local fiber optic and/or telephone network;
- Installation of meteorological stations; and
- Final installation of site roadways after placement of all necessary underground components.

2.9.6 Inverters, Transformers, Substation, and Electrical Collector System

Underground cables connecting panel strings would be installed in trenches constructed using a backhoe excavator or trencher. Wire depths would be approximately 3 feet below grade in a trench approximately 3 to 6 feet wide. Cable types would either be cable-rated for direct burial or installed inside a conduit. Trenches would be backfilled with imported sand bedding surrounding cables if onsite soils are not suitable for backfill.

2.9.7 Onsite Project Substation

Construction work for the onsite Project substation would include site preparation and installation of substructures and electrical equipment. The area would initially be cleared and graded and fenced with security fencing. Underground Service Alert would be contacted to identify locations of buried utilities. The Project substation would be constructed with conventional grading and construction equipment. Grading is expected to be minimal. The Project substation equipment would be mounted on concrete foundation pads or piers depending on local soil conditions. The Project substation area would be graveled for grounding and employee safety purposes.

2.9.8 Energy Storage Facility

After clearing and grading the BESS site, underground electrical conduit and the grounding grid would be installed and concrete foundations poured. Battery containers or one or more buildings would be installed on top of the foundations to house the batteries.

The HVAC and fire safety systems may be pre-installed in the battery containers offsite or installed onsite during construction. Battery modules would be pre-installed in racking systems within the battery containers or building. Wiring would be connected at the equipment and in enclosures. Inverters and transformers would be installed within the containers/building or installed externally on concrete pads. The inverters and transformers would be connected electrically to complete the system.

these PG&E activities. PG&E's construction of the electrical connections to the project's infrastructure as described herein would be subject to the authority of the CPUC, which, in this role, serves as a Responsible Agency under the CEQA. Aspects of the project to be constructed by the Applicant (such as the onsite substation and collector lines) would not be subject to the CPUC's authority and oversight. The impacts identified in the PG&E Interconnection Infrastructure subsections of this document are a subset of, not in addition to, the direct and indirect impacts of the project as a whole.

2.9.9 Construction Equipment

Table 2-3 provides a breakdown of proposed construction equipment.

Table 2-3. Project Construction Equipment

Construction Task	Proposed Equipment	Equipment Modeled	Expected Pieces of Equipment	Average Daily Usage (hours/day)
Civil work	On-site Pickup Trucks	Medium heavy-duty trucks (MHDT)	7	8
	Staff Commute Vans	Light-duty trucks (LDT2)	60	1
	Water Haul Trucks	Heavy heavy-duty trucks (HHDT)	26	-
	Excavator	Excavators	2	2
	Off-road haul truck	Off-highway trucks	1	8
	Grader	Graders	2	4
	Loader	Tractor/loader/ backhoes	2	3
Facility Construction	On-site Pickup Trucks[1]	Medium heavy-duty trucks (MHDT)	7	8
	Staff Commute Vans[2]	Light-duty trucks (LDT2)	60	1
	Water Haul Trucks[3]	Heavy heavy-duty trucks (HHDT)	26	-
	Vibratory roller	Rollers	1	2
	Loader	Tractor/loader/ backhoes	2	3
	Utility truck/pile driver	Off-highway trucks	6	3
	Hydraulic cranes	Cranes	1	3
Testing and Commissioning	On-site Pickup Trucks	Medium heavy-duty trucks (MHDT)	7	8
	Staff Commute Vans	Light-duty trucks (LDT2)	60	1
	Water Haul Trucks	Heavy heavy-duty trucks (HHDT)	26	-
	Skidsteer	Skid Steer Loaders	10	6
	Excavator	Excavators	2	2
	Utility truck/pile driver	Off-highway trucks	6	3
	Utility Terrain Vehicle	Off-highway trucks	8	4
	Generator	Generator Sets	2	4

Source: Longroad Development Company, LLC
Note: The Project applicant intends to use a “green fleet” for construction; however, the construction emissions and fuel expenditures presented in Section 4.3, Air Quality and Greenhouse Gas Emissions, and Section 4.6, Energy, do not account for a green fleet and thus provides a conservative estimate.

2.9.10 Construction Traffic

Project construction would generate 300 passenger car trips per day and 80 heavy-duty trips (vendor and hauling) per day during peak construction periods. Specifically, 52 of the daily vendor trips would be water trucks. For the traffic analysis, the heavy-duty hauling and vendor truck trips were converted to a

passenger car trip number using a passenger car equivalent (PCE) rate of 2.16. As such, the Project was assumed to generate 473 PCE trips per day during construction.

The fleet mix for worker trips is light-duty passenger vehicles to light-duty trucks. The vendor trips fleet mix comprises medium-duty and heavy-duty diesel trucks. The Project is in a rural portion of California, and vendors and workers would travel from nearby urban centers to the Project site. The nearest major urban areas are Fresno (56 miles), Merced (44.8 miles), and Madera (49 miles) from the Project site. It is conservatively assumed that all worker and vendor trips will be from Fresno (56 miles). It is also assumed that solid waste hauling trips would travel to Merced County Regional Waste, approximately 52.2 miles from the Project site, and concrete would be brought from a batch plant located within 20 miles from the Project site.

2.10 OPERATION AND MAINTENANCE

2.10.1 Schedule

The Project would have an electrical generation capacity of approximately 75 MW AC and would include a storage capacity of up to 8 hours of 75 MW AC during operation. During daylight hours, the Project would supply generated electricity to the grid while also charging the BESS. The PV solar facility would generate electricity daily, generally between 7 a.m. and 7 p.m., depending on the season. The BESS can charge from the solar facility or the electrical grid and could deliver stored electricity to the grid for up to 8 hours during any hour of the day. It is most common for BESS facilities to discharge in the evening hours between 4 p.m. and 9 p.m., when need is the highest. Personnel would likely be onsite Monday through Friday from 7 a.m. to 4 p.m. and as needed after hours and on weekends.

2.10.2 Workforce

The Project would employ up to approximately 10 full-time employees for facility operation and up to 10 part-time employees for vegetation management, panel washing, contract maintenance, and other similar tasks. These employees would be drawn from the local labor force and are expected to commute to the Project site from nearby urban areas, such as Fresno, Madera, and Merced. The average number of workers at the Project site would be 10 people per day with a peak number of 20 people per day. Delivery trucks, pickup trucks, or personal vehicles would make an average of 10 daily two-way trips to the Project site. The Project would provide 10 parking spaces onsite at the O&M area.

2.10.3 Site Maintenance

Maintenance activities would be managed from the onsite O&M area or a regional O&M facility located elsewhere in Merced County. The Project would include an O&M office that would be approximately 2,100 square feet and an O&M warehouse that would be approximately 3,000 square feet.

Maintenance activities would be outlined in the Project-specific maintenance plan. Pest and weed management would be performed in accordance with the Vegetation and Soil Management Plan. To control noxious weed populations during routine operations, herbicide and fungicide may be used. The Vegetation and Soil Management Plan and the Hazardous Materials Business Plan would detail how

pesticides and herbicides would be applied, labeled, stored, and used onsite, and how records of their use would be monitored, as well as emergency information in the event of exposure.

Maintenance workers would use gasoline- or diesel-fueled vehicles. Maintenance activities would include panel repairs; panel washing; maintenance of transformers, inverters, and other electrical equipment; maintenance of the oil/water separator system; and road and fence repairs.

Equipment repairs would take place in the early morning or evening when the plant would be producing the least energy. Crews would wash panels two to three times per year. The plant manager and maintenance staff would perform visual site inspections and monitor the Project site to deter theft and vandalism during daylight hours. During all other times, offsite security personnel would monitor the Project site remotely and provide incident response 24 hours per day, seven days a week.

2.10.4 Site Security

The Project site would be surrounded by 8-foot-tall chain-link security fence along all perimeters, with access gates that serve as points of ingress and egress. The access gates would remain locked when not in use. The Project may include additional security measures including but not limited to barbed wire, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the Project.

2.11 DECOMMISSIONING AND SITE RECLAMATION

The operational term of the Project is anticipated to be approximately 40 years. If, at the end of this term, the Applicant or Project proponent determines that the Project should be decommissioned (rather than repowered), the facilities would be decommissioned and dismantled and the Project site restored to its pre-construction conditions. Decommissioning of the Project site would take approximately 12 months and would comprise removal of above- and below-ground structures as well as site reclamation, including restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control best management practices (BMPs) would be implemented. A collection and recycling program would be implemented to promote recycling of and minimize disposal of Project components. It is expected that steel would be recycled, including from the PV posts and racking systems. Equipment such as drive controllers, inverters, transformers, and switchgear would either be reused or recycled; batteries composing the BESS would be recycled or disposed of at a hazardous waste facility. Decommissioning activities would consist of the following:

- Dismantling and removal of all above-ground equipment (PV panels, tracker units, transformers, substation, enclosures, etc.);
- Removal of gen-tie line—all conductors and poles would be removed and hauled offsite for scrapping or to an approved landfill;
- Excavation and removal of all below-ground cabling to a depth of 24 inches;
- Removal of posts and piles;

- Removal of roads;
- Break-up and removal of concrete pads and foundations; and
- Scarification of compacted areas and regrading of the Project site to pre-Project conditions.

Site reclamation would consist of tillage of the site to break up potential compaction; restoration of topsoil as necessary; and revegetation through seeding with a local dryland range grass mixture. Decommissioning of the Project would require water use for dust control similar to that used during construction (i.e., up to 75 AFY).

3.0 ALTERNATIVES TO THE PROPOSED PROJECT

3.1 INTRODUCTION

The purpose of an alternatives analysis pursuant to the California Environmental Quality Act (CEQA) is to identify feasible options that would attain most of the basic objectives of a Project while reducing its significant impacts. Provisions of CEQA Guidelines (Section 15126.6(f)) that address project alternatives in an Environmental Impact Report (EIR) state the following:

> *The range of alternatives required in an EIR is governed by a "rule of reason"; the EIR must evaluate only those alternatives necessary to permit a reasonable choice. The alternatives shall be limited to those that would avoid or substantially lessen any of the significant effects of a proposed project while meeting most of the underlying project objectives.*

3.2 REQUIREMENTS FOR THE CONSIDERATION OF ALTERNATIVES

An important aspect of EIR preparation is the identification and assessment of alternatives to the Project that have the potential to avoid or substantially lessen potentially significant impacts. In addition to mandating consideration of the No Project Alternative, CEQA Guidelines (Section 15126.6(e)) emphasize the selection of a reasonable range of feasible alternatives and adequate assessment, which allows decision-makers to use a comparative analysis. CEQA Guidelines (Section 15126.6(a)) states:

> *An EIR shall describe a reasonable range of 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.*

To comply with CEQA requirements for the evaluation of alternatives, each alternative identified was evaluated according to three criteria:

1. Would the alternative accomplish most of the basic project objectives?
2. Would the alternative be feasible (from a technological, economic, legal, environmental, and social perspective)?
3. Would the alternative avoid or substantially lessen any significant impacts of the Project (including whether the alternative itself could create significant impacts potentially greater than those of the Project)?

CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental impacts even though they may "impede to some degree the attainment of project objectives or would be more costly" (Section 15126.6(b)).

3.2.1 Consistency with Project Objectives

A project's statement of objectives describes the purpose of the project and the reasons for undertaking the project. To be considered for detailed analysis in the EIR, an alternative must meet most of the project objectives. The Applicant has identified the following as the basic objectives for purposes of screening potential alternatives to the Zeta Solar and Battery Energy Storage System (BESS) Project (Project):

- Construct and operate a solar PV and BESS power-generating facility capable of producing and transmitting up to 75 MW of renewable energy in a cost-competitive manner.
- Locate a power-generating facility in proximity to existing California Independent System Operator (CAISO) high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.
- Assist the State of California in achieving or exceeding its California Renewable Portfolio Standard (RPS) under Senate Bill (SB) 350, SB 100, and the California Global Warming Solutions Act (Assembly Bill [AB] 32) by developing and constructing a new solar power generation facility.
- Assist the State of California in reducing its greenhouse gas (GHG) emissions as required by the California Global Warming Solutions Act.
- Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).
- Develop a commercially viable solar power generation and BESS facility that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to Merced County.

3.2.2 Feasibility

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.*

Based on CEQA Guidelines, "feasible" is defined as, "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social,

and technological factors" (CEQA Guidelines Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative, but rather that an alternative be potentially feasible.

For the screening analysis, the feasibility of potential alternatives was assessed using the following considerations:

Technological Feasibility. Is the alternative feasible from a technical perspective, considering available technology? Are there any construction, operation, or maintenance constraints that cannot be overcome?

Legal Feasibility. Do legal protections on lands preclude or substantially limit the feasibility of constructing a utility-scale solar and BESS project? Is the alternative consistent with regulatory standards regarding transmission system design, operation, and maintenance?

Economic Feasibility. Is the alternative so costly that its costs would prohibit its implementation?

Environmental Feasibility. Would implementation of the alternative cause greater environmental damage than the project?

Social Feasibility. Would the alternative cause significant damage to the socioeconomic structure of the community and be inconsistent with important community values and needs?

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant impacts, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, an EIR must contain a discussion of "potentially feasible" alternatives, the ultimate determination whether an alternative is feasible or infeasible is made by the lead agency's decision-making body (See Public Resources Code [PRC] Section 21081[a][3]).

3.2.3 Potential to Avoid or Lessen Significant Environmental Effects

CEQA requires that alternatives to a Project have the potential to avoid or substantially lessen one or more significant effects of the project (CEQA Guidelines Section 15126.6). At the project and/or cumulative level, the Draft EIR determined that all potentially significant impacts could be mitigated to less than significant impacts with implementation of feasible mitigation measures. Thus, the Project would not result in any significant and unavoidable impacts. However, under CEQA, and as indicated in California Public Resources Code (PRC) Section 21002.1(a), the identification and analysis of alternatives to a project is a fundamental aspect of the environmental review process to consider ways of substantially lessening or avoiding the significant environmental effects of a project. Based on the significant environmental impacts of the Project, the objectives established for the Project, and the feasibility of the alternatives considered, three alternatives, including the No Project Alternative as required by CEQA, are considered in this chapter.

3.2.4 No Project Alternative

CEQA Guidelines require that the alternatives be compared to the project's environmental impacts and that the "no project" alternative be considered (CEQA Guidelines Section 15126.6(d)(e)). Section 15126.6(d)(e)(1) states:

> *The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline.*

The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the Project with the impacts of not approving the Project.

3.3 ALTERNATIVES CONSIDERED AND REJECTED FROM FURTHER CONSIDERATION

CEQA Guidelines Section 15126.6(c) provides the following guidance in selecting a range of reasonable alternatives for the Project.

> *The range of potential alternatives for the project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more significant effects. The EIR should also identify any alternatives that were considered by the lead agency, but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination.*

3.3.1 Alternative Locations

This alternative would involve the development of the proposed project on another site located within Merced County, other than constructing rooftop distributed generation systems. Although undetermined at this time, the alternative project site would likely be located in the Central San Joaquin Valley. This alternative is assumed to involve construction of a 75 MW AC PV solar facility and BESS with the ability to store up to 8-hours of 75 MW of AC on a site of sufficient size. CEQA Guidelines Section 15126.6(f)(2(a) states that the key and initial step in considering an alternative site is whether "any of the significant effects of the proposed project would be avoided or substantially lessened" in relocating the proposed project, while remaining consistent with the same basic objectives of the proposed project. Alternative locations considered for the project site were identified based on meeting most of the following conditions:

- Sufficient incoming solar radiation;
- Flat terrain (<5% slope across the majority of the site);

- Absence of environmental constraints, such as significant wetlands and protected species habitat;
- Site devoid of permanent structures;
- Sufficient size to accommodate a utility-scale solar project of similar capacity
- Contiguous acreage;
- Within 5 miles of Mercy Springs Substation

The Central San Joaquin Valley has attracted renewable energy development applications that are being proposed for vacant land or land with a history of agricultural uses. According to the Merced County General Plan, agriculture accounts for more than 90 percent of all land area within the County. While other potential sites may exist in the Central San Joaquin Valley with similar size, configuration, and use history, alternative project sites in the area are likely to be located on agricultural land with varying degrees of productivity. Sites with increased agricultural productivity may result in greater impacts to agricultural resources than the Project. Further, alternative project sites in the area are likely to have similar project and cumulatively significant impacts after mitigation, based on the general conditions in the area and the size of the Project.

Alternative sites for the proposed project are not considered to be “potentially feasible,” as there are no suitable sites identified that would reduce proposed project impacts. The potential number of available, similar sites is further reduced because unlike the proposed project, alternative sites may not include sites in proximity to transmission infrastructure. As noted above, alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental impacts. Therefore, this alternative was eliminated because it would not avoid or substantially reduce the significant environmental impacts of the proposed project and would not meet the objective to locate a power-generating facility in proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.

3.3.2 Wind Energy Project Alternative

The Wind Energy Project Alternative would involve the use of wind energy as an alternative to development of a solar site. Wind energy provides the following benefits:

- It is a renewable and infinite resource.
- It is free of any emissions, after installation, including carbon dioxide (GHG).
- It is a free resource after the capital cost of installation (excluding maintenance).

In addition, energy production from wind power would not require the significant water usage associated with energy sources such as coal and nuclear. The Wind Energy Project Alternative would consist of a group of three-blade wind turbine units that are pointed into the wind by computer-controlled motors to produce electrical power. The individual turbines would be interconnected with a medium-voltage power

collection system and a communications network. At a substation, the medium-voltage electrical current would be increased through a transformer before connection to the high-voltage transmission system.

Compared with non-renewable energy sources, the environmental effects of wind power are relatively minor. However, wind farms would not decrease short-term construction-related air emissions. Wind turbines would also have the potential to affect bird species in the local area. In addition, for wind turbines to produce an equivalent 75 MW of power that the Project would produce, the alternative would require more space than what the project site currently accommodates and, consequently, the project site would need to be expanded.

Some of the Project objectives are to develop a solar project that will help meet the increasing demand for clean, renewable electrical power, as well as help California meet its statutory and regulatory goals of generating more renewable power. Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental impacts. Therefore, this alternative was eliminated from further consideration because:

- The wind resource at a 100m height is <5 m/s (NREL 2017), which makes this site not commercially viable. Commercial wind projects typically requires an annual average wind speed of at least 7 m/s at 100m height for a site to be considered commercially viable.
- It may result in additional/greater aesthetic impacts associated with the Project because wind turbines would be much taller than solar panels, require Federal Aviation Administration lighting and are more visible from many viewpoints.
- It may result in additional/greater biological resources impacts on bird species than the Project.
- It may generate long-term noise impacts on nearby sensitive receptors from rotating turbine blades depending on location.
- It may result in increased land use and planning impacts associated with the proposed project due to the need for an increased project site.

3.3.3 Industrial Power Plant Alternative

This alternative would involve the development of a natural gas-fired power plant or plants (equivalent to 75 MW) in Merced County. Fossil fuel-powered plants are designed on a large scale for continuous operation. However, byproducts of industrial power plant operation need to be considered in both design and operation. When waste heat that results from the finite efficiency of the power cycle is not recovered and used as steam or hot water, it must be released to the atmosphere, and often uses a cooling tower as a cooling medium (especially for condensing steam). The flue gas from combustion of the fossil fuels is discharged to the air and contains carbon dioxide and water vapor as well as other substances, such as nitrogen, nitrogen oxides, and sulfur oxides. Furthermore, unlike the proposed project, fossil fuel-powered plants are major emitters of GHGs. In addition, industrial power plants generally involve the construction of large structures, such as cooling towers and gas stacks, as well as a large number of employees to

operate the facility on a 24/7 basis 365 days a year. Accordingly, the development of an industrial power plant would typically result in greater adverse impacts related to:

- Aesthetics and the local visual setting of the project area
- Air quality and GHG emissions
- Land use and planning conflicts with the rural development of the surrounding area
- Noise from the plant operations
- Traffic from increased employment at the facility; and
- Demand on public utilities, including water and waste disposal.

As noted above, some of the objectives for the Project are to develop a solar project that would help meet the increasing demand for clean, renewable electrical power as well as help California meet its statutory and regulatory goals of generating more renewable power with minimum potential for environmental effects. Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental effects. Therefore, this alternative was eliminated from further consideration because:

- It would result in additional/greater impacts than the proposed project including aesthetics, air quality, GHG emissions, land use and planning, noise, transportation and traffic, and public utilities, including water use and disposal.
- Depending on siting, it may also result in greater biological resources impacts than the proposed project.
- It would not contribute to the statewide renewable energy and GHG reduction objectives as this alternative would use non-renewable energy to produce electricity.

3.4 ALTERNATIVES CONSIDERED

Section 15126.6 of CEQA Guidelines requires an EIR to identify and discuss a no project alternative, as well as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project and would avoid or substantially lessen any of the significant environmental impacts. The alternatives screening process evaluated other alternatives discussed in Section 3.4; however, all of them were either infeasible, speculative, failed to meet most of the underlying project objectives, or had greater environmental impacts than the Project.

3.4.1 Alternative 1 – No Project

CEQA Guidelines Section 15126.6(e)(1) requires that the no project alternative be described and analyzed “to allow decision-makers to compare the impacts of approving the project with the impacts of not approving the project.” The no project analysis is required to discuss “the existing conditions at the time the Notice of Preparation is published . . . as well as what would be reasonably expected to occur in

the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Section 15126.6(e)(2)).

The No Project Alternative assumes that no development would occur on the project site. The area would likely remain fallow. According to the Merced County Zoning Code, other allowable uses that could occur in the current zone would potentially be other agriculture, ranching operations, well drilling, game preserves, public parks and recreation areas, wildlife management, equipment maintenance, on-site energy generation facilities, residence, produce stand, kennel, county or publicly owned facilities, truck parking, and wireless communication towers.

3.4.2 Alternative 2 – Reduced Acreage

Under the reduced acreage alternative, the footprint of the project would be reduced. The total MW capacity at the project site would be reduced from 75 MW to 23.4 MW, and the project footprint would be reduced by approximately 462 acres to remove the project area that currently consists of Prime Farmland. Figure 3-1 provides the site layout for this alternative.

Elimination of the area with Prime Farmland would result in including only assessor's parcel numbers (APNs) 090080028, 090130060, and 090130044 as the Reduced Acreage Alternative. This would reduce the project size from 650 acres to approximately 186 acres.

Under this alternative, the other 462 acres of the project site would remain undeveloped and fallow, with periodic use of grazing sheep and goats for weed control, as it is currently used. The gen-tie interconnection would remain unchanged. In addition to the solar panels, development on the project site would still include construction of an onsite collector substation, a BESS on an approximately 15-acre portion of the Project site, and associated infrastructure, as under the proposed project. Similar to the proposed project, this alternative would require a conditional use permit (CUP) for the project.





Alternative Project Site Boundary

Gen-tie

0 0.25 0.5 N

Miles

(At original document size of 8.5x11)
1:24,000

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-18
TR by GG on 2024-07-18

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 3-1

Title
Reduced Acreage Alternative

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\Fig_3-1_ReducedAcreageAlternative.mxd Revised: 2024-07-18 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

3.4.3 Alternative 3 – Distributed Power

Distributed power generation refers to a variety of technologies that generate electricity at or near where it will be used. Distributed power resources may be standalone or grid connected and may preclude the need for transmission lines. The distributed power alternative assumes the 75-MW production capacity of the Project would be provided by solar panels placed on the roofs of residential, commercial, industrial, and institutional buildings throughout the County.

The distributed power alternative would involve the development of a number of geographically distributed small to medium solar PV systems (e.g., 100 kWh to 1 MW each) within existing developed areas, typically on the rooftops of commercial and industrial facilities situated throughout unincorporated Merced County. Under this alternative, no undeveloped land would be developed or altered. However, depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage (i.e., greater than 650 acres of total rooftop area) would be required to attain the proposed project's capacity of 75 MW of solar PV generating capacity. Because of space or capital cost constraints, many rooftop solar PV systems would be fixed-axis systems or would not include the same type of sun-tracking equipment that would be installed in a freestanding utility-scale solar PV project and, therefore, would not attain the same level of efficiency with respect to solar PV generation.

Alternative 3 would generate 75 MW of electricity, but it would be for onsite use only and no BESS would be available to store the unused solar energy; therefore, the solar power could only be used during daylight hours.

The distributed power alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, relatively flat roof areas necessary for efficient solar installations. Similar to the project, this alternative would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Power generated by such distributed solar PV systems would be consumed onsite by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

OVERVIEW

In accordance with CEQA Guidelines Section 15126.2, this Draft EIR identifies and focuses on the significant direct and indirect environmental impacts of the Project, given due consideration of both its short- and long-term impacts. Short-term impacts are generally those associated with construction and decommissioning of the Project, while long-term impacts are generally those associated with the operation of the Project.

Sections 4.1 through 4.17 of this Draft EIR contain discussions of the potential environmental impacts related to the construction, operation, and decommission of the Project.

ENVIRONMENTAL RESOURCE AREAS

The potential environmental impacts associated with the implementation of the Project are evaluated for the following environmental resource areas:

4.1 Aesthetics

4.2 Agriculture and Forestry Resources

4.3 Air Quality

4.4 Biological Resources

4.5 Cultural Resources

4.6 Energy

4.7 Geology and Soils

4.8 Greenhouse Gas Emissions

4.9 Hazards and Hazardous Materials

4.10 Hydrology and Water Quality

4.11 Land Use and Planning

4.12 Noise

4.13 Public Services

4.14 Transportation

4.15 Tribal Cultural Resources

4.16 Utilities and Service Systems

4.17 Wildfire

Organization of Environmental Resource Areas

The analysis within each issue area considers all components of the Project, discussed in Chapter 2.0, Project Description. Each environmental issue section listed above contains the following components:

- **Regulatory Setting:** this section presents the laws, regulations, plans, and policies that are relevant to each issue area. Regulations originating from the federal, state, and local levels are each discussed, as appropriate.

- **Environmental Setting:** this section presents the existing environmental conditions on the project site and within the surrounding area as appropriate, in accordance with CEQA Guidelines Section 15125. The extent of the environmental setting area evaluated (the Project study area) differs among resources, depending on the locations where impacts would be expected. For example, air quality impacts are assessed for the air basin (macro-scale), as well as the site vicinity (micro-scale), whereas aesthetic impacts are assessed for the Project vicinity only.

- **Environmental Impacts:** this section identifies the thresholds of significance used to determine the level of significance of the environmental impacts for each resource topic, in accordance with CEQA Guidelines Sections 15126, 15126.2, and 15143. The thresholds of significance used in this Draft EIR are based on the checklist presented in CEQA Guidelines Appendix G; best available data; and regulatory standards of federal, state, and local agencies. Information regarding the methods, procedures, resources, and techniques used to analyze Project impacts are described. This section also identifies the level of each environmental impact by comparing the effects of the Project to the environmental setting. Key methods and assumptions used to frame and conduct the impact analysis, as well as issues or potential impacts not discussed further (i.e., such issues for which the project would have no impact), are also described.

Project impacts are organized numerically in each subsection (e.g., Impact AES-1, Impact AES-2, Impact AES-3). A bold-font environmental impact statement precedes the discussion of each impact while its level of significance succeeds the discussion of each impact. The discussion that follows the impact summary includes the substantial evidence supporting the impact significance conclusion.

- **Level of Significance Before Mitigation:** this section describes the level of impact significance before mitigation measures are implemented.

- **Mitigation Measures:** this section describes any feasible measures that could avoid, minimize, rectify, reduce, or compensate for significant adverse impacts, with measures having to be fully enforceable through incorporation into the project (Public Resources Code [PRC] Section 21081.6[b]). Mitigation Measures are not required for environmental impacts that are found to be less than significant. Where feasible mitigation for a significant environmental impact is available, it is described following the impact.

- **Level of Significance After Mitigation:** this section describes the level of impact significance remaining after mitigation measures are implemented.

- **Cumulative Impacts:** this section describes two or more individual impacts that, when considered together, are significant or that compound or increase other significant environmental impacts. Cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355). The incremental impact of a project, although less than significant on its own, may be considerable when viewed in the cumulative context of other closely related past, present, and reasonably foreseeable probable future projects. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of reasonably foreseeable probable future projects (CEQA Guidelines 15064).

LEVEL OF SIGNIFICANCE

Determining the severity of project impacts is fundamental to achieving the objectives of CEQA. CEQA Guidelines Section 15091 requires that decision-makers mitigate, as completely as is feasible, the significant impacts identified in the Final EIR.

The level of significance for each impact examined in this Draft EIR is determined by considering the predicted magnitude of the impact against the applicable threshold. Thresholds were developed using criteria from the CEQA Guidelines and Appendix G Checklist; federal, state, and local regulatory schemes; local and regional plans and ordinances; accepted practice; consultation with recognized experts; and other professional opinions.

FORMAT USED FOR IMPACT ANALYSIS AND MITIGATION MEASURES

The format adopted in this Draft EIR to present the evaluation of environmental impacts is described and illustrated below:

Summary Heading of Impact

Impact BIO-1:	**An impact summary heading appears immediately preceding the impact description (Summary Heading of Impact in this example). The impact abbreviation identifies the section of the report (BIO for Biological Resources in this example) and the sequential order of the impact (1 in this example) within that section. To the right of the impact number is the impact statement, which identifies the potential impact (this text block).**

A narrative analysis follows the impact statement. Some discussions include separated discussions of construction and operation as applicable.

LEVEL OF SIGNIFICANCE BEFORE MITIGATION

This section identifies the level of significance of the impact before any mitigation is proposed.

MITIGATION MEASURES

In some cases, following the impact discussion, reference is made to state and federal regulations and agency policies that would fully or partially mitigate the impact. In addition, policies and programs from applicable local land use plans that partially or fully mitigate the impact may be cited.

Project-specific mitigation measures, beyond those contained in other documents, are set off with a summary heading and described using the format presented below:

MM BIO-: Mitigation Measure Title. Project-specific mitigation is identified that would reduce the impact to the extent feasible. The mitigation number links the particular mitigation to the impact with which it is associated.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

This section identifies the resulting level of significance of the impact following mitigation. Abbreviations used in the mitigation measure numbering are shown in Table 4.0-1.

Table 4.0-1. Environmental Issue Abbreviations

Code	Environmental Issue
AES	Aesthetics
AG	Agriculture and Forestry Resources
AQ	Air Quality
BIO	Biological Resources
CUL	Cultural Resources
EN	Energy
GEO	Geology and Soils
GHG	Greenhouse Gas Emissions
HAZ	Hazards and Hazardous Materials
HYD	Hydrology and Water Quality
LUP	Land Use and Planning
NOI	Noise
PUB	Public Services
TRA	Transportation
TRIB	Tribal Cultural Resources

Code	Environmental Issue
USS	Utilities and Service Systems
WF	Wildfire

In performing the analysis for this Draft EIR, the County relied on available published studies and reports and conducted independent investigations as needed. Information provided by or on behalf of the Applicants was also independently reviewed and determined to be suitable for reliance on (in combination with other materials in the formal record) in the preparation of this Draft EIR. The specific documents considered and relied upon are cited in Chapter 9.0, References. Project-specific technical studies are included as appendices. Copies of cited reference materials, such as Merced County's General Plan and Zoning Code, are available upon request.

CUMULATIVE IMPACTS

Cumulative impacts refer to the combined effect of Project's impacts with the impacts of other past, present, and reasonably foreseeable future projects. As established in the CEQA Guidelines, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence attributable to the project alone. As stated in PRC Section 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to CEQA Guidelines:

> *"'Cumulative impacts' refer to two or more individual effects which, when considered together, are considerable and which compound or increase other environmental impacts.*
>
> *a) The individual effects may be changes resulting from a single project or a number of separate projects.*
>
> *b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Section 15355)*

In addition, as stated in CEQA Guidelines:

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

Cumulative Impact Setting

Cumulative impact discussions for each environmental issue area are provided within each individual impact section. CEQA Guidelines explain that cumulative context may be described through either the list-of-projects approach or the summary-of-projections approach. The list approach involves identifying and listing the past, present, and reasonably foreseeable projects that contribute to a given significant cumulative impact. The summary-of-projections approach relies on an adopted plan or reliable projection that describes the significant cumulative impact. This Draft EIR combines both the list-of-projects and summary-of-projections approaches to generate the most reliable future projections possible.

Geographic Scope

The geographic area analyzed for cumulative impacts is dependent on the resource being analyzed. The geographic area associated with the Project's environmental impacts defines the boundaries of the area used for compiling the list of past, present, and reasonably foreseeable projects considered in the cumulative impact analysis. For example, the analysis of air quality is based on a regional level because air quality impacts are regional in nature; whereas analysis of aesthetic impacts considers projects in the vicinity of the project site because of the localized nature of the impact.

The geographic area that could be affected by implementation of the Project in combination with other projects varies depending on the type of environmental resource being considered. Table 4.0-2 provides the geographic area and the method of evaluation utilized in the cumulative analysis for each resource area.

Table 4.0-2. Geographic Scope of Cumulative Impact and Method of Evaluation

Resource Topic	Geographic Area	Method of Evaluation
Aesthetics	Viewshed of the Project and the area surrounding the Project site from which the Project is, or could be, visible to viewers in the foreground, middle ground, or background	Projects
Agriculture and Forestry Resources	County	Projects
Air Quality	Local (toxic air contaminants) Air Basin (construction-related and mobile sources)	Projects and Projections
Biological Resources	San Joaquin Valley	Projects
Cultural Resources	San Joaquin Valley	Projects
Energy	PG&E service area	Projects and Projections
Geology and Soils	General area of seismic influence	Projects
Greenhouse Gas Emissions	Worldwide	Projects and Projections
Hazards and Hazardous Materials	0.25-mile radius	Projects

Resource Topic	Geographic Area	Method of Evaluation
Hydrology and Water Quality	San Joaquin River hydrologic region for surface water and the Delta-Mendota Subbasin for groundwater	Projects and Projections
Land Use and Planning	County	Projects
Noise	0.25-mile radius	Projects
Public Services	Service areas	Projects
Transportation	Surrounding roadway network	Projects
Tribal Cultural Resources	San Joaquin Valley	Projects
Utilities and Service Systems	Service areas	Projects
Wildfire	Merced County Fire District service area	Projects

Notes:
Projects = the use of a list of past, present, and reasonably foreseeable projects
Projections = the use of projections contained in relevant planning documents

For those environmental resources that were evaluated based on the projections approach, the projections take into consideration future projects that are not included in the below list of related plans and projects.

RELATED PLANS AND PROJECTS

The summary of projections approach evaluates the impacts of a 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. The following adopted plans and analyses are considered in combination with the Project for assessing cumulative impacts. In most cases, these plans have been prepared by local agencies to meet the requirements of state law and comprise the preparing agencies' comprehensive, long-term visions for physical development or resources conservation within the region:

- **Air Quality:** San Joaquin Valley Air Pollution Control District (SJVAPCD) 2016 Plan for the 2008 8-Hour Ozone Standard, 2013 Plan for the Revoked 1-Hour Ozone Standard, 2007 Particulate Matter 10 (PM_{10}) Maintenance Plan and Request for Redesignation, 2018 Plan for the 1997, 2006, and 2012 Particulate Matter 2.5 ($PM_{2.5}$) Plan, and the 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard.
- **Greenhous Gas Emissions (GHG):** 2022 Climate Change Scoping Plan
- **Hydrology and Water Quality:** Central Valley Regional Water Quality Control Board Water Quality Control Plan

The list of past, present, and reasonably foreseeable future projects used for this cumulative analysis is restricted to those projects that have occurred or are planned to occur within or directly adjacent to the County.

CEQA Guidelines Section 15130 (b)(1)(B)(2) states that when using a list, "factors to consider when determining whether to include a related project should include the nature of each environmental resource being examined, the location of the project, and its type. Location may be important, for example, when water quality impacts are at issue since projects outside the watershed would probably not contribute to a cumulative effect. Project type may be important, for example, when the impact is specialized, such as a particular air pollutant or mode of traffic." Factors considered in determining whether a project is a cumulative project include whether it would cause impacts of the same nature as the Project in the same area at the same time. For the purposes of this discussion, these projects that may have a cumulative effect on the resources of the Project area will often be referred to as the "related projects." The timeframe of the cumulative analysis is from 2023 through operation and maintenance of the Project. A list of related projects was generated based on a review of Caltrans District 10 current projects and Merced County 2023 environmental documents in coordination with Merced County Planning staff. This list of related projects is described in Table 4.0-3 and depicted in Figure 4.0-1.

Table 4.0-3. List of Projects Included in Cumulative Analysis

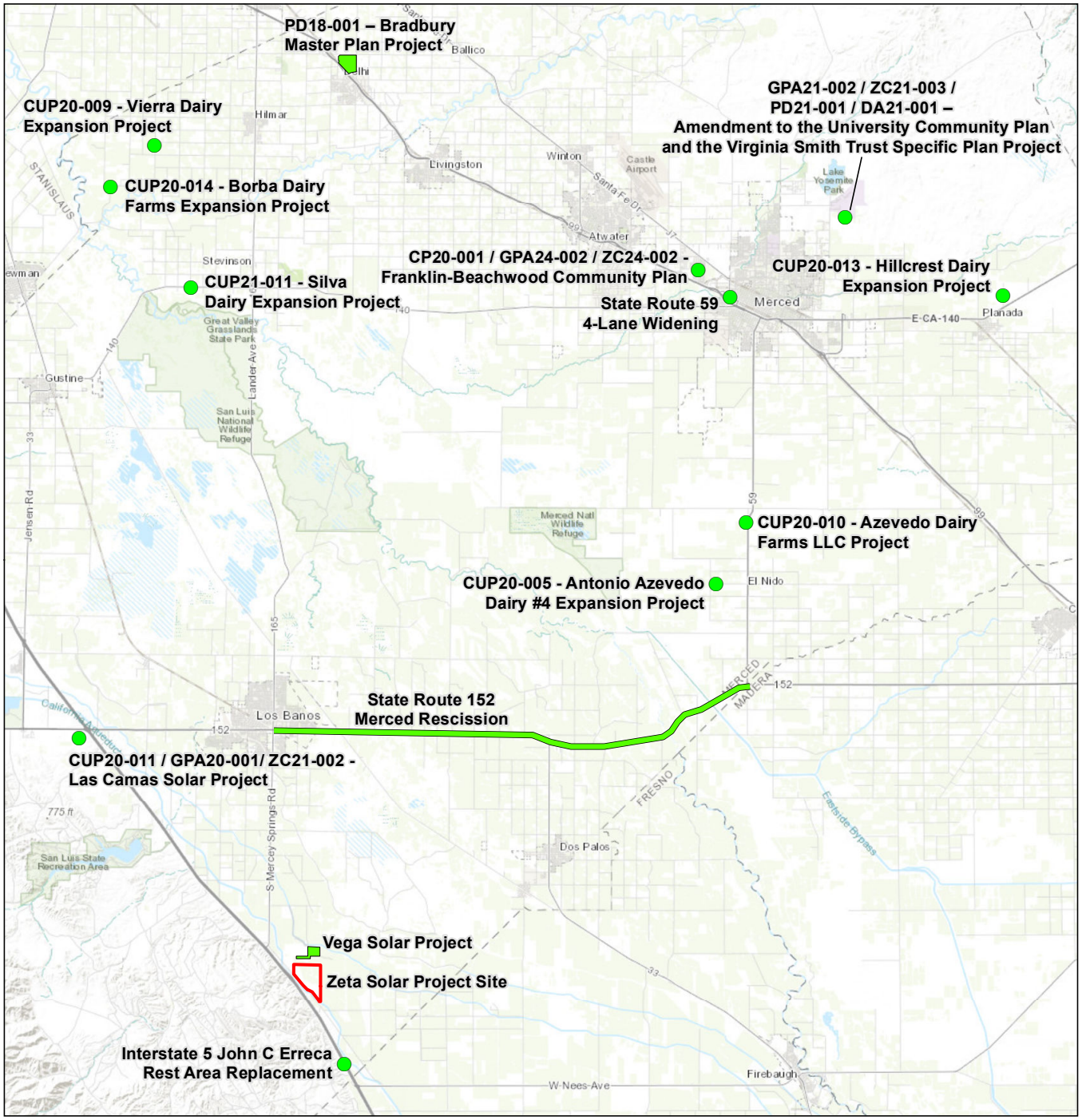
Lead Agency	Project Name/Applicant (Common Name)	Project Description	Status	Distance from the Project (miles)
Merced County	CP20-001 / GPA24-002 / ZC24-002 – Franklin-Beachwood Community Plan	This project would involve a general plan amendment to modify the land use designations in the community plan that apply to the Franklin-Beachwood area as illustrated in the community plan.	Review Period: 06/28/2024 – 07/29/2024	31.51
Merced County	PD18-001 – Bradbury Master Plan Project	This project would involve a general plan amendment to modify the land use designations in the community plan that apply to the Bradbury Master Plan area as illustrated in the community plan.	Supplemental EIR Review Period: 05/26/2023 – 07/10/2023	35.39
Merced County	CUP21-011 – Silva Dairy Expansion Project	This project would modify and expand the existing dairy to house a total of 7,300 animals, including 4,000 milk cows, 500 dry cows, and 2,800 support stock, and would merge the two existing separate dairy facility permits into a single permit.	Review Period: 07/25/2024 – 09/09/2024	27.20
Merced County	CUP20-014 – Borba Dairy Farms Expansion Project	This project would modify and expand the existing dairy farm to house 4,000 milk cows, 500 dry cows, and 2,100 support stock, for a total of 6,600.	Review Period: 01/19/2024 – 03/05/2024	31.72
Merced County	CUP20-013 – Hillcrest Dairy Expansion Project	This project would involve an expansion of an existing dairy	Review Period: 07/14/2022 – 08/29/2022	38.24

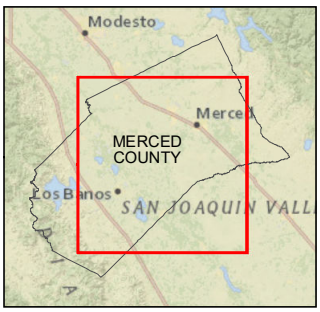
Lead Agency	Project Name/Applicant (Common Name)	Project Description	Status	Distance from the Project (miles)
		facility on approximately 200 acres of a 2,290-acre site.		
Merced County	GPA21-002 / ZC21-003 / PD21-001 / DA21-001 – Amendment to the University Community Plan and the Virginia Smith Trust Specific Plan Project	This project would involve an update the 2004 University Community Plan (Adopted UCP), which would remove a portion of the UCP area owned by UC Merced from the County's UCP, expand the UCP area east to align with current land ownership, and update the land uses proposed within the 654-acre Virginia Smith Trust Specific Plan that would comprise the northern portion of the revised UCP.	Review Period: 04/28/2023 – 06/12/2023	36.56
Merced County	CUP20-009 – Vierra Dairy Expansion Project	This project would involve expansion of an existing dairy facility located approximately 2.6 miles west of the Hilmar community in unincorporated Merced County. The existing Vierra Dairy and the site of the proposed expansion are located on approximately 72 acres of a 695-acre site.	Notice of Preparation (NOP) and Initial Study; Review period: 10/01/2021 – 11/01/2021	33.02
Merced County	CUP20-005 – Antonio Azevedo Dairy #4 Expansion Project	This project would merge the existing heifer facility with the existing dairy operations and expand the existing dairy so that the modified dairy would house 2,500 milk cows, 500 dry cows, and 1,000 support stock.	Review Period: 08/31/2021 – 10/15/2021	21.98
Merced County	CUP20-011 / GPA20-001 / ZC21-002 – Las Camas Solar Project	This project includes the construction, long-term operation, and eventual decommissioning of a 200-megawatt alternating current ground-mounted solar photovoltaic power plant located on vacant lands in unincorporated Merced County.	Review Period: 05/03/2024 – 06/17/2024 NOP: August 2021	12.36
Merced County	CUP20-010 – Azevedo Dairy Farms LLC Project	This project requires a Conditional Use Permit (CUP20-010) from Merced County to construct a new dairy on approximately 220 acres of existing cropland to house 15,000 milk cows, 3,000 dry cows, and 10,000 support	Review Period: 07/23/2021 – 08/24/2021; NOP: July 2021	24.57

Lead Agency	Project Name/Applicant (Common Name)	Project Description	Status	Distance from the Project (miles)
		stock, for a total of 28,000 animals.		
Merced County	Vega Solar Project	This project includes the development of a 20-megawatt photovoltaic solar array on approximately 165 acres. Electricity generated by the Vega project would be transferred to the existing PG&E Los Banos-Canal-Oro Loma 70-kilovolt (kV) Line via an interconnection line directly west of the Project site.	Built in 2015	0.25
Caltrans District 10	Interstate 5 John C. Erreca Rest Area Replacement	This project proposes to demolish and replace the existing comfort station buildings and increase the capacity of the existing northbound and southbound facilities at the John "Chuck" Erreca Safety Roadside Rest Area in Merced County. The upgrade will include reconstruction, expansion, and modernization of both northbound and southbound sides, as these facilities are deteriorating and require constant repairs due to age and overuse of amenities.	Construction tentatively scheduled to start the spring of 2022. All work is currently scheduled to be complete in September 2023.	2.85
Caltrans District 10	State Route 59 Four-Lane Widening	This project proposes to widen State Route 59 from a two-lane to a four-lane conventional highway from 16th Street to Black Rascal Canal Bridge and replace Black Rascal Canal Bridge and South Fork Black Rascal Bridge with one new bridge.	Caltrans is providing oversight for the project in the Project Approval & Environmental Document phase. Level of environmental review not determined at the time of writing this Draft EIR.	31.34
Caltrans District 10	State Route 152 Merced Rescission	This project would rescind the previously adopted route for sections of State Route 152 in Merced County near Los Banos from Santa Fe Grade Road to the Merced/Madera County line. This would allow Caltrans	Written comment period closed 03/24/2024.	9.22

Lead Agency	Project Name/Applicant (Common Name)	Project Description	Status	Distance from the Project (miles)
		to dispose of parcels of land under its ownership.		

Source: Merced County 2023, Caltrans 2023





Zeta Solar Project Site

Other Projects

0 4 8 Miles

(At original document size of 8.5x11)
1:388,779

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-08-29
TR by LC on 2024-08-30

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.0-1

Title
Cumulative Projects

Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\Figures\Fig4.0-1_CumulativeProjects.mxd Revised: 2024-08-29 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

4.1 AESTHETICS

This chapter of the EIR discusses impacts associated with the potential for the Project to degrade the existing visual character or quality of the project site and its surroundings through changes in the existing landscape. Per the Federal Highway Administration (FHWA), the aesthetic value of an area is a measure of its visual characters and quality combined with viewer response to the area (FHWA 1988). Aesthetic impacts are generally defined in terms of a project's physical characteristics and potential visibility and the extent to which the project's presence would change the visual character and quality of the environment in which it would be located.

This assessment of aesthetic resources is based on the Visual Resources Assessment prepared for the Project, which applied the FHWA Visual Impact Assessment for Highway Projects methodology (FHWA 1988[1]) to describe the existing environmental and regulatory setting for the Project, identify potential sensitive views, and assess the levels of visual contrast that would be introduced through the construction and operation of the Project. Where applicable, mitigation measures are included to avoid or lessen significant impacts. The County received no scoping comments pertaining to aesthetics (Appendix A).

4.1.1 Regulatory Setting

4.1.1.1 Federal

There are no applicable federal regulations, plans, or policies pertaining to aesthetics that are applicable to the Project.

4.1.1.2 State

California Scenic Highway Program

The California Scenic Highway Program was created by the Legislature in 1963 and is managed by the Landscape Architecture Division of the California Department of Transportation (Caltrans). Its purpose is to protect and enhance the natural scenic beauty of California's highways and adjacent corridors through special conservation treatment. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view (Caltrans 2022).

According to the Caltrans State Highway Network Data Library, there are no officially designated state scenic highways in the vicinity of the Project site (Caltrans 2022). The nearest designated state scenic highways are segments of Interstate 5 (I-5) and State Route 152 over 10 miles north of the Project site.

[1] The FHWA Guidelines for Highway Projects were updated in 2015. While these guidelines revise the recommended methodology for visual impact analyses for highway projects, they are generally consistent with regard to definitions of concepts incorporated in this analysis. Those concepts were more fully defined in the 1988 methodology; thus, this analysis cites the 1988 FHWA guidelines.

4.1.1.3 Local

Merced County General Plan

Scenic resources identified in the Merced County General Plan Natural Resources element include rural and agricultural landscapes within the County, scenic vistas such as the scenic views of the Coastal and Sierra Nevada ranges, river corridors, a segment of State Route 152 between I-5 and San Benito County, and a segment of I-5 between State Route 152 and Stanislaus County. Approximately 95 percent of County land is designated rural and agricultural (Merced County 2013), and the project site is located within a rural and agricultural landscape. Merced County General Plan Natural Resources Element policies applicable to the Project include:

- **Goal NR-2.** Provide adequate and efficient energy supplies by increasing renewable energy production and energy conservation.
    - **Policy NR-2.6:** Open Space Impacts. Work with public agencies and private energy providers to ensure that energy projects avoid or minimize impacts to open space, natural resources, and productive agricultural land.
- **Goal NR-4.** Protect scenic resources and vistas.
    - **Policy NR-4.1:** Scenic Resource Preservation. Promote the preservation of agricultural land, ranch land, and other open space areas as a means of protecting the County's scenic resources.

Merced County Zoning Code

Chapter 18.40, Performance Standards, of the Merced County Zoning Code includes performance standards to ensure compatibility between land uses by setting specific standards for environmental hazards, including dust, various air pollutants, hazardous materials, lighting, noise, odors, glare, and wastewater. Specifically, Section 18.40.070 of the Merced County Zoning Code contains exterior lighting standards for properties and requirements to ensure that lighting related to glare does not spill beyond property boundaries.

4.1.2 Environmental Setting

4.1.2.1 Assessment of Existing Visual Conditions and Definition of Terms

The assessment of the Project's potential impacts to aesthetics and visual resources included a review of applicable planning documents, site reconnaissance and photography, production of visual simulations, and the application of the FHWA methodology through incorporation of the following steps:

1. Establish the visual environment for the area within which the Project would be located.
2. Assess the visual resources present within the Project area by describing the existing visual character and assessing the visual quality of views toward the Project site.

3. Describe and assess the affected viewers in terms of viewer exposure to the components of the Project and their levels of visual sensitivity.

4. Develop simulations to determine the potential visual impact of the Project. The degree of visual impact is a function of the projected visual change within the Project area and anticipated viewer response to such change.

Visual Quality

Visual quality is a function of the natural and cultural features of the environment that can be seen and that contribute to the public's enjoyment of the environment. It is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. The visual quality of the site is described using criteria established by the FHWA for visual landscape relationships. The criteria established to describe visual quality are based on the relative degree of vividness, intactness, and unity, as defined below:

- **Vividness** is described as the visual power or memorability of landscape components as they combine in distinctive visual patterns. Vividness is represented by an assessment of landforms, vegetation, water features, and human-made components present in views.

- **Intactness** is a measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as natural settings. High intactness consists of a landscape that is free of unattractive features and is not broken up by features and elements that are out of place. Low intactness consists of visual elements that can be seen in views that are unattractive and/or detract from the quality of the view.

- **Unity** is the visual coherence and compositional harmony of the landscape considered as a whole. High unity frequently attests to the careful design of individual components in the landscape and their relationship to the landscape.

Viewer Groups and Visual Sensitivity

Visual sensitivity is based on the number and type of viewers and the frequency and duration of views. Typically, visual sensitivity increases with an increase in the total numbers of viewers, the frequency of viewing (e.g., daily vs. seasonally), and the duration of views (i.e., how long a scene is viewed). The criteria for identifying the importance of views are related in part to the viewer's position relative to the resource and the placement of the viewer in the viewshed, defined as the area surrounding the Project area from which the Project is, or could be, visible to viewers.

A viewshed may be broken into distance zones of foreground, middleground, and background. Generally, the dominance and importance of an object increases with its proximity to the viewer, although distance zones in viewsheds may vary between different geographic regions or types of terrain. The standard foreground distance zone extends out to 0.25 to 0.50 mile from the viewer, the middleground distance zone extends from the foreground zone to 3 to 5 miles from the viewer, and the background zone extends from the middleground zone to the limit of human sight (FHWA 1988). Generally, visual contrast in

foreground distances would be more noticeable to viewers than increased visual contrast in background distance zones.

Viewer groups in the Project area are based on primary viewing activities and are described in terms of their physical location in relation to the Project site, the number of viewers, the duration of views, and viewer sensitivity, which considers viewer activity and awareness. The following viewer groups and their sensitivity to visual change were identified for the Project:

- **Motorists** on local roads and freeways include residents, workers, and commuters driving to businesses in the area. Drivers generally have low sensitivity to visual changes since their views are of short duration and they are more concerned with surrounding traffic, road signs, and their immediate surroundings within their vehicle rather than visual features in the landscape.
- **Residents or workers** that live in the vicinity of the Project typically have high sensitivity to visual changes, since residential viewer groups have stationary and long-term views of the landscape.
- **Recreational Travelers** are those travelers whose purpose for travel is primarily leisure and not related to work or other typical daily tasks. Examples include but are not limited to tourists, vacation travelers, and weekend travelers. Recreational travelers also are expected to have high sensitivity to scenery and landscape character.

Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geological, hydrological, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The FHWA describes visual character in terms of four visual pattern elements: form, line, color, and texture. The appearance of the landscape is described in terms of the dominance of each of these components.

4.1.2.2 Regional Visual Character

The Project is located within the San Joaquin Valley in the southern portion of unincorporated Merced County, about 9 miles south of Los Banos. Figure 4.1-1 shows the Project location and the location of Key Observation Points (KOP) referred to throughout this section.

Merced County is within San Joaquin Valley and spans between coastal ranges to the foothills of the Sierra Nevada. Merced County is bordered by Stanislaus County to the north, Fresno and Madera Counties to the south, Mariposa County to the east, and Santa Clara and San Benito Counties to the west (Merced County 2013). The portion of the valley where the Project would be located is characterized by agricultural lands. Land uses surrounding the Project site consist of mostly undeveloped agricultural lands to the north, south, and east, in addition to a small (0.15 acre) developed area to the south housing a cell tower, and undeveloped hilly grasslands used for cattle grazing to the west. Poleline Road abuts the southwestern Project site boundary. The California Aqueduct and I-5 run parallel to the southwest Project

boundary about 300 feet and 800 feet to the west, respectively. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5-mile northwest, respectively.

The major transportation corridor for the Project area is I-5, a four-lane divided highway that extends north to south and is located approximately 800 feet west of the Project site.

4.1.2.3 Visual Character of Project Site

The Project site is bounded to the north by agricultural land and to the west by a road called First Lift Canal. Poleline Road and I-5 run parallel to each other to the southwest of the Project site. Grazing foothill pasture grassland is beyond I-5. The Project site is bounded to the east by an unnamed dirt/gravel road. The valley landscape consists of agricultural land and sparse rural development, as well as existing utility-scale solar energy facilities and associated infrastructure. The proposed gen-tie line would terminate to the north at the existing Mercy Springs Substation, located approximately 0.25 mile north of the Project site. The Vega Solar Project and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5-mile northwest, respectively, as shown in Figure 4.1-1. Los Banos is the closest concentrated urban development, located 9 miles northeast of the Project.

Elevations within the Project site range from approximately 200 to 320 feet above mean sea level. The Project site is located almost entirely within fallow agricultural fields which are grazed for weed control and where vegetation has otherwise been highly disturbed by historical human activity, such as clearing and grading. Developed areas make up the remaining portion of the Project site and include unvegetated areas, such as unpaved roads, paved roads, sections of riprap, and a small gravel lot in the southeast corner with a steel communications tower.

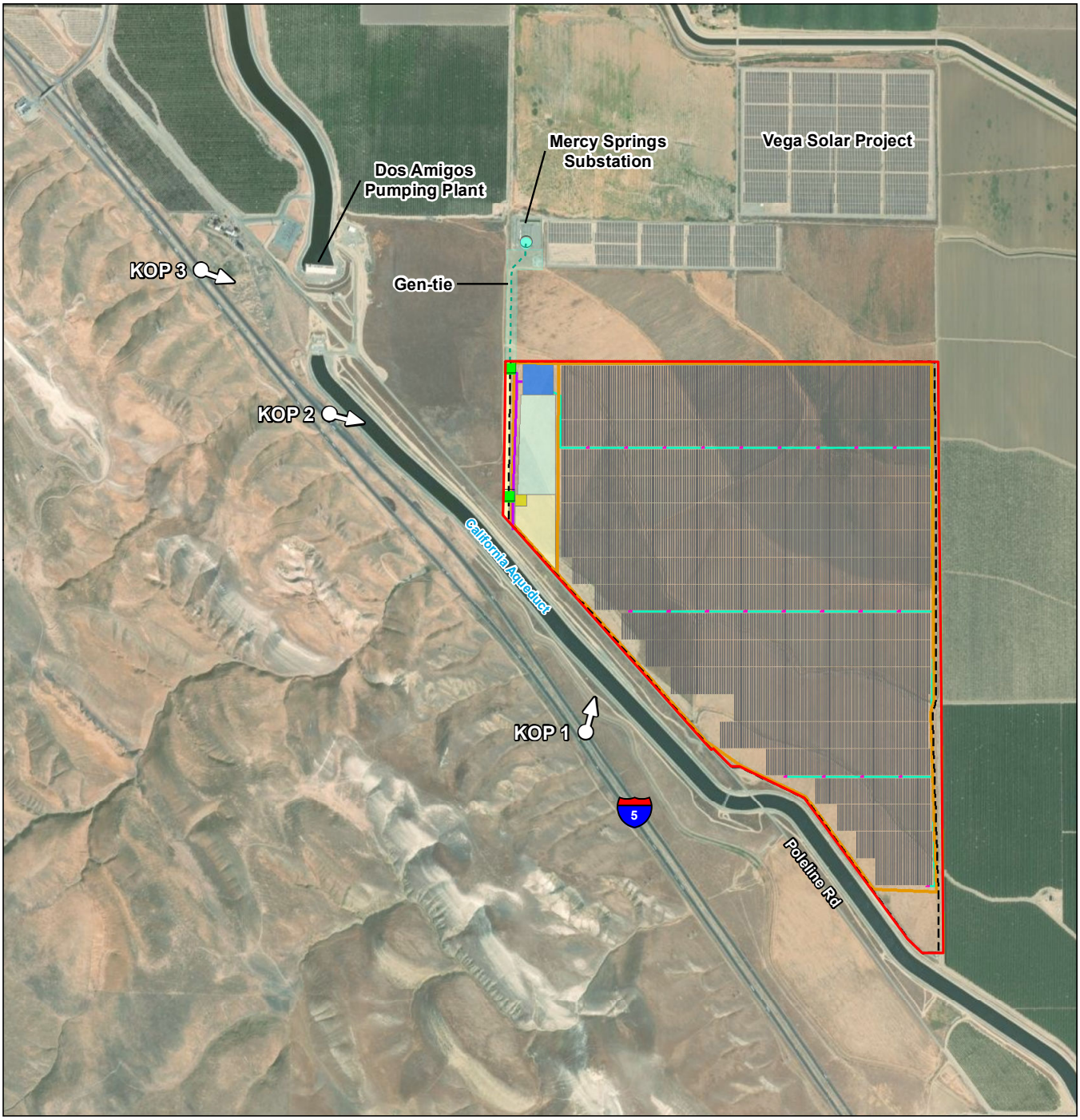
Potential viewers of the Project include motorists traveling northbound or southbound on I-5 or along nearby local roads, and residents or workers that live in the vicinity of the Project. Views of the area from along I-5 are expansive and generally characterized by the sparsely developed agricultural landscape. Transmission lines and distribution infrastructure are also visible to motorists traveling north or south on I-5 and from locations where they may stop along the freeway corridor. The Project is located approximately 0.5 mile east of the Dos Amigos Pump Station Vista Point, a designated vista point along northbound I-5.

A representative subset of photographed viewpoints was selected for use as KOPs, which collectively serve as the basis for this assessment. The three KOP locations are shown in Figure 4.1-1.

Figure 4.1-2a shows the existing view of KOP 1, which is located within the northbound lane of I-5, 0.2 mile west of the Project. The view from KOP 1 is to the north-northeast toward the Project and is representative of views from the freeway in which the Project would appear closest to viewers.

Figure 4.1-3a shows the existing view of KOP 2, which is located at a designated vista point at Dos Amigos Pump Station Vista Point along northbound I-5, approximately 0.5 mile west of the Project site. This location affords a stationary view to the pump station to the northeast, as well as a view to the east-southeast toward the Project.

Figure 4.1-4a shows the existing view of KOP 3, which is located on southbound I-5, approximately 0.75 mile from the Project. The view from KOP 3 is to the southeast and represents elevated views of the Project from southbound I-5.





- Project Site Boundary
- Key Observation Point and View Direction
- Gen-tie
- Gen-tie Corridor
- Point of Interconnection
- Zeta Substation
- Panel Layout
- Inverters
- O&M Building
- Laydown Yard
- BESS
- Mv Collectors
- Fence
- Access Road
- Perimeter Road
- Utility Lines
- Gate

0 0.25 0.5 Miles
(At original document size of 8.5x11)
1:24,000

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2022-06-09
TR by DA on 2023-06-12

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.1-1

Title
Project Site and Key Observation Points

V:\1857\Active\185705411103_data\gis_cad\gis\mxd\visual\Fig4.1-1_KOPs.mxd Revised: 2024-07-16 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



a) View to the north-northeast from KOP 1. A segment of the California Aqueduct is visible in the center of the view, just over 0.2 mile away. The Vega Solar Project is visible in the center of the view, as close as 1.1 mile away.



b) View from KOP 1 with project simulated. Project panels and inverters would be visible from this segment of I-5 beyond the California Aqueduct and in front of the Zeta Solar Project.

Stantec

Project Location
Merced County, CA

Client/Project
Longroad Energy Management
Zeta Solar Project

Figure No.
Figure 4.1-2: Key Observation Point 1

Title
Key Observation Point 1



a) View to the east-southeast from KOP 2. The California Aqueduct in the immediate foreground is within 0.5 mile of the Dos Amigos Pump Station Vista. The orchard in the center of the view is as close as 1.5 miles away.



b) View from KOP 2 with project simulated. The project, including the BESS area and the O&M buildings, would be visible beyond the California Aqueduct, less than 0.5 mile away.

Stantec

Project Location
Merced County, CA

Client/Project
Longroad Energy Management
Zeta Solar Project

Figure No.
Figure 4.1-3: Key Observation Point 2

Title
Key Observation Point 2



a) View to the east-southeast from KOP 3. The Mercy Springs Substation, just west of the Vega Solar Project and visible along the left edge of this view, is 0.75 mile away from this segment of southbound I-5. The Dos Amigos Pumping Plant facilities along the right edge of the view are about 0.33 mile away.



b) View from KOP 3 with project simulated. The project would be visible as close as 0.75 mile away, in the center of the view. The project substation and gen-tie line are visible extend-ing northward toward Mercy Springs Substation.

Stantec

Project Location
Merced County, CA

Client/Project
Longroad Energy Management
Zeta Solar Project

Figure No.
Figure 4.1-4: Key Observation Point 3

Title
Key Observation Point 3

4.1.2.1 Key Observation Points

The analysis of the Project's potential effects to visual resources primarily relies on the evaluation of changes to the existing aesthetic environment at the Project site as viewed from viewpoints selected to best represent the Project and presumed viewer sensitivities. The previously introduced KOPs are representative of motorists traveling along I-5, which is the most proximate, highly traveled roadway. Motorists compose the most substantial group of potential viewers of the Project and are assumed to be the most sensitive to the Project, given the lack of other sensitive receptors in the Project vicinity and absence of residences adjacent to the Project. The views from the KOPs are used as the basis for evaluation, and simulations showing the Project are included here as Figure 4.1-2b, Figure 4.1-3b, and Figure 4.1-4b. Descriptions of the existing conditions at each of the KOPs are described in the following paragraphs.

KOP 1: Northbound I-5

Figure 4.1-2a shows the existing view of KOP 1, which is located within the northbound lane of I-5, 0.2 mile west of the Project. The view from KOP 1 is to the north-northeast toward the Project and is representative of views from the freeway in which the Project would appear closest to viewers. It is characterized by mostly fallow agricultural terrain in the foreground (i.e., the area visible out to 0.25 mile from the KOP) and middle ground (i.e., the area visible between 0.25 mile and 3 miles from the KOP). There are some existing distant linear developments and agricultural structures in the middle ground and background (i.e., beyond 3 miles from the KOP). A majority of the area visible from KOP 1 is beige and tan with a fine to medium texture of low-profile sparse green vegetation visible in the foreground and middle ground and an additional limited view of linear gray and green structures and agriculture in the background.

The visual quality of the view from KOP 1 is moderately low. The California Aqueduct is the view's most vivid element, appearing as a strong linear feature across a broad landscape that is otherwise typical of valley agricultural settings. Observable variety in color conveys the moderately low intactness in the view, as the blue-gray of the Vega Solar Plant, along with other identifiable land uses, appear to encroach upon the mostly green and tan agricultural lands visible beyond the aqueduct and surrounding fallowed areas. This results in a generally incoherent scene in which the agricultural lands that characterize the view are not discernable as the dominant feature in the foreground and near middleground.

KOP 2: Dos Amigos Pump Station Vista Point

Figure 4.1-3a shows the existing view of KOP 2, which is located at a designated vista point at Dos Amigos Pump Station Vista Point along northbound I-5, approximately 0.5 mile west of the Project site. The Dos Amigos Pump Station Vista Point is a vista point designated to afford views of water conveyance infrastructure within the broader rural and agricultural landscape. This location affords a stationary view to the pump station to the northeast, as well as a view to the east-southeast toward the Project.

KOP 2 is characterized by the visual dominance of the California Aqueduct, a linear feature visible in the foreground set against a backdrop containing predominantly agricultural lands which contain relatively few structures. The dominant colors are the blue and gray of the aqueduct, and the beige, tan, and green

hues of the valley and agricultural land beyond the aqueduct. The view's discernible texture varies and ranges from fine to medium, from the aqueduct's water surface and concrete to the valley's flat, grassy terrain and orchards and other vegetation further away.

The visual quality of the view from KOP 2 is moderately low. Similar to KOP 1, the California Aqueduct is the most vivid element of the view, with views of the Vega Solar Project and transmission poles also in view. Intactness of the view from KOP 2 is moderately low, as multiple uses are observed with a variety of shapes appearing as part of a patchwork landscape in which none is dominant beyond the aqueduct. As such, the variety of components results in a less-than-coherent view.

KOP 3: Southbound I-5

Figure 4.1-4a shows the existing view of KOP 3, which is located on southbound I-5, approximately 0.75 mile northwest of the Project site. The view from KOP 3 is to the southeast and represents elevated views of the Project from southbound I-5.

KOP 3 is characterized by the linear forms of the I-5 corridor and transmission line crossing in the immediate foreground, beyond which a number of disparate built features appear in front of a more distant, mostly flat agricultural terrain. From this vantage point, the valley landscape beyond and alongside these features appears relatively flat, although some sparse scrub vegetation and orchards are discernible. The dominant colors are the tans and beiges of the valley, with light grays and tans of the shoulder of I-5 and the blue and gray from the California Aqueduct in the foreground and some greens from vegetation and agriculture in the background.

The visual quality from KOP 3 is low. There are no vivid elements of note in addition to the California Aqueduct and the Dos Amigos Pumping Plant facilities, surrounded by multiple uses and inconsistent forms, such as the freeway, utility infrastructure, and water tower. Other land uses interrupt continuity of vegetation and intactness is low, with irregular low shrubs and grasses with grasslands and patchwork of crops and orchards. The variety of components results in a less-than-coherent view, with linear features (i.e., I-5, transmission lines, and the California Aqueduct), strong vertical features (i.e., a prominent water tower near the center of the view), and other utility infrastructure (i.e., Dos Amigos Pumping Plant facilities, Mercy Springs Substation, and the Vega Solar Project) visible.

4.1.3 Environmental Impacts

This section contains the visual resources impact analysis for the Project. It explains the methods used to determine the impacts of the Project, lists the thresholds used to conclude whether an impact would be significant, and provides measures to mitigate significant impacts.

4.1.3.1 Methodology

This assessment of the Project's potential impacts on visual resources was conducted through a review of applicable planning documents, site reconnaissance and photography, production of visual simulations, and the application of the FHWA Visual Impact Assessment for Highway Projects methodology, as found in the Project's Visual Resources Assessment, provided in Appendix B of this Draft EIR. This evaluation depends on the assessment of the landscape's visual quality under existing conditions and the changes

in visual quality with implementation of the Project. Visual quality ratings range from very high to very low and incorporate landscape assessment concepts applied by FHWA (FHWA 1988).

The inventory of viewpoints included three components: (1) identification and photo-documentation of viewing areas and viewpoints (field work was completed September 2022 by Stantec), (2) evaluation of visual sensitivity of viewpoints, and (3) an evaluation of the Project's visibility from the final KOPs. Assessments of existing visual conditions were made based on professional judgment that took into consideration the following conditions: visual quality, viewer groups and viewer sensitivity, and visual character.

During the field survey, images were photographed using a >10-megapixel digital single lens reflex camera equipped with a 50-millimeter fixed focal length lens. This configuration is the de facto standard that approximates the proportion seen by the human eye. The camera positioning was determined with a sub-meter differentially corrected global positioning system (GPS). The camera was leveled at eye-level for each photograph.

The visual simulations provide clear before-and-after images of the location, scale, and visual appearance of the features affected by and associated with the Project. The simulations were developed through an objective analytical and computer modeling process and are accurate within the constraints of the available site and alternative data (a three-dimensional computer model was created using a combination of AutoCAD files and geographic information system [GIS] layers and exported to Autodesk's three-dimensional Studio Max for production). Design data—consisting of engineering drawings, elevations, site and topographical contour plans, concept diagrams, and reference pictures—were used as a platform from which digital models were created. In cases where detailed design data were unavailable, more general descriptions about alternative facilities and their locations were used to prepare the digital models.

Rating sheets identifying contrast between existing and proposed conditions as seen from each KOP are included in Appendix A of the Project Visual Resources Assessment (provided in Appendix B of this Draft EIR). Landscape components related to visual character and quality are based on selected concepts from the FHWA Visual Impact Assessment (VIA) for Highway Projects method (FHWA 2015).

4.1.3.2 Thresholds of Significance

In accordance with the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to aesthetics are significant. Would the Project:

- Have a substantial adverse effect on a scenic vista?
- Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?
- In nonurbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings?

- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

4.1.3.3 Evaluation of Visual Impacts

This section summarizes potential impacts to visual quality and character with the implementation of the Project based on changes to views toward the Project site from KOP 1, KOP 2, and KOP 3.

KOP 1: Northbound I-5

Figure 4.1-2b shows the view from KOP 1 with the Project simulated. With addition of the Project, solar panels would be visible across the view in the middle ground, becoming the view's most memorable feature. While appearing similar in form and color to the existing solar panels in the background, a greater portion of the landscape would become visibly mechanized in appearance, with additional lands in view appearing occupied by renewable energy development instead of appearing in their current, generally natural state. Though appearing to encroach on the fallowed lands beyond the aqueduct, the presence of clearly identifiable solar arrays across the entire view would slightly enhance observable intactness. Contrast between existing and proposed conditions would be further evident where the color throughout the view's middle ground would appear darker and textured by the repeated rows of mounted panels. Viewers typically traveling at high speeds along this segment of northbound I-5 would experience visibility of the Project at close proximity for a relatively short period of time. In north- and east-facing views from points further to the south from this KOP, the Project would be seen as a portion of a broader, mostly fallow agricultural landscape. The presence of one existing use would appear markedly enhanced, though other nearby uses would remain identifiable in views, retaining the moderately low unity of the existing view. The visual quality of the view from KOP 1 with the Project would remain moderately low.

KOP 2: Dos Amigos Pump Station Vista Point

Figure 4.1-3b shows the view from KOP-2 with the Project simulated. With the Project, the view would include the dark, flat plane of the solar arrays not dissimilar to the surface of the aqueduct that is in the immediate foreground. The vertical forms of its utility infrastructure would be evenly spaced poles progressing northward from the Project site to its point of interconnection, and its battery energy storage system (BESS) components, visible as a cluster of low, white rectilinear structures. The Project would be visible beyond the foreground, atop a fallowed field that appears more natural or undeveloped in current views. The expansion of the area occupied by solar panels would appear consistent with the visual character of the existing solar panels that are set within the valley landscape, and their dark gray color would relate to the freeway corridor while contrasting with the Project site's more immediate surroundings. The Project would appear to be generally absorbed into the existing agricultural landscape. Along the closer side of the Project site, partially obscured by the aqueduct levee, the upper portions of the BESS structures and the operations and maintenance (O&M) buildings would be visible, slightly reducing intactness. Viewers typically stopped at the vista point would likely be utilizing the view to the pump station to the northeast, and would also experience the Project at relatively close proximity, but it would likely be viewed as an expansion of an already existing area of utility infrastructure, encroaching into a currently fallow agricultural portion of the valley and would not obscure views of the pump station. Multiple uses remain visible, though the Project would make solar power generation the more dominant of them,

and unity would remain moderately low. The visual quality of the view from KOP-2 with the Project would remain low, with multiple uses and their varying visual characteristics evident.

KOP 3: Southbound I-5

Figure 4.1-4b shows the view from KOP 3 with the Project simulated. The Project would appear much as it would from KOP 2, except that viewers would be closer to the Project from this portion of I-5 and the solar panels would therefore be more vivid in views. The expansion of the area occupied by solar panels would appear consistent with the visual character of the existing solar panels that are set within the valley landscape, and their dark gray color would relate to the freeway corridor while contrasting with the Project site's more immediate surroundings. The addition of the Project would slightly enhance the intactness. Viewers typically traveling at a high speed along this segment of southbound I-5 would notice the Project, but it would likely be viewed as an expansion of an already existing area of utility infrastructure, encroaching into a currently fallow agricultural portion of the valley, and unity would remain low. The visual quality of the view from KOP 3 with the Project would remain low, with multiple uses and their varying visual characteristics competing for dominance within the view.

4.1.3.4 Project Impacts

This section discusses potential impacts on aesthetics associated with the Project and provides Mitigation Measures where necessary. Construction-related activities would not constitute permanent impacts to aesthetic resources, and as such, construction activities are considered temporary effects as addressed in the discussion of potential impacts below. When the Project ceases operation, the facilities would be decommissioned and dismantled over 12 months and would include removal of above- and below-ground structures, as well as site reclamation activities. Accordingly, decommissioning-related activities would have similar temporary visual impacts as construction-related activities.

Scenic Vista

Impact AES-1 The Project would not have a substantial adverse effect on a scenic vista.

Scenic vistas are typically expansive views from elevated areas. They may or may not be part of a designated scenic overlook or other area providing a static vista of a landscape. There are no designated scenic vistas in the Project vicinity, though the Dos Amigos Pump Station Vista Point (KOP 2) affords views of water conveyance infrastructure within the broader rural and agricultural landscape identified in the Merced County General Plan Natural Resources Element as a scenic resource. In sustained, elevated views of the San Joaquin Valley and the agricultural lands in the middle ground and background from the KOP 2 vantage point, the Project site would appear within the valley floor, alongside an area already developed with solar projects and other utility infrastructure. Further, even with development of the Project, the visual quality of the view from the vista point would remain low. The Project would appear to be generally absorbed into the existing agricultural landscape. Viewers typically stopped at the vista point would experience the Project at relatively close proximity, but it would likely be viewed as an expansion of an already existing area of utility infrastructure, encroaching into a currently fallow agricultural portion of the valley and would not obscure views of the pump station from the vista point. The

Project would not substantially alter this or any other elevated, expansive view toward San Joaquin Valley. As such, the Project would not have a substantial adverse effect on a scenic vista and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Scenic Resources Within a State Scenic Highway

Impact AES-2 The Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

There are no officially designated state scenic highways in the Project area. The Project site is undeveloped and does not contain historic buildings, trees or rock outcroppings. When viewed from I-5, the project would appear visually consistent with existing solar development in the vicinity. Thus, the project would not substantially damage scenic resources within a state scenic highway. No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Visual Character

Impact AES-3 The Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

The Project is located within the San Joaquin Valley in the southern portion of unincorporated Merced County, surrounded mostly by agricultural land. It is bordered on the west by I-5 and grazing foothill pasture beyond I-5. The valley landscape consists of agricultural land and sparse rural development, with

some utility-scale solar energy facilities and associated infrastructure. Publicly accessible views toward the Project would generally be from I-5 and local roadways adjacent to the broader Project footprint (KOP 1 and KOP 3), and from Dos Amigos Pump Station Vista Point (KOP 2). The existing visual quality of views surrounding the Project site are low or moderately low.

Construction

Construction activities associated with the Project would create temporary changes in views of the Project site, including the introduction of workers and construction equipment. The addition of construction vehicles, equipment, and worker vehicles would create visible contrast within the rural setting of the Project site. However, construction activities would be temporary and would be limited to active areas of construction as opposed to the entirety of the Project site. Accordingly, the visual effects associated with construction vehicles, equipment, and workers would be limited and impacts to existing visual character or quality of the Project site and surrounding area would be less than significant.

Operation

Once constructed, the Project would be most visible to viewers when viewed at eye-level and within proximity, as shown in the simulated view for KOP 1, which shows the Project as near as 0.2 mile away. KOP 2 and KOP 3 are located further away from the Project compared to KOP 1 (between 0.5 mile and 0.75 mile, respectively). However, the project would still be visible from further away, appearing as a linear feature or distinct polygon across all or part of the valley floor. In the views from KOPs 1 and 3, the Project would appear alongside the developed Vega Solar Project. While appearing similar in form and color to the existing solar panels in the background of the view, a greater portion of the landscape would become visibly mechanized in appearance, with additional lands in view appearing occupied by renewable energy development. However, the Project would appear consistent with existing uses and would not substantially degrade the existing visual character or quality of public views.

The Project would change the appearance of the site from an area that is currently fallow agricultural lands to an area that is developed with solar facilities. This change would represent a change in the visual character of the site; however, the visual quality of the existing view is low or moderately low and the addition of the Project would likely be viewed within the context of an already existing area of utility infrastructure, encroaching on fallow agricultural land. Therefore, the Project would introduce a low degree of change in local visual quality. This impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Light or Glare

Impact AES-4 The Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Construction

Construction would occur during daylight hours; however, additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities in accordance with applicable Merced County standards. Some activities may continue 24 hours per day, seven days per week. Nighttime activities could potentially include but are not limited to refueling equipment, staging material for the following day's construction activities, quality assurance and control, and commissioning.

During any nighttime construction, lighting would be designed to provide the minimum illumination needed to achieve safety and security. The lights would be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. Unless there were a known risk to the Project, lighting would be placed into motion detection mode at night to limit illumination at night when not required. Therefore, construction of the Project would result in less than significant impacts to nighttime views.

Operation

Once operational, the Project would not include any source of substantial nighttime lighting. Any lighting required for safety and security within the Project area would be shielded and directed away from public rights-of-way. Lighting would be designed to provide the minimum illumination needed to achieve safety and security.

There currently is no source of substantial daytime glare within the Project site. The Project would introduce a new potential source of glare from the reflective portions of the solar panel arrays. A Glare Hazard Analysis was prepared for the Project, which broke the array into three separate blocks (Blocks 1-3) to analyze the whole site. Fifteen observation points on nearby roads, including State Highway 165 and northbound and southbound segments of I-5, were analyzed for glare. In addition, linear route analysis was performed for extended lengths of each of the three road segments (3 miles for State Highway 165 and approximately 5 miles for each I-5 segment). Analysis input parameters included a maximum tracking angle of 60 degrees and use of smooth textured glass with anti-reflective coating.

Each block was analyzed with a combination of 5-foot and 9-foot vehicle heights; with 6-foot and 12-foot panel heights. No glare was predicted for any observation points or routes for any height combinations for any portion of the blocks that formed the entire project site. Additionally, incorporation of low-reflective materials such as coating on solar panels or galvanized steel on gen-tie structures would help minimize reflectivity and glint or glare associated with the project. Similar to the nearby Vega Solar Project, the Project is expected to result in little glare. Therefore, the Project would not create a new source of substantial light or glare in the area that would affect daytime or nighttime views in the area, and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.1.3.5 PG&E Interconnection Infrastructure

As described in Chapter 2.0, Project Description, PG&E would construct the Project's interconnection facilities. Activities would include the installation of the gen-tie line and fiber optic line terminal equipment and one circuit breaker at the existing PG&E Mercy Springs Substation. The Mercy Springs substation is already developed and the interconnection improvements would not change the industrial character of the site, degrade the existing visual character or quality of the area, or result in additional lighting or sources of glare. Impacts would be less than significant.

4.1.3.6 Cumulative Impacts

The geographic scope of cumulative impacts for aesthetics includes the viewshed of the area surrounding the Project site from which the Project is, or could be, visible to viewers in the foreground, middleground, or background.

Cumulative impacts could occur where Project facilities are viewed in combination with other past, present, and future developments in the same viewshed. Of the cumulative projects listed in Chapter 4.0, Environmental Impact Analysis, there are no planned or proposed projects that would be visible within the foreground, middleground, or background of the Project. The Vega Solar Project, which is completed and operational, is located in the middleground, and the Project's facilities and solar panels would cumulatively contribute to the view in the middleground. Although the addition of the Project to views that include the Vega Solar Project would increase the visual dominance of solar panels in views, the visual quality of the views would remain low or moderately low and the solar panels would be generally absorbed into the existing agricultural landscape. The Project would not produce lighting or glare effects that would be problematic in the viewshed when combined with other projects. Therefore, the Project would not result cumulatively considerable impact to visual resources, and impacts would be less than significant.

4.2 AGRICULTURE AND FORESTRY RESOURCES

This section describes the impacts on agricultural resources that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations related to agriculture, and an analysis of environmental impacts of the Project on agricultural resources. Where applicable, mitigation measures are included for significant impacts. The County received one scoping comment from the California Department of Conservation (DOC) pertaining to agriculture and forestry resources. The comment letter requests for the EIR to consider the type, amount, and location of farmland conversion; impacts on agriculture operations in the vicinity of the Project; cumulative impacts on agricultural land; and proposed mitigation measures (Appendix A). Accordingly, an Agricultural Land Conversion Study was completed for the Project. The Agricultural Land Conversion Study incorporated the points-based Land Evaluation Site Assessment (LESA) method for rating the relative importance of agricultural lands based upon specific quantifiable elements to analyze the Project's potential impacts to agricultural lands, specifically lands identified as Prime Farmland. The Agricultural Land Conversion Study and associated LESA modeling worksheets are provided in Appendix D of this Draft EIR.

4.2.1 Regulatory Setting

4.2.1.1 Federal

No federal regulations pertaining to agricultural resources apply to the Project.

4.2.1.2 State

California Land Conservation Act (Williamson Act)

The Land Conversion Act of 1965 (also known as the Williamson Act) is a statewide program that allows property owners to enter into contracts with local governments to maintain their land in agricultural production. The purpose of the Williamson Act is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. In return, the landowners receive property tax assessments based on farming and open space uses, as opposed to full market value, thus resulting in a lower tax burden. All contracts are for a term of ten years and automatically renew each year unless a Notice of Non-Renewal or Cancellation is filed (California Department of Conservation [DOC] 2023a).

The County Assessor's office is responsible for the assessment and administration of the Williamson Act. The Assessor's office annually updates the taxable values and responds to information inquiries by property owners, prospective property owners, real estate agents, etc. In 2008, the state's subvention (i.e., tax reimbursement) monies available for implementation of the Williamson Act were reduced by ten percent due to the state budget; and from 2009 forward, the subvention funds were essentially eliminated.

Participation in the Williamson Act program is dependent on a county's willingness to adopt and implement the program. In July 2000, pursuant to the Williamson Act, the Merced County Board of Supervisors adopted Local Rules of Procedures, a Fee Schedule Policy, a Contract Template, and established an Agricultural Preserve boundary, thereby creating a local voluntary, differential tax

assessment program to preserve agricultural lands. In August 2009, the Board of Supervisors determined that it would not accept any new land under Williamson Act Contract as a result of state action to reduce by 50 percent subvention payments to the County.

Farmland Mapping and Monitoring Program

The DOC established the Farmland Mapping and Monitoring Program (FMMP) in 1982. The FMMP is a non-regulatory program and provides a consistent and impartial evaluation of agricultural land use and land use changes throughout California (DOC 2023b). The FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural lands are rated according to soil quality and irrigation status. The FMMP's Important Farmland map categories include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, and Other Land. FMMP maps are updated every two years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. The DOC is currently several years behind in preparing new FMMP maps with updated land designations. The last complete update to the FMMP maps was prepared in 2018 with the corresponding 2018 Important Farmland (IFL) data. The DOC has started rolling out the updated 2020 FMMP maps with 2020 FMMP maps being available for several, but not all, counties in the State.

The FMMP categories are defined as:

- **Prime Farmland** is defined by the FMMP as farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. Prime Farmland 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 in the four years prior to the mapping date to qualify as Prime Farmland.

- **Farmland of Statewide Importance** is defined by the FMMP as farmland similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date to qualify as Farmland of Statewide Importance.

- **Unique Farmland** is defined by the FMMP as farmland of lesser quality soils, but which is still 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 to qualify as Unique Farmland.

- **Farmland of Local Importance** is defined by the FMMP as land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

- **Grazing Land** is defined by the FMMP as land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

- **Urban and Built-Up Land** is defined by the FMMP as land occupied by structures with a building density of at least one unit per 1.5 acres, or approximately six structures to a ten-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land** is defined by the FMMP as land not included in any other mapping category. Common examples include low-density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant land and non-agricultural land surrounded on all sides by urban development and greater than 40 acres is also mapped as Other Land.

California Public Resources Code

The California Public Resources Code (PRC) defines forest land, timberland, and timberland production zones as the following:

PRC Section 12220(g): "Forest land" is land that can support ten-percent native tree cover of any species, including hardwoods, under natural conditions, and that slows for management of one or more forest resources, including: timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

PRC Section 4526: "Timberland" means land, other than land owned by the federal government and land designed by the Board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.

PRC Section 51104(g): "Timberland production zone" or "TPZ" means an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h). With respect to the general plans of cities and counties, "timberland preserve zone" means "timberland production zone".

As identified in the 2030 Merced County General Plan (2030 General Plan) EIR, no forest land, timberland, or timberland production areas, as zoned by applicable state regulations, exists within Merced County (Merced County 2013a).

4.2.1.3 Local

2030 Merced County General Plan

The Agricultural Element of the 2030 General Plan provides the policy context for the County to achieve its vision for the protection, preservation, and expansion of productive agriculture. The 2030 General Plan sets out goals, policies, and programs related to agricultural resources. The following 2030 General Plan policies and programs are applicable to the Project (Merced County 2013b):

Goal LU-2: Preserve, promote, and expand the agricultural industry in Merced County.

- **Policy LU-2.5: Agricultural Support Facilities.** Allow consideration of locating characteristically-specific commercial and industrial uses in rural areas in limited cases based on the unique nature of the use and for health and safety reasons, which require location on large parcels or in sparsely populated areas. In addition, consider the following criteria during the Conditional Use Permit review process:

  a) The use requires location in a rural area because of one or more of the following characteristics: unusual site area requirements, natural resource production purposes, the use is directly agricultural related, or because of specific operational characteristics which pose a health or safety problem to urban populations.

  b) The use is located near or readily accessible to a probable work force.

  c) The use is consistent with the intent and policies of the Agricultural, Natural Resources, and Health and Safety Elements.

  d) The use will not significantly impact adjacent agricultural, recreational, natural, cultural, wildlife, or other identified Natural Resources Element.

  e) The use is protected from hazards identified in the Health and Safety Element.

  f) The use is not located on productive agricultural land when nonproductive agricultural land is available in the vicinity of the proposed project.

  g) The use is limited in size, time of operation, or length of permit authority where necessary to ensure compatibility with adjacent land uses.

  h) The use shall not have a detrimental effect on surface or groundwater resources.

  i) The use shall provide adequate infrastructure and improvements to reduce impacts on County services.

  j) The use shall have access to adequate transportation facilities without creating abnormally high traffic volumes and shall provide road improvements to mitigate impacts generated by the project.

- **Policy LU-2.7: Rural Energy Production.** Allow the development of ethanol production, co-generation, solar, and wind facilities in Agricultural and Foothill Pasture areas that produce renewable energy, support agricultural-related industries, and/or use agricultural waste, provided that such uses do not interfere with agricultural practices or conflict with sensitive habitats or other biological resources.

Goal AG-2: Ensure the long-term preservation and conservation of land used for productive agriculture, potentially productive agricultural land, and agricultural-support facilities.

Goal AG-3: Minimize conflicts between productive agricultural areas and urban land uses and discourage the parcelization and conversion of large agricultural holdings into rural residential parcels or urban uses.

- **Policy AG-3.11: Solar and Wind Energy Production Facilities.** Encourage the installation of solar and wind energy production facilities in agricultural areas so long as they do not result in a tax burden to the County, do not result in permanent water transfers off of productive agricultural land, do not require cancellation of Williamson Act contracts, and do not conflict with sensitive habitats or other biological resources. In addition, approval of such facilities shall require dedications of agricultural land and habitat mitigation when impacts to these resources have been determined to be significant pursuant to CEQA, measures to control erosion, and assurances for financing decommissioning activities.

Merced County Right-to-Farm Ordinance

The County's Right-to-Farm Ordinance is administered by the County's Planning Department and has been in place since 1986. The ordinance addresses the problem of the encroachment of urban growth on adjacent agricultural operations by seeking to reduce the opposition of residential neighbors to the nuisances created by commercial farming. The ordinance is an educational and disclosure measure, not a regulatory requirement. It informs purchasers of property about the local importance of agriculture, and the possible negative impacts and inconveniences of locating residences near normal farm operations. It requires a disclosure of the importance and protection of agriculture in the residential development process, when subdivisions or parcel splits are approved and building permits are issued. The disclosure is passed on to future property buyers through the title process.

Merced County Code

Chapter 9.30 of the Merced County Code implements the agricultural land conservation policies contained in the Merced County General Plan related to permanently protecting agricultural land within the County. Pursuant to section 9.30.030, conversion to a non-agricultural or non-agricultural related use of any productive agricultural land with an agricultural designation or zoning as the result of approval of a discretionary application requires mitigation. Further, as mitigation for the conversion of productive agricultural land, the applicant shall arrange for the imposition of an agricultural conservation easement on no less than one acre of mitigation land for each acre of land proposed for conversion. The applicant shall convey, or arrange for the conveyance of, such agricultural easement to a qualified entity. The mitigation land shall be of equivalent quality to the land proposed for conversion, as provided in section 9.30.050. Under section 9.30.020, "Agricultural land" means land that is either currently in agricultural use or substantially undeveloped and capable of agricultural use. "Productive agricultural land" means land designated "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" by the State Department of Conservation as shown on their latest Important Farmland Map, prepared in accordance with the Farmland Mapping and Monitoring Program. Finally, section 9.30.040 provides alternative mitigations options for purposes of mitigating the conversion of productive agricultural land.

4.2.2 Environmental Setting

This section presents information on the conditions of agricultural resources in and around the project area. The regional setting provides information on the baseline conditions in the project region. The project setting describes baseline conditions in the study area for the Project.

4.2.2.1 Regional

The Project is located in western Merced County, approximately nine miles southwest of the City of Los Banos. Agriculture is the prominent economic segment in the County and accounts for more than 90 percent of all land area within the County. Merced County is ranked fifth among all counties in California and sixth in the nation in the annual market value of farm products (Merced County 2013b).

According to the FMMP, approximately 33,487 acres of agricultural land uses in the County were converted to urbanized uses between 1992 and 2018 (DOC 2018). During this period, the County lost 9,400 acres of land designated as Important Farmland by the FMMP. The FMMP and the County define Important Farmland as lands designated by the FMMP as Prime Farmland, Unique Farmland, Farmland of Statewide Important, and Farmland of Local Importance (Merced County 2013a). Total agricultural land in the County decreased by 2.8 percent and Important Farmland decreased by 1.6 percent during this time.

Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre) developed area to the south housing a cell tower and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 miles northwest of the Project site, respectively. Additionally, the California Aqueduct and U.S. I-5 run parallel to the southwest Project boundary about 300 feet and 800 feet to the west of the Project site, respectively.

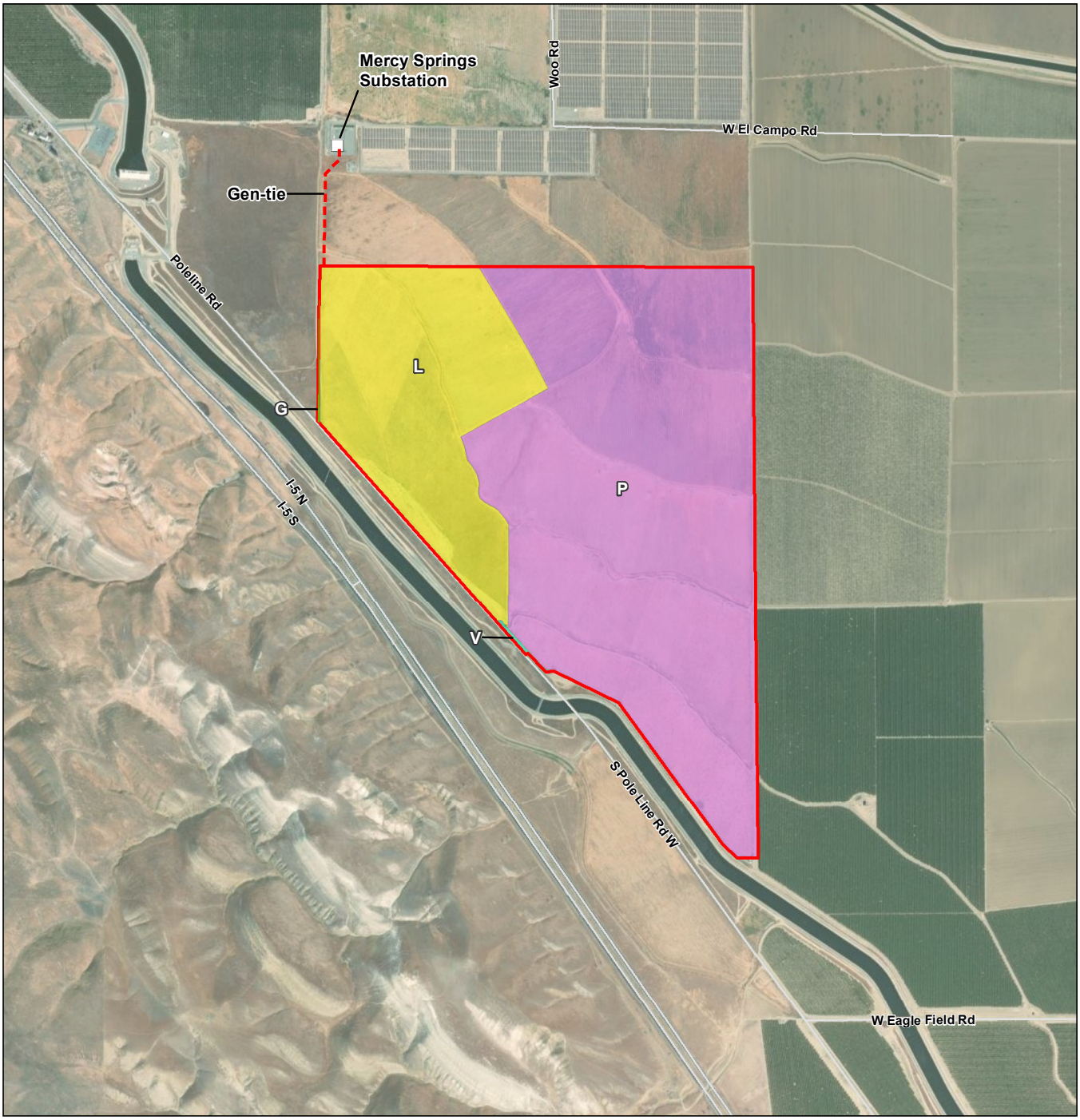
4.2.2.2 Project Site

The Project site is designated Agricultural by the 2030 General Plan and zoned Exclusive Agricultural (A-2). There has been no agricultural production on the site for over ten years. The landowner bought the land in 2010, and the land was not economically productive at the time of purchase. The following year, the landowner entered into a Restrictive Covenant Prohibiting Irrigation with the San Luis Water District (SLWD), and the land has not been irrigated since that time. From 2012 to 2018, dryland plants were planted on the Project site as a weed-control measure, but these plants were not irrigated. The land laid fallow for three years between 2018 and 2020 until neighbors alerted the landowner of weeds blowing over to the neighboring properties. To mitigate the concern, the landowner brought in grazing sheep and goats in 2021 as a weed-control measure.

According to the latest IFL data from 2018, the Project site consists of 462.01 acres of Prime Farmland, 185.47 acres of Farmland of Local Importance, 0.65 acre of Grazing Land, and 1.77 acres of Vacant or Disturbed Land. Figure 4.2-1 depicts FMMP farmland types in the Project site.

Although the Project site is partially designated as Prime Farmland under the 2018 maps, based on more recent information received from conversations with the DOC and its review of site conditions, described

herein, the Project site's agricultural designation is expected to change over the next several years such that no portion of the Project site will be designated as Prime Farmland (Michael Kisko, personal communication, February 24, 2023).





Project Area (649.92 acres)
Gen-tie
Mercy Springs Substation

Farmland Type

P: Prime Farmland (462.01 ac.)
L: Farmland of Local Importance (185.47 ac.)
G: Grazing Land (0.65 ac.)
V: Vacant or Disturbed Land (1.77 ac.)

Source: Farmland Mapping and Monitoring Program, California Department of Conservation, Division of Land Resource Protection, June 2023

0 0.25 0.5 Miles
1:24,000
(At original document size of 8.5x11)

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-08
TR by JW on 2024-07-09

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.2-1

Title
Important Farmland

V:\1185\Active\185705411\03_data\gis_cad\gis\mxd\AgConversion\CEQA\Fig4.2-1_ImportantFarmland.mxd Revised: 2024-07-08 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

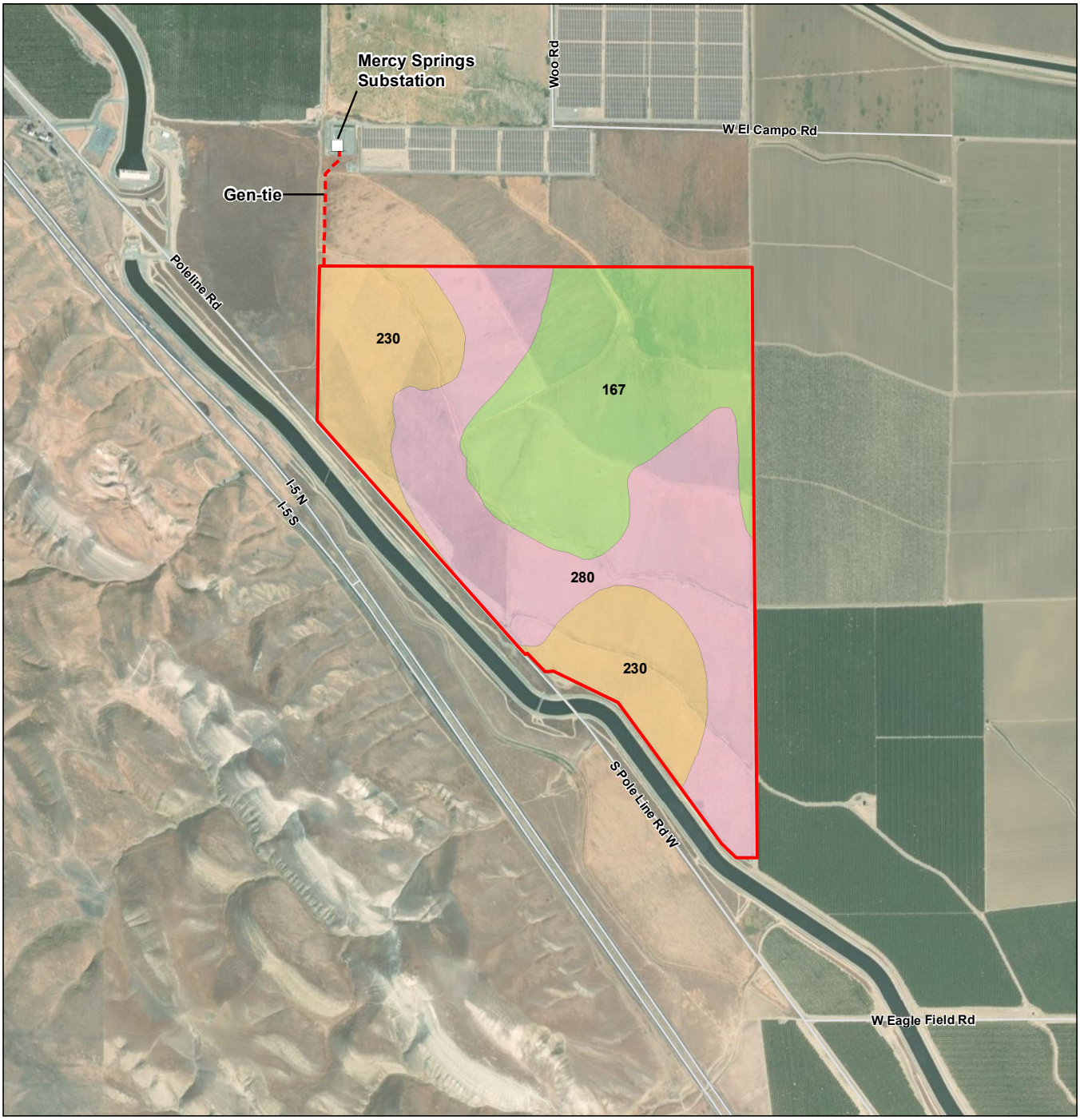
As provided above, for land to qualify as Prime Farmland, the land must have been used for irrigated agricultural production at some time in the four years prior to the mapping date. Accordingly, the currently designated Prime Farmland on the Project site may be reclassified if it has been fallow for four years from the last map update. As identified through coordination with the DOC, in 2016 the southern portion of the area classified as Prime Farmland showed a lack of irrigation. In addition, in 2018 both the southern and northern portions of the area classified as Prime Farmland showed a lack of irrigation. All currently designated Prime Farmland on the site has remained unirrigated and fallow for over four years since the last map update (which occurred in 2018). Therefore, the DOC has indicated it will be removing the Prime Farmland designation from Project site if the site remains unirrigated and fallow. DOC expects to re-designate the southern portion of the classified land in its ongoing update based on 2020 data, and the northern portion in the following update based on 2022 data (Michael Kisko, personal communication 2023) in the 2020 and 2022 maps.

There is currently no access to irrigation water on the Project site. There are 40 unmaintained ditch segments and culverts on-site and a non-producing and unmaintained well. In 2011, the landowner entered into a non-irrigation covenant with the water district, and the site has not been irrigated since that time. This agreement prohibits agricultural irrigation into perpetuity. The site's rights to water allocations from the SLWD have been indefinitely transferred to the SLWD to distribute to other water users. The restrictive covenant can be terminated by written notice, but any water allocation to the site would be limited based on the water district's resources available at that time.

The Project site is located within the County's agricultural preserve but is not under a Williamson Act Contract. An Agricultural Preserve Amendment would be required to remove the parcels from the agricultural preserve and allow for development of the Project. The Project site does not contain any land defined as forest land (as defined by PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or land zoned Timberland Production (as defined by GC Section 51104(g)).

Soil Classification

According to the Natural Resources Conservation Service's (NRCS's) Web Soil Survey, an online database maintained by the U.S. Department of Agriculture, the Project site soils consist of 223.54 acres of Deldota clay, 161.99 acres of Paver clay loam, and 264.37 acres of Woo clay (Figure 4.2-2). Note that much of the Project site is on the Deldota soil type, a partially drained soil which is considered drainage impaired. In addition, all soils on the Project site are formed in clays deposited in marine environments, which are typically high in salinity. As identified in the USDA's Soil Survey of Merced County, most of the alluvial soils in the area are to some degree saline, sodic, or saline-sodic, and many saline, sodic, and saline-sodic soils in the area are very poorly drained, poorly drained, or somewhat poorly drained (USDA 1990). Agricultural benefit from these soils is largely dependent on the development of drainage and flushing of native salts. The massive salt discharges associated with these soils have led to the need for covenants to restrict irrigation in the area to reduce salinity impacts on the water system.





Project Area (649.92 acres)
Gen-tie
Mercy Springs Substation

Soil Type

167 - Deldota clay, partially drained (223.54 ac.)
230 - Paver clay loam, 2 to 5 percent slopes (161.99 ac.)
280 - Woo clay, 0 to 2 percent slopes (264.37 ac.)

Source: U.S. Dept. of Agriculture, Natural Resources Conservation Service, SSURGO Soils Database, Aug. 2022

0 0.25 0.5 Miles
1:24,000
(At original document size of 8.5x11)

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-08
TR by JW on 2024-07-09

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.2-2

Title
USDA Soils

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\AgConversion\CEQA\Fig4.2-2_Soils.mxd Revised: 2024-07-08 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Within California, land must meet at least one of five specified criteria in order to qualify as Prime Agricultural Land (California GC 51201). The five specified criteria are as follows:

1. All land that qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability classifications.

2. Land which qualifies for ratings of 80 through 100 in the Storie Index Rating.

3. Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture.

4. Land planted with fruit- or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars per acre.

5. Land which has returned from the production of unprocessed agricultural plant products with an annual gross value of not less than two hundred dollars per acre for three of the previous five years.

The soils on the Project site do not meet any of the five criteria.

The Land Capability Classification (LCC) rating is based on the suitability of on-site soils for growing crops. The LCC rating includes eight classes of soil designations (identified as Class I through Class VIII), with soils identified as “Class I” having the fewest limitations, and soils designated as “Class VIII” being the least suitable for cropland. The soils on the Project site have a non-irrigated LCC rating of Class IV. Soils in Class IV have very severe limitations that restrict the choice of plants or that require very careful management, or both.

The Storie Index is a semi-quantitative method of rating soils for irrigated agricultural use based on crop productivity data. It assesses soil productivity based on four characteristics: Factor A, the degree of soil profile development; Factor B, texture of the surface layer; Factor C, slope; and Factor X, other soil and landscape conditions and manageable features, including drainage, alkalinity, fertility, acidity, erosion, and microrelief. A score between 0 and 100 is determined for each factor, and then the scores are multiplied together to generate an index rating. The Storie Index Ratings range from Grade 1 – Excellent to Grade 5 – Very Poor. Deldota clay is in Grade 5 – Very Poor with a Storie Index value of 15. Woo clay is in Grade 3 – Fair with a Storie Index value of 50. Paver clay loam is in Grade 2 – Good with a Storie Index value of 70. The Paver clay loam has a best-case condition Storie Index of 83; however, this soil at the Project site is slightly saline, and its productivity requires additional management and irrigation above typical crop requirements. As identified in the USDA’s Soil Survey of Merced County, generally the western portion of the Central Valley, where the project site is located, is developed in such soils that have high salinity in groundwater and most of the alluvial soils in the area are saline, sodic, or saline-sodic and are very poorly drained, poorly drained, or somewhat poorly drained (USDA 1990). Therefore, a Storie Index of 70 was calculated by adjusting Factor X to the middle value associated with “slightly alkali affected” and used for the purposes of the LESA modeling completed for the Project to provide a

more accurate analysis. In summary, the soils on the Project site are not considered Prime for agricultural production.

4.2.3 Environmental Impacts

This section analyzes the Project's potential to result in significant environmental impacts related to agricultural resources. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.2.3.1 Methodology

The Project's impacts on agricultural lands were evaluated through the use of the LESA model. The LESA model provides an analytical approach for rating the relative quality of land resources based on specific measurable features. Factors considered by the LESA model include soils, site acreage, water availability, and surrounding land uses. The results of the LESA model were analyzed in the Agricultural Land Conversion Study prepared for the Project, as provided in Appendix D, of this Draft EIR. In addition, the 2030 General Plan was reviewed to provide context of existing and historical agricultural production.

4.2.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to agricultural resources would be significant.

Would the project:

- 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?
- Conflict with existing zoning for agricultural use, or a Williamson Act Contract?
- 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)?
- Conflict with existing zoning for, or cause rezoning of forest land (as defined in PRC section 12220(g)) or timberland (as defined in PRC section 4526) or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?
- Result in the loss of forest land or conversion of forest land to non-forest use?

4.2.3.3 Project Impacts

This section discusses potential impacts on agriculture associated with the Project and provides mitigation measures where necessary.

Convert Important Farmland to Non-Agricultural Use

Impact AG-1 The Project would not convert Prime, Unique, or Farmland of Statewide Importance to a non-agricultural use.

The Project involves the construction and operation of a photovoltaic (PV) solar and Battery Energy Storage System (BESS) facility. The Project would affect the agricultural land on the Project site for the duration of the life of the project, which is expected to be 40 years, and would then restore the land to its current state as part of project decommissioning.

The construction and operation of the proposed facility would result in conversion of approximately 462 acres of land currently designated under the FMMP as Prime Farmland to a non-agricultural use. However, Prime Farmland is defined as land that must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. There has been no agricultural production on the site for over ten years. The landowner bought the land in 2010, and the land was not productive at the time of purchase. The following year, the landowner entered into a Restrictive Covenant Prohibiting Irrigation with the SLWD, and the land has not been irrigated since that time. From 2012 to 2018, dryland plants were planted on the Project site as a weed-control measure, but these plants were not irrigated. The land laid fallow for three years between 2018 and 2020 until the landowner brought in grazing sheep and goats in 2021 as a weed-control measure.

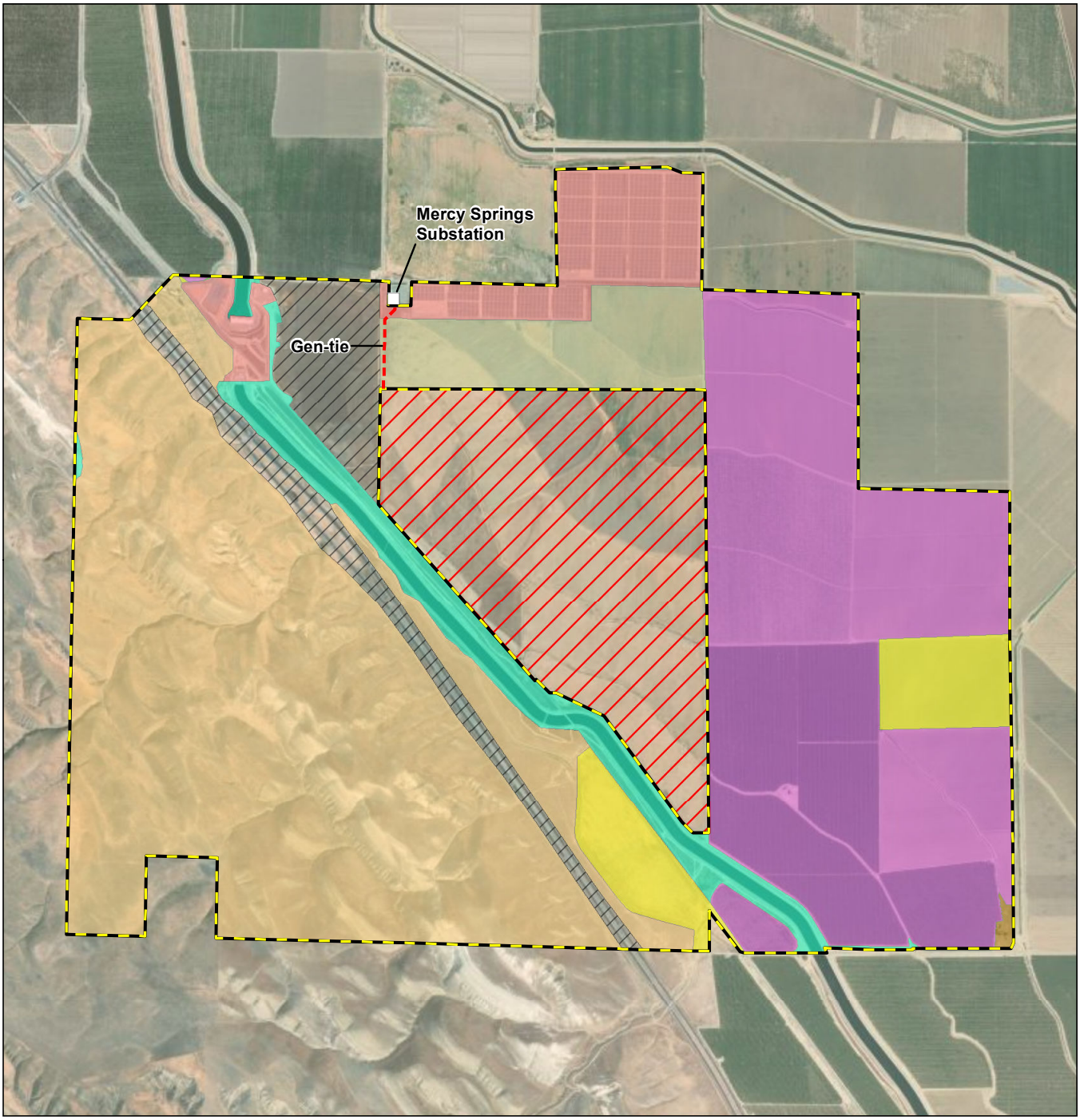
As identified through coordination with the DOC, in 2016 the southern portion of the area classified Prime Farmland showed a lack of irrigation. In addition, in 2018 both the southern and northern portions of the area classified as Prime Farmland showed a lack of irrigation. All currently designated Prime Farmland on the site has remained unirrigated and fallow for over four years since the last map update (which occurred in 2018). Therefore, the DOC has indicated it will be removing the Prime Farmland designation from Project site if the site remains unirrigated and fallow. DOC expects to re-designate the southern portion of the classified land in its ongoing update based on 2020 data, and the northern portion in the following update based on 2022 data (Michael Kisko, personal communication, February 24, 2023) in the 2020 and 2022 maps. By the time the Project is approved for construction, it is anticipated that no Prime Farmland will remain on the Project site or be affected by construction. The proposed gen-tie line would occur within a dedicated utility easement.

California Land Evaluation and Site Assessment Model

The California LESA model is designed to assess the significance of a Project's conversion of agricultural land. Loss of agricultural land has typically involved conversion to permanent urban uses, and the LESA model has generally been used to evaluate that type of potential impact. The Project would affect the agricultural land on the Project site for 40 years.

The LESA model is composed of six factors, each of which is separately rated on a 100-point scale. Two land evaluation factors are based on measures of soil resource quality. Four site assessment factors provide measures of a project's size, water resource availability, surrounding agricultural lands (Figure 4.2-3), and surrounding protected resource lands (Figure 4.2-4). The factors are weighted relative to each other and combined into a final single numeric score for the project, which has a maximum value of 100

points. Any project with a score of more than 40 points may be considered a significant conversion of agricultural land, depending on the values of the subscores. The LESA model uses two subscores to determine whether a LESA score of more than 40 points would be considered a significant impact.





Source: Farmland Mapping and Monitoring Program, California Department of Conservation, Division of Land Resource Protection, October 2021

- Project Area (649.92 acres)
- Gen-tie
- Mercy Springs Substation
- Zone of Influence (3,493.83 acres)

Farmland Type

- Prime Farmland (1,058.36 ac.)
- Farmland of Local Importance (169.07 ac.)
- Unique Farmland (0.07 ac.)
- Grazing Land (1,439.01 ac.)
- Semi-Agricultural and Rural Commercial Land (5.28 ac.)
- Fallow Agricultural Land (184.25 ac.)
- Vacant or Disturbed Land (203.03 ac.)
- Urban and Built-up Land (203.45 ac.)
- Other Land (231.30 ac.)

0 0.25 0.5 Miles
1:32,000
(At original document size of 8.5x11)

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-08
TR by JW on 2024-07-09

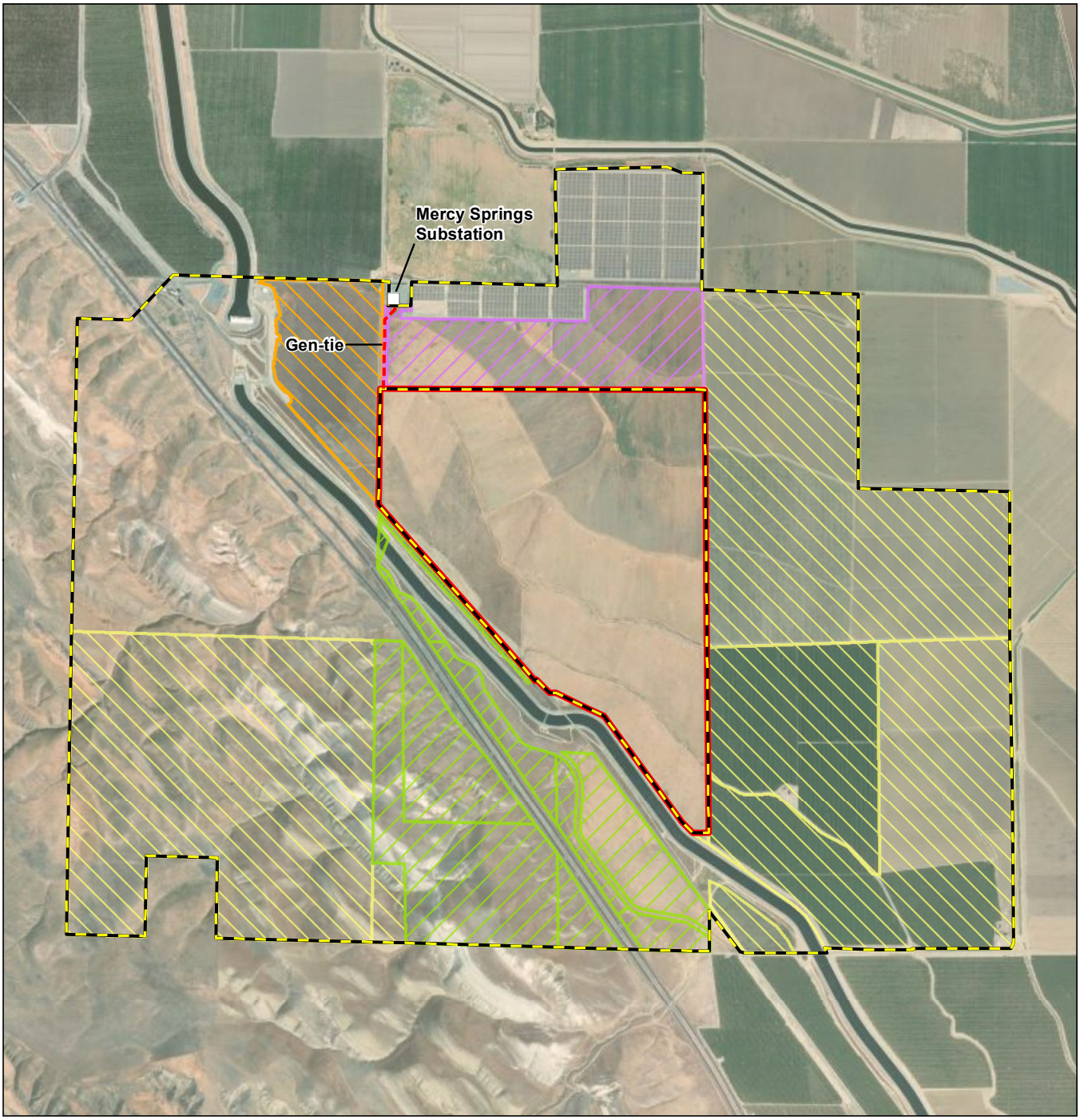
Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.2-3

Title
Zone of Influence

V:\1857\Active\185705411103_data\gis_cad\gis\mxd\AgConversion\CEQA\Fig4.2-3_ZoneOfInfluence.mxd Revised: 2024-07-08 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.





- Project Area (649.92 acres)
- Gen-tie
- Mercy Springs Substation
- Zone of Influence (3,493.83 acres)
- CDFW Wildlife Area (122.78 acres)
- Conservation Easement** (180.59 acres)

Agricultural Preserves

- Williamson Act Land (418.65 acres)
- Other Agricultural Preserve Land (1,768.49 acres)

* Source: California Natural Resources Agency, California Conservation Easement Database, December 2022
** Source: County of Merced Assessors Department, August 2022.

0 0.25 0.5 Miles
1:32,000
(At original document size of 8.5x11)

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-08
TR by JW on 2024-07-09

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.2-4

Title
Protected Resource Lands

V:\1857\Active\185705411103_data\gis_cad\gis\mxd\AgConversion\CEQA\Fig4.2-4_ProtectedResourceLands.mxd Revised: 2024-07-08 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

The Land Evaluation (LE) subscore is calculated through a combination of the LCC score and Storie Index score. The Site Assessment (SA) subscore is calculated through a combination of the project size score, water resources availability score, surrounding agricultural land use score, and protected resource lands score. The scoring thresholds for the California LESA are listed in Table 4.2-1. Table 4.2-2 summarizes the LESA model score results for the Project site. Based on the analysis, the final LESA score for the Project site is 39.86, which means that the Project's conversion of agricultural land is not considered significant. (See Appendix D for the California LESA Model Scoring Worksheet used in this analysis.)

Table 4.2-1. California LESA Model Scoring Thresholds

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

Source: DOC 1997

Table 4.2-2. California LESA Model Scoring Results for the Project Site

Factors	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability Classification	42.49	0.25	10.62
Storie Index	42.95	0.25	10.74
LE Subscore		*0.50*	*21.36*
SA Factors			
Project Size	100	0.15	15
Water Resource Availability	0	0.15	0
Surrounding Agricultural Land	0	0.15	0
Surrounding Protected Resources Land	70	0.05	3.5
SA Subscore		*0.50*	*18.5*
Final LESA Score			**39.86**

Source: Appendix D

Because the LESA methodology considers soil conditions, Project site size, available water resources, surrounding agricultural lands, and surrounding protected resources lands to determine an agricultural conversion score, DOC's anticipated reclassification of the Project site to remove the Prime Farmland classification would not necessarily change the results of the LESA score, as the model inputs would remain the same. Therefore, with the redesignation of the Project site to Farmland of Local Importance, the LESA score for the project would continue to be 39.86 and would not result in a significant impact. DOC's proposed downgrading of the Project site from Prime Farmland to Farmland of Local Importance further supports the LESA's conclusions that the Project would not result in significant impacts on agricultural resources.

The LESA modeling completed for the Project determined that development of the Project would not result in significant impact to agricultural resources. Although portions of the Project site are designated Prime Farmland, the land does not meet the definition of Prime Farmland under the FMMP. There has been no agricultural production on the site for over ten years, and there is currently no access to irrigation water on the Project site. The Project site has been under a non-irrigation covenant with the water district since 2011, and the site has not been irrigated since that time. This agreement prohibits agricultural irrigation into perpetuity. The site's rights to water allocations from the SLWD have been indefinitely transferred to the SLWD to distribute to other water users. Additionally, by the time the Project is approved for construction, it is anticipated that no Prime Farmland will remain on the Project site or be affected by construction.

2030 Merced County General Plan Policies AG-3.11 and LU-2.5

The 2030 General Plan includes Policy AG-3.11, Solar and Wind Energy Production Facilities, which encourages the installation of solar and wind energy production facilities in agricultural areas so long as they do not result in a tax burden to the County, do not result in permanent water transfers off of productive agricultural land, do not require cancellation of Williamson Act contracts, and do not conflict with sensitive habitats or other biological resources. In addition, approval of such facilities shall require dedications of agricultural land when impacts to these resources have been determined to be significant pursuant to CEQA. The Project would be consistent with this policy. The Project would be privately financed and would pay property taxes over the life of the Project and would not result in a tax burden to the County. The Project would provide Merced County, as well as the State of California, with a renewable energy source that would assist the State of California in complying with the Renewable Portfolio Standards under Senate Bill 100 and other similar renewable and reliability programs in the state. Although the Project site is subject to a non-irrigation covenant entered into with the SLWD, the water rights transfer under the covenant did not result from the Project. The Project site is not located on land currently under Williamson Act contract and, thus, the Project does not require cancellation of Williamson Act contracts. Additionally, the Project would not result in significant adverse impacts to agricultural land, as described above, and would not conflict with sensitive habitats or other biological resources (see Section 4.4, Biological Resources).

Similarly, under General Plan Policy LU-2.5, the County may approve industrial uses in rural areas through approval of a CUP, taking into account a variety of factors, including unusual site area requirements, natural resource production purposes, and impacts to agricultural, recreational, natural, cultural, wildlife, or other identified natural resources, and impacts to groundwater resources. The Project is consistent with this policy, as the Project is located in a rural area near existing transmission infrastructure and is a type of natural resource extraction use that requires large areas of undeveloped land for purposes of constructing solar arrays to capture solar energy. Further, as discussed above, there has been no agricultural production on the Project site for more than ten years, the Project's LESA score indicates that impacts to agricultural land would be less than significant, and it is anticipated that no Prime Farmland will remain on the Project site at the time of construction. Finally, as explained in Sections 4.4, 4.5, 4.10, and 4.13 of this Draft EIR, the Project would not result in significant impacts to recreational, natural, cultural, wildlife, or other identified natural resources, or impacts to groundwater resources. Therefore, the Project would comply with the provisions within the 2030 General Plan's Agriculture and

Land Use Elements regarding the siting of a solar energy facility on agricultural land. An Agricultural Preserve Amendment would be required to remove the parcels from the agricultural preserve and allow for development of the Project.

Based on the LESA, the lack of irrigation on the Project site for over ten years, and the Project's consistency with General Plan Policies AG-3.11 and LU-2.5, the Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use. Impacts would be less than significant, and no mitigation is required.

Merced County Code Chapter 9.30 imposes mitigation requirements for the conversion of any "productive agricultural land," which is defined as "lands designated Prime Farmland, Farmland of Statewide Importance, and Unique Farmland by the State Department of Conservation as shown on their latest Important Farmland Map." As discussed above, the Project site has not been used for irrigated agricultural production for over ten years and, therefore, does not qualify as "productive agricultural land," even though a portion of the site currently is designated as Prime Farmland, a designation which is to be removed as confirmed by DOC. Further, General Plan Policy AG-3.11, which specifically applies to solar development on agricultural land, only requires mitigation in the event that impacts to agriculture are significant under CEQA. As impacts are less than significant, no mitigation is required.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Conflict with Existing Zoning or Williamson Act Contract

Impact AG-2 The Project would not conflict with existing zoning for agricultural use or a Williamson Act contract.

Agricultural Zoning

The Project site is designated Agricultural by the 2030 General Plan and zoned Exclusive Agricultural (A-2). The purpose of the A-2 Zoning District is to provide for areas with considerable expanded agricultural enterprises, due mainly to the requirement of large parcels which are more economically suitable to support family activities. Energy generation facilities for offsite energy use are allowed in the A-2 Zoning District with the approval of a Conditional Use Permit (CUP). Further, the Merced County General Plan encourages the development of solar energy while protecting the environment. Therefore, with approval of a CUP, development of the Project would be compatible with applicable land use policies and regulations, and impacts would be less than significant related to conflicts with existing zoning for agricultural use.

Williamson Act Contracts

According to the County's records, no parcels under Williamson Act contracts are currently located on the Project site (Merced County 2023). Therefore, the Project would not conflict with an existing Williamson Act contract.

The Project would not conflict with existing zoning for agricultural use or a Williamson Act contract and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Pressures to Convert Farmland to Non-Agricultural Use

Impact AG-3	**The Project would not involve other changes in the existing environment that, due to their location or nature, would result in conversion of Farmland to non-agricultural use (or conversion of forest land to non-forest use).**

The Project may cause changes to the existing environment that could result in conversion of Farmland outside the Project site boundary to non-agricultural use. Farmland conversion is caused primarily by urbanization; other chief causes for the loss of Farmland include development of low-density rural residences and ecological restoration projects, such as wetlands and wildlife habitat. The Project does not fall in any of these categories and would not result in any new infrastructure that could promote growth or remove development barriers. Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre), developed area to the south housing a cell tower, and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 mile northwest of the Project site, respectively. The Project's gen-tie line would interconnect to the existing Mercy Springs Substation that would serve as the Project's point of interconnection to the grid. Although the Project would require upgrades to the Mercy Springs Substation to support interconnection of the gen-tie line, the upgrades would not increase the capacity of the substation or promote additional development near the substation.

During construction, disturbance to the Project site would result from installation of solar panels, staging areas, roads, and other structures. Vehicle emissions and traffic may increase on nearby roadways, which could affect crops and farm operations on nearby farms. However, any impacts would be temporary

and would cease once the construction is completed. The Project would also comply with applicable dust control regulations, which would further minimize any temporary impacts.

Changes in the existing environment could affect agricultural production on adjacent agricultural parcels by limiting the agricultural feasibility of these lands. In general, the conversion of agricultural land to non-agricultural uses such as residential uses could potentially reduce the agricultural feasibility of adjacent agricultural parcels by placing restrictions and limitations on the use of pesticides, fungicides, and herbicides; increasing traffic levels and vehicle emissions along adjacent transportation routes, which could affect crop delivery times and crop health and survival; and encouraging water competition between existing agricultural operations and new land uses, which could ultimately reduce the share dedicated to farmers. However, the Project would not include residential or other sensitive uses. Operation of the Project would require only a small number of employees that are anticipated to be drawn from the local labor force and would not result in substantial increases in traffic levels and vehicle emissions in the area. There would be no conflict between the Project and the adjacent agricultural parcels as a result of these nearby agricultural operations applying pesticides, fungicides, and herbicides to their crops. Lastly, the Project would require water to clean the solar PV panels, provide water to staff in the O&M office, and for herbicide application. As described in Section 4.16, Utilities and Service Systems, there is sufficient water supply is available to serve the project as proposed.

Once operational, the Project would be generally passive in nature and would not include any physical improvements or operational characteristics that would affect nearby agricultural operations. The presence of solar panels on the Project site would not result in an incentive to convert neighboring farmland to similar solar generation projects because of the limitation in capacity to tie into the Mercy Springs Substation.

The Project would not include the extension of roadways or utility infrastructure to an area not already served by existing roadways and utility infrastructure. Therefore, the Project would not result in construction of any new infrastructure that could promote growth or remove development barriers. Additionally, as noted below, the Project site does not contain any forest land, and the 2030 General Plan EIR indicates that forest land areas do not exist within the County (Merced County 2013b). Therefore, the Project would not result in other changes in the existing environment that would result in the conversion of Farmland to non-agricultural uses or forest land to non-forest use, and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Forest Land Zoning

Impact AG-4 **The Project would not conflict with existing zoning for, or cause rezoning of forest land (as defined in PRC section 12220(g)) or timberland (as defined in PRC section 4526) or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).**

As identified above, the Project site is designated Agricultural by the 2030 General Plan and zoned A-2. The Project site is not zoned forest land or timberland, and forestry and timberland uses are not permitted under the Project site's existing designation. Additionally, the 2030 General Plan EIR identifies that forest land, timberland, and timberland production areas do not exist within the County (Merced County 2013a). Therefore, development of the Project would not result in a conflict with existing zoning for, or cause rezoning of, forest land or timberland. There would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Loss of Forest Land

Impact AG-5 **The Project would not result in the loss of forest land or conversion of forest land to non-forest uses.**

The Project site is designated Agricultural by the 2030 General Plan and zoned Exclusive Agricultural (A-2) and does not allow forest land uses onsite. The 2030 General Plan EIR identifies that forest land areas do not exist within the County (Merced County 2013a). Therefore, development of the Project would not result in the loss of forest land or conversion of forest land to non-forest uses and there would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

4.2.3.4 PG&E Interconnection Infrastructure

Pacific Gas and Electric Company (PG&E) would construct the Project's interconnection facilities for the Project. PG&E would incorporate upgrades to the Mercy Springs Substation to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches. PG&E improvements are anticipated to occur within areas previously disturbed and occupied by existing electrical facilities. As PG&E's proposed upgrades are anticipated to occur within areas previously disturbed and already occupied by existing facilities, they would not result in impacts to agricultural land or forestry resources. No mitigation would be required specific to the PG&E interconnection infrastructure and impacts would be less than significant.

4.2.3.5 Cumulative Impacts

The geographic scope of the cumulative impact analysis for agricultural resources is the extent of the County. As identified above, the Project would have a less than significant impact on agricultural resources. The Project site does not currently support agricultural uses and its potential use for agricultural production is limited. Although portions of the Project site are designated Prime Farmland, the land does not qualify for that classification as it has not been irrigated for over 10 years. DOC further confirmed that it is anticipated that no Prime Farmland will remain on the Project site or be affected by construction.

The list of related projects that could potentially result in cumulative impacts is presented in Table 4.0-3 in Chapter 4.0, Environmental Impact Analysis. Cumulative projects not located on agricultural land, or located on non-productive agricultural land, would not result in significant impacts to agricultural uses, similar to the Project. To the extent any cumulative projects would convert productive agricultural land to non-agricultural uses, they would be required to preserve an equal amount of productive agricultural land through a conservation easement in accordance with County Code Chapter 9.30, which would reduce potential impacts.

Overall, projects that convert agricultural land to non-agricultural land would disrupt agricultural operations but would not preclude agricultural activities in the area. The Project would result in the conversion of non-productive agricultural land to non-agricultural uses; however, the Project site would remain zoned as agricultural and the Project is consistent with General Plan policies encouraging solar development and with the agricultural zoning district with approval of a CUP. Additionally, development of the Project would not disrupt nearby agricultural operations and activities as the Project would not result in other changes in the existing environment that would result in the conversion of offsite Farmland to non-agricultural uses. As identified above under Impact AG-1, the Project's conversion of Farmland to non-agricultural uses would not result in a significant impact. Therefore, cumulative impacts would be less than significant and the Project's contribution to cumulative impacts would not be cumulatively considerable.

4.3 AIR QUALITY

This section provides an analysis of air quality impacts that would result from development of the Project. Included in this section is the overall regulatory framework for air quality management in California and the region, a description of the existing air quality conditions in the Project vicinity, and an analysis of the impacts related to air quality. Where applicable, mitigation measures are included for significant impacts. The County received a scoping comment letter from the San Joaquin Valley Air Pollution Control District (SJVAPCD) pertaining to air quality conditions in the district and project-related emissions (Appendix A). These comments are incorporated accordingly into the EIR and Air Quality and Greenhouse Gas Impact Assessment prepared for the Project (Appendix E).

4.3.1 Regulatory Setting

The agencies with regulatory authority over air emissions in the County are the United States Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the SJVAPCD. The USEPA has established federal air quality standards for which CARB and SJVAPCD have primary implementation responsibility. CARB and SJVAPCD are also responsible for seeing that state air quality standards are met within the region.

4.3.1.1 Federal

U.S. Environmental Protection Agency

At the federal level, the USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the Clean Air Act (CAA), which was signed into law in 1970. Congress substantially amended the CAA in 1977 and 1990.

Clean Air Act

The CAA requires USEPA to establish National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2) (which is a form of NOx), SO_2 (which is a form of SOx, particulate matter 10 microns or smaller in diameter (PM_{10}), particulate matter 2.5 microns or smaller in diameter ($PM_{2.5}$), and lead (Pb). The USEPA sets federal vehicle and stationary source emission standards and oversees approval of all State Implementation Plans (SIP), as well as provides research and guidance for air pollution programs. The SIP is a state level document that identifies all air pollution control programs within California that are designed to meet NAAQS. The NAAQS are summarized in Table 4.3-1.

USEPA has also adopted technology-based standards which limit the emissions of criteria pollutants from new or modified facilities in specific source categories. These standards are referred to as New Source

Performance Standards (NSPS) and are found in 40 Code of Federal Regulations (CFR) Part 60. The applicability of these standards depends on the equipment size or rating; material or fuel process rate; and/or the date of construction, modification, or reconstruction.

Table 4.3-1. California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Primary	National Standards Secondary
Ozone	1 hour	0.09 ppm (180 µg/m^3)	—	—
	8 hours	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)
Respirable particulate matter	24 hours	50 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual arithmetic mean	20 µg/m^3	—	—
Fine particulate matter[2]	24 hours	—	35 µg/m^3	35 µg/m^3
	Annual arithmetic mean	12 µg/m^3	9 µg/m^3	15 µg/m^3
Carbon monoxide	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen dioxide	1 hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur dioxide	1 hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m^3)
	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas)	—
	Annual arithmetic mean	—	0.030 ppm (for certain areas)	—
Lead	30-day average	1.5 µg/m^3	—	—
	Calendar quarter	—	1.5 µg/m^3	1.5 µg/m^3
	Rolling 3-month average	—	0.15 µg/m^3	0.15 µg/m^3
Visibility reducing particles	8 hours	See Footnote[1]	—	—
Sulfates	24 hours	25 µg/m^3	—	—
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m^3)	—	—
Vinyl chloride	24 hours	0.01 ppm (26 µg/m^3)	—	—

Source: California Air Resources Board. 2016. Ambient Air Quality Standards.
Note:
[1] In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction at 0.23 per kilometer" and "extinction at 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.
[2] On February 7, 2024, the USEPA issued a pre-publication version of the Final Rule to lower the primary annual NAAQS for $PM_{2.5}$ from 12.0 µg/m^3 to 9.0 µg/m^3.
Key:
µg/m^3 = micrograms per liter; mg/m3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million

National Emission Standards for Hazardous Air Pollutants

Pursuant to the CAA of 1970, USEPA established NESHAP. These are technology-based source-specific regulations that limit allowable emissions of HAPs. Among these sources include asbestos-containing building materials (ACBM). NESHAPs include requirements pertaining to the inspection, notification, handling, and disposal of ACBMs associated with the demolition and renovation of structures.

Non-Road Diesel Rule

The USEPA has established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. Any new construction equipment used for the Project, including heavy duty trucks and off-road construction equipment, are required to comply with the emissions standards.

4.3.1.2 State

California Air Resources Board

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) of 1988. Other CARB duties include monitoring air quality in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards (CAAQS) which—in many cases—are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, type of vehicle, fuel, and type of engine used. The CAAQS are set to be protective of human health and are summarized in Table 4.3-1. These standards apply to the same criteria pollutants as the federal CAA and also include sulfates, visibility reducing particulates, hydrogen sulfide, and vinyl chloride. There are currently no NAAQS for these latter pollutants.

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O_3, CO, sulfur dioxide (SO_2), and NO_2 by the earliest practical date. The CCAA specifies that districts focus attention on reducing the emissions from transportation and area-wide emission sources and provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors; or (2) provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment must consider both state and federal planning requirements.

Assembly Bills 1807 and 2588 – Toxic Air Contaminants

Within California, toxic air contaminants (TACs) are regulated primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987).

AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC.

Existing sources of TACs that are subject to AB 2588 are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

Assembly Bill 617 – Nonvehicular Air Pollution

In response to AB 617 (Nonvehicular Air Pollution), CARB established the Community Air Protection Program. This program includes community air monitoring and a community emissions reduction program that focuses on reducing exposure in communities most impacted by air pollution. The California Legislature has appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these communities and provided grants to support community participation in the AB 617 process. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased penalty fees, and greater transparency and availability of air quality and emissions data.

Regulatory Attainment Designations

Under the CCAA, CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An “attainment” designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An “unclassified” designation signifies that the data does not support an attainment nor nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

USEPA designates areas for O_3, CO, and NO_2 as “does not meet the primary standards,” “cannot be classified,” or “better than national standards.” In addition to these designations, for SO_2, areas include a designation of “does not meet the secondary standards.” However, CARB terminology of attainment, nonattainment, and unclassified is more frequently used. USEPA uses the same subcategories for nonattainment status: serious, severe, and extreme. In 1991, USEPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for fugitive dust, PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated as unclassified.

Low-Emission Vehicle Program and Zero-Emission Vehicle Program

CARB first adopted low-emission vehicle (LEV) program standards in 1990. The first LEV program standards ran from 1994 through 2003. LEV II regulations, from 2004 through 2010, represented continuing progress in emission reductions. As the state’s passenger vehicle fleet continues to grow and

more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 SIP. In 2012, CARB adopted LEV III amendments to California's LEV regulations. These amendments include more stringent emission standards for both criteria pollutants and greenhouse gases (GHGs) for new passenger vehicles. (Note: GHGs are further discussed in Section 4.8 of this Draft EIR).

The Advanced Clean Cars II (ACC II) regulation builds on the Advanced Clean Cars (ACC) rule adopted in 2012. ACC II decreases emissions by increasing electric vehicle (EV) sales via two programs. First, the Zero-Emission Vehicle (ZEV) program requires ZEVs, defined as battery-electric vehicles (BEVs) or fuel-cell-electric vehicles (FCEVs), to comprise an increasing portion of annual vehicle sales. Under the ZEV program, original equipment manufacturers must increase sales of ZEV vehicles from 35 percent in 2026 to 100 percent in 2035. Second, ACC II further strengthened the LEV program discussed above, with more stringent emission standards beginning with model year 2025.

On-Road Heavy Duty Vehicle Program

CARB has adopted standards for emissions from various types of new on-road heavy duty vehicles. Section 1956.8, Title 13, CCR contains California's emission standards for on-road heavy duty vehicles and test procedures (CARB 2024a). CARB has also adopted programs to reduce emissions from in-use heavy duty vehicles, including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, the School Bus Program, and others.

In addition, CARB's truck and bus regulation was established to meet federal attainment standards. This regulation requires heavy duty diesel vehicles that operate in California to reduce TAC emissions from their exhaust. Diesel exhaust is responsible for 70 percent of the cancer risk from airborne toxics. Therefore, as of January 1, 2023, nearly all trucks and buses are required to have year 2010 or newer model engines to reduce PM and NOx emissions. To help ensure that the benefits of this regulation are achieved, starting in 2020, only vehicles compliant with this regulation were registered by the California Department of Motor Vehicles (CARB 2024b).

Advanced Clean Truck Act

To reduce emissions, the Advanced Clean Truck Act (ACT) requires original equipment manufacturers of medium- and heavy-duty vehicles to sell ZEVs or near-zero-emissions vehicles (NZEVs), such as plug-in electric hybrids, at an increasing percentage of their annual sales from 2024 to 2035. A ZEV is a vehicle that produces zero tail-pipe emissions, including BEVs and hydrogen fuel cell vehicles. A NZEV is a vehicle with an internal combustion engine and an electric energy storage system, including plug-in hybrid vehicles and hydrogen internal combustion engine vehicles. The ACT includes a cap-and-trade system, capping the number of fossil fuel vehicles sold by stipulating annual sales percentage requirements. Manufacturers can comply with the ACT by generating compliance credits through the sale of ZEVs or NZEVs or through the trading of compliance credits.

California State Implementation Plan

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register.

California Renewables Portfolio Standard Program

Established in 2002 under SB 1078 and accelerated by SB 107 (2006) and SB 2 (2011), California's Renewable Portfolio Standard (RPS) required investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent of their electricity from renewable energy sources by 2020. In 2015, SB 350 further increased the RPS to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) are jointly responsible for implementing the program. PG&E is on track to meeting these obligations, and currently delivers 93 percent GHG emissions free clean energy with the plan to be net zero by 2040 and climate positive (carbon negative) by 2050 (PG&E 2022). SB 100, signed into law in September 2018, requires California utilities to increase the percentages of renewable energy sold to retail customers. The new targets are for 50 percent renewable resources by December 31, 2026, 60 percent by December 31, 2030, and 100 percent from eligible renewable energy resources and zero-carbon resources by 2045.

4.3.1.3 Regional

San Joaquin Valley Air Pollution Control District

Current Air Quality Plans

SJVAPCD is responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the San Joaquin Valley Air Basin (SJVAB). The main purpose of an AQMP is to bring the area into compliance with federal and state air quality standards. SJVAPCD addresses each criteria pollutant with its own AQMP. The SJVAPCD has the following AQMPs:

a) 2004 Revision to the California State Implementation Plan for Carbon Monoxide

b) 2007 PM10 Maintenance Plan

c) 2013 Plan for the Revoked 1-Hour Ozone Standard

d) 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards

e) 2022 Plan for the 2015 8-Hour Ozone Standard

f) 2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard

SJVAPCD's AQMPs incorporate the latest scientific and technological information and planning assumptions, including updated emission inventory methodologies for various source categories. The SJVAPCD's AQMPs included the integrated strategies and measures needed to meet the NAAQS, implementation of new technology measures, and demonstrations of attainment of the 1-hour and 8-hour O_3 NAAQS as well as the latest 24-hour and annual $PM_{2.5}$ (i.e., fine particulate matter 2.5 microns or smaller in diameter) standards.

The SJVAPCD's current air quality plans are discussed below.

- **Carbon Monoxide Plans.** CARB approved the 2004 Revision to the California State Implementation Plan for Carbon Monoxide on July 22, 2004 to demonstrate how ten areas of the state, including SJVAB, would maintain CO standards.

- **Ozone Plans.** The SJVAPCD adopted the 2022 Plan for the 2015 8-Hour Ozone standard in December 2022 to meet CAA requirements and ensure attainment of the USEPA's 8-hour ozone threshold of 70 ppb. In June 2023, SJVAPCD adopted the 2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard to request redesignation of the SJVAB to attainment for the 1-hour federal ozone standard and demonstrate a maintenance plan to ensure attainment through 2036.

    - SJVAQMD's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The comprehensive strategy in this plan will reduce NOx emissions by over 60 percent between 2012 and 2031 and will bring the San Joaquin Valley into attainment of USEPA's 2008 8-hour O_3 standard as expeditiously as practicable, no later than December 31, 2031.

- **Particulate Matter Plans.** The USEPA designated the SJVAB as an attainment/maintenance area for PM_{10} and non-attainment for $PM_{2.5}$. SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007 to help ensure SJVAB's continued attainment of the USEPA's PM_{10} standard. The SJVAPCD's most recent $PM_{2.5}$ attainment plan is the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards. This plan was adopted in 2018 and addresses the USEPA federal 1997 annual $PM_{2.5}$ standard of 15 µg/m³ and 24-hour $PM_{2.5}$ standard of 65 µg/m³; the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³; and the 2012 annual $PM_{2.5}$ standard of 12 µg/m³. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable.

San Joaquin Valley Air Pollution Control District Rules and Regulations

SJVAPCD rules and regulations that may apply during buildout of the Project include, but are not limited to, the following:

- **Rule 2010 – Permits Required.** The purpose of this rule is to require any person constructing, altering, replacing, or operating any source which emits, may emit, or may reduce emissions to

obtain an Authority to Construct or a Permit to Operate. This rule also explains the posting requirements for a Permit to Operate and the illegality of a person willfully altering, defacing, forging, counterfeiting, or falsifying any Permit to Operate.

- **Rule 2201 – New and Modified Stationary Source Review Rule**. The purpose of this rule is to provide for the following:
  - The review of new and modified stationary sources of air pollution and to provide mechanisms including emission trade-offs by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards; and
  - No net increase in emissions above specified thresholds from new and modified stationary sources of all nonattainment pollutants and their precursors.
- **Rule 2280 – Portable Equipment Registration**. Portable equipment used at project sites for less than six consecutive months must be registered with SJVAPCD. The SJVAPCD will issue the registrations 30 days after receipt of the application.
- **Rule 4002 – National Emission Standards for Hazardous Air Pollutants.** This rule incorporates the NESHAP from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAP for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, CFR.
- **Rule 4102 – Nuisance.** The purpose of this rule is to protect the health and safety of the public, and it applies to any source operation that emits or may emit air contaminants or other materials.
- **Rule 4601 – Architectural Coatings.** The purpose of this rule is to limit ROG emissions (also called Volatile Organic Compound [VOC] emissions) from architectural coatings. Emissions are reduced by limits on ROG content and providing requirements on coatings storage, cleanup, and labeling.
- **Rule 4623 – Storage of Organic Liquids.** The purpose of this rule is to limit ROG emissions from the storage of organic liquids.
- **Rule 4624 – Transfer of Organic Liquids.** The purpose of this rule is to limit ROG emissions from the transfer of organic liquids.
- **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations.** The purpose of this rule is to limit ROG emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.
- **Rule 8011 – General Requirements, Fugitive Dust Emission Sources.** Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For projects in which construction-related activities would disturb equal to

or greater than 1 acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD-approved Dust Control Plan or Construction Notification Form, before issuance of the first grading permit, be made a condition of approval.

- **Rule 9510 – New 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 NOx emissions and 45 percent below statewide average PM_{10} exhaust emissions. This rule also requires applicants to reduce baseline emissions of NOx and PM_{10} emissions associated with operations by 33.3 percent and 50 percent, respectively, over a period of 10 years (SJVAPCD 2005).

- **Regulation VIII – Fugitive PM_{10} Prohibitions.** Rules 8011 through 8081 are designed to reduce PM_{10} emissions (e.g., dust or dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules. Specifically, pursuant to Rule 8021, non-residential projects that disturb more than 5 acres during construction are required to prepare and comply with a Dust Control Plan. The Project would be subject to this rule.

- **SJVAPCD California Environmental Quality Act Guidance and Thresholds.** SJVAPCD also provides guidance and thresholds for CEQA air quality and GHG analyses. In particular, SJVAPCD's 2015 Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) provides technical guidance for the review of air quality impacts from proposed projects within the boundaries of the SJVAPCD. The GAMAQI provides uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents. SJVAPCD also has adopted thresholds of significance for criteria air pollutants and TACs, which are presented in Section 4.3.3.2.

4.3.1.4 Local

2030 Merced County General Plan

The 2030 Merced County General Plan (2030 General Plan) (Merced County 2013) is a legal document that serves as Merced County's blueprint for future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers Merced County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the County's future development.

The 2030 General Plan contains the following goals and policies that are applicable to the Project:

- **Goal AQ-1.** Reduce air pollutants and GHG emissions and anticipate adaptation due to future consequences of global and local climate change.

    - **Policy AQ-1.1: Energy Consumption Reduction.** Encourage new residential, commercial, and industrial development to reduce air quality impacts from energy consumption.

- **Policy AQ-1.5: Climate Action Plan**. Prepare a Climate Action Plan that includes an inventory of 1990 and 2010 GHG emissions, determines project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD, and identifies strategies to achieve state emission reduction targets.
- **Policy AQ-1.6: Air Quality Improvement.** Support and implement programs to improve air quality throughout the County by reducing emissions related to vehicular travel and agricultural practices.
- **Policy AQ-1.8: Climate Change Adaptation.** Prepare appropriate strategies to adapt to climate change based on peer-reviewed scientific findings of the potential impacts.
- **Policy AQ-1.10: Public Awareness.** Increase public awareness about climate change and encourage County residents and businesses to become involved in activities and lifestyle changes that will aid in reduction of GHG emissions.

- **Goal AQ-2.** Mitigate significant local and regional air quality impacts of projects through the CEQA process.
  - **Policy AQ-2.1: Air Quality Plan Compliance.** Require all development projects to comply with applicable regional air quality plans and policies.
  - **Policy AQ-2.2: Development Review Process.** Use the development review process to achieve measurable reductions in criteria pollutants, TACs, and GHG emissions.
  - **Policy AQ-2.3: Cumulative Impacts.** Encourage the reduction of cumulative air quality impacts produced by projects that are not significant by themselves but result in cumulatively significant impacts in combination with other development.
  - **Policy AQ-2.4: Mitigation.** Require that local and regional air quality impacts identified during CEQA review for projects reviewed and approved by the County are consistently and fairly mitigated.
  - **Policy AQ-2.5: Innovative Mitigation Measures.** Encourage innovative mitigation measures and project redesign to reduce air quality impacts by coordinating with the SJVAPCD project applicants and other interested parties.
  - **Policy AQ-2.6: County Decision-Making Process.** Require climate change planning and program implementation in the County decision-making process.
  - **Policy AQ-2.7: Air District Best Performance Standards.** Require the County to use the Best Performance Standards adopted by the SJVAPCD during the development review and decision-making process to help ensure new projects meet the targets set by the district.

- **Goal AQ-5.** Protect County residents from toxic air pollutants and noxious odors from industrial, manufacturing, and processing facilities, and agricultural operations.

- **Goal AQ-6.** Improve air quality in Merced County by reducing emissions of PM_{10}, $PM_{2.5}$, and other particulates from mobile and non-mobile sources.

    - **Policy AQ-6.1: Particulate Emissions from Construction.** Support SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with state and federal regulations.

    - **Policy AQ-6.3: Paving Materials.** 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 AQ-6.8. Voluntary Emissions Reduction Agreement.** Require all project applicants, where project emissions for any criteria pollutant have been evaluated to exceed SJVAPCD significance thresholds, to consult with SJVAPCD regarding the establishment of a Voluntary Emissions Reduction Agreement between the Applicant and SJVAPCD. Support SJVAPCD in its efforts to fund the Emissions Reduction Incentive Program.

4.3.2 Environmental Setting

The Project is located within the SJVAB and the jurisdiction of SJVAPCD. Air pollution in the SJVAB can be attributed to both anthropogenic (i.e., human-related) and non-anthropogenic (i.e., natural) activities that can produce emissions. Air pollution from significant anthropogenic activities in the SJVAB include a variety of industrial-based sources and on- and off-road mobile sources (SJVAPCD 2015).

4.3.2.1 Regional Topography and Climate

The SJVAB has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (e.g., O_3), and the SJVAB averages over 260 sunny days per year. The SJVAB is generally shaped like a bowl: it is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada are along the eastern boundary and rise 8,000 to 14,000 feet; the Coast Ranges are along the western boundary, rising to 3,000 feet; and the Tehachapi Mountains are along the southern boundary at 6,000 to 8,000 feet in elevation (SJVAPCD 2015).

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the SJVAB form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Southeast Desert Air Basin portion of Kern County. As the wind moves through the SJVAB, it mixes with the air pollution generated locally, transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter (SJVAPCD 2015).

Strong temperature inversions occur throughout the SJVAB in the summer, fall, and winter. The result is a relatively high concentration of air pollution in the valley during inversion episodes. These inversions cause haziness, which in addition to moisture may include suspended dust, a variety of chemical aerosols emitted from vehicles, particulates from wood stoves, and other pollutants. In the winter, these conditions can lead to CO hotspots along heavily traveled roads and at busy intersections. During summer's longer

daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between ROG and NOx, which results in the formation of O_3 (SJVAPCD 2015).

Because of the prevailing daytime winds and time-delayed nature of O_3, concentrations are highest in the southern portion of the SJVAB. Summers often have periods of hazy visibility and occasionally unhealthful air. Winter air quality impacts tend to be localized and can consist of odors from agricultural operations; soot or smoke around residential, agricultural, and hazard-reduction wood burning; and dust near mineral resource recovery operations (SJVAPCD 2015).

4.3.2.2 Criteria Air Pollutants

Criteria air pollutants includes O_3, CO, NO_2, SO_2, Pb, $PM_{2.5}$ and PM_{10}. In addition, sulfates (SO_4), hydrogen sulfide (H_2S), vinyl chloride, and visibility reducing particles, are not considered criteria pollutants, but have CAAQS.

Ozone

Most ground-level O_3 is formed as a result of complex photochemical reactions in the atmosphere between ROGs, NOx, and oxygen. ROGs and NOx are considered precursors to the formation of O_3, a highly reactive gas that can damage lung tissue and affect respiratory function. O_3 can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms, such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Health effects include potential increased susceptibility to respiratory infections and reduced ability to exercise. Health effects are more severe in people with asthma and other respiratory ailments. While O_3 in the lower atmosphere is considered a damaging air pollutant, O_3 in the upper atmosphere is beneficial, as it protects Earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level O_3 from reaching the upper atmosphere (USEPA 2022a).

Carbon Monoxide

CO is a colorless, odorless, poisonous gas produced by the incomplete combustion of fossil fuels. Elevated levels of CO can result in harmful health effects, especially for the young and elderly, and can also contribute to global climate change (USEPA 2022a). When inhaled, CO enters the bloodstream and binds more readily to hemoglobin, the oxygen-carrying protein in blood, than oxygen, thereby reducing the oxygen-carrying capacity of blood and reducing oxygen delivery to organs and tissues. Exposure to CO can cause chest pain, headaches, and reduced mental alertness. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and, with prolonged enclosed exposure, death.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas primarily produced as a result of the burning of fossil fuels. NO_2 can also lead to the formation of O_3 in the lower atmosphere. NO_2 can cause respiratory ailments,

especially in the young and elderly, and can lead to degradations in the health of aquatic and terrestrial ecosystems (USEPA 2022a). Direct inhalation of NO_2 can cause a wide range of health effects, including irritation of the lungs, lung damage, and lowered resistance to respiratory infections, such as influenza. Other health effects associated with NO_2 include an increase in the incidence of chronic bronchitis and lung irritation.

Sulfur Dioxide

SO_2 is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. High concentrations of SO_2 can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis. Health effects from exposure to emissions of SO_2 include aggravation of lung diseases, especially bronchitis, and constricting of breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. Other health effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of particulate matter, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also contributes to acid rain, which in turn, can lead to the acidification of lakes and streams (USEPA 2022a).

Lead

Sources of Pb include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically over the years. Historically, the main source of Pb was automobile emissions. Pb can be inhaled directly or ingested by consuming Pb-contaminated food, water, or dust. Fetuses and children are most susceptible to Pb poisoning, which can result in heart disease and nervous system damage (USEPA 2022b). Through regulations, USEPA has gradually reduced the Pb content of gasoline. This program has essentially eliminated violations of the Pb standard in urban areas except those areas with Pb paint sources. Excessive exposure to Pb may cause neurological impairments, such as seizures, mental retardation, and behavioral disorders. Even at low doses, Pb exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ. Recent studies also show that Pb may be a factor in high blood pressure and subsequent heart disease. Pb can also be deposited on the leaves of plants, presenting a hazard to grazing animals and humans through ingestion (USEPA 2022b).

Particulate Matter

Airborne PM is not a single pollutant, but rather is a mixture of many chemical species. PM is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$) and is a subset of PM_{10}. Emissions from combustion of gasoline, oil, diesel fuel, or wood produce much of the $PM_{2.5}$ pollution found in outdoor air and a significant proportion of PM_{10}. PM_{10} also includes dust from construction sites, landfills and agriculture, wildfires and brush or waste burning, industrial sources, wind-blown dust from open lands, pollen, and fragments of bacteria.

PM may be either directly emitted from sources (primarily particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2, NOx, and certain organic compounds (USEPA 2022a).

PM_{10} and $PM_{2.5}$ particles are small enough—about one-seventh the thickness of a human hair or smaller—to be inhaled and lodged in the deepest parts of the lung, where they evade the respiratory system's natural defenses and can be trapped in the nose, throat, and upper respiratory tract. Health effects from exposure to PM_{10} and $PM_{2.5}$ occur when the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases; heart and lung disease; and coughing, bronchitis, and respiratory illnesses in children. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death. Sensitive populations, including children, the elderly, exercising adults, and those suffering from chronic lung disease, such as asthma or bronchitis, are especially vulnerable to the effects of PM. Acidic PM can also damage humanmade materials and is a major cause of reduced visibility in many parts of the United States. Non-health-related effects include reduced visibility and soiling of buildings.

Sulfates

Sulfates are a category of chemicals that contain the fully oxidized ionic form of sulfur (SO_4^{2-}) in combination with metal or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. Effects of sulfate exposure at levels above the standard include a decrease in oxygen intake, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfate particles are usually acidic and contribute to acid rain. There are currently no adopted NAAQS for sulfates.

Hydrogen Sulfide

H_2S is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. At low concentrations, H_2S, which has a characteristic "rotten egg" smell, may cause irritation to the eyes, mucous membranes, and respiratory system, dizziness, and headaches. At high concentrations, H_2S is extremely hazardous, especially in enclosed spaces. There are currently no adopted NAAQS for H_2S.

Vinyl Chloride

Vinyl chloride is a sweet-smelling colorless gas at ambient temperature. Landfills, publicly owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of liver angiosarcoma, which is a rare cancer, and have suggested a relationship between exposure cancers of the lung and brain. There are currently no adopted NAAQS for vinyl chloride.

Visibility Reducing Particles

Visibility reducing particles consist of suspended PM, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. Except for

Lake County, which is designated to be in attainment, California's attainment status with respect to visibility reducing particles is currently designated as unclassified. There are currently no adopted NAAQS for visibility reducing particles.

4.3.2.3 Attainment Status

As stated in the Regulatory Attainment Designations section, USEPA and CARB designate air basins as nonattainment, attainment, or unclassified areas. National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Attainment status is based on the NAAQS and the CAAQS. Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring value exceeds the threshold per year. In contrast, the federal annual standard for $PM_{2.5}$ is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The CAA identifies two types of NAAQS. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA 2023). The CAAQS are equal to or more stringent than the NAAQS and include pollutants for which national standards do not exist.

The current attainment designations for the SJVAB are shown in Table 4.3-2. The SJVAB is designated as nonattainment for federal and state O_3 and $PM_{2.5}$ and state PM_{10}.

Table 4.3-2. San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation/Classification of Federal Standards[1]	Designation/Classification of State Standards[2]
Ozone – One hour	No Federal Standard[3]	Nonattainment/Severe
Ozone – Eight Hour	Nonattainment/Extreme[4]	Nonattainment
Particulate Matter 10 Microns or Less	Attainment[5]	Nonattainment
Particulate Matter 2.5 Microns or Less	Nonattainment[6]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: San Joaquin Valley Air Pollution Control District Ambient Air Quality Standards & Valley Attainment Status (SJVAPCD 2022).

Notes:

[1] See 40 Code of Federal Regulations Part 81

[2] See California Code of Regulations Title 17 Sections 60200-60210

[3] Effective June 15, 2005, the USEPA revoked the federal 1-hour ozone standard, including associated designations and classifications. USEPA had previously classified the SJVAB as extreme nonattainment for this standard. USEPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

[4] Though the valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, USEPA approved valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

[5] On September 25, 2008, USEPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

[6] The valley is designated nonattainment for the 1997 $PM_{2.5}$ NAAQS. USEPA designated the valley as nonattainment for the 2006 $PM_{2.5}$ NAAQS on November 13, 2009 (effective December 14, 2009).

4.3.2.4 Existing Air Quality Conditions

SJVAPCD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Local air quality can be evaluated by reviewing relevant air pollution concentrations near the Project. The nearest monitoring station to the Project site is the Merced-S. Coffee Avenue Monitoring Station, which monitors ambient O_3, $PM_{2.5}$, and NOx. Table 4.3-3 summarizes published monitoring data from the Merced-S. Coffee Avenue Monitoring Station for the years 2020 to 2022 (CARB 2022a). The Merced-2334 M Street Monitoring Station was used to present the ambient concentration of PM_{10}. Other monitoring stations in Merced County do not measure CO or SO_2; therefore, CO and SO_2 ambient concentrations are not included in the table.

Table 4.3-3. Merced-S. Coffee Monitoring Station Air Quality Data

Air Pollutant	Averaging Time	Item	2020	2021	2022
Ozone	1 Hour	Max 1 hour (ppm)	0.100	0.099	0.096
		Days above state standard (0.09 ppm)	2	2	2
	8 Hours	Max 8 hour (ppm)	0.087	0.089	0.083
		Days above state standard (0.070 ppm)	21	24	10
		Days above national standard (0.070 ppm)	20	21	9
		Days above national standard (0.075 ppm)	5	7	2
PM_{10}	24-Hour	Max 24 hours (ug/m^3)	210.7	86.9	46.4
		Measured days above national standard	5.8	*	*
		Annual average	41.6	32.2	19.0
$PM_{2.5}$	24-Hours	Max 24 hours (ug/m^3)	117.4	77.3	39.6
		Measured days above 24-hour standard	23	13	1
		Annual average	14.6	11.2	9.7
Nitrogen Dioxide	1-Hour	Max 1 hour (ppb)	38.5	38.2	39.1
		Annual average	6	*	7
		Days above state standard (180 ppb)	0	0	0
		Days above national standard (100 ppb)	0	0	0

Source: California Air Resources Board. 2022a. iADAM: Air Quality Data Statistics.
Notes: The data presented for PM_{10} was taken from the Merced-2334 M Street Monitoring Station, which is the closest monitoring station to the Project site that measures PM_{10}.
* = insufficient data available to determine the value
Key:
µg/m^3 = micrograms per liter; $PM_{2.5}$ = particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10} = particulate matter between 2.5 and 10 microns in aerodynamic diameter; ppb = parts per billion; ppm = parts per million

4.3.2.5 Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e., irritation, anger, or anxiety) to the physiological (i.e., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and is subjective. Some individuals can smell very minute quantities of specific substances; others have varying sensitivities to odors; and people may have different reactions to the same odor (e.g., bakery, gasoline). It is important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience (e.g., a description of flowery or sweet). Intensity refers to the strength of the odor and depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases, the odor intensity weakens, and it eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant drops below a human's detection threshold.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources. SJVAPCD does not have an individual rule or regulation that specifically addresses odors; however, odors would be subject to SJVAPCD Rule 4102, Nuisance. Any actions related to odors would be based on citizen complaints to the County or SJVAPCD.

4.3.2.6 Toxic Air Contaminants

TACs are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered “criteria pollutants” under either the federal CAA or the CCAA and are not subject to NAAQS or CAAQS. Instead, USEPA and CARB regulate hazardous air pollutants and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with SJVAPCD rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national level, USEPA has established NESHAPs in accordance with the requirements of the federal CAA and subsequent amendments. These are technology-based, source-specific regulations that limit allowable emissions of hazardous air pollutants.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. The following provides a summary of the primary TACs of concern within the State of California and related health effects.

4.3.2.7 Diesel Particulate Matter

Diesel particulate matter (DPM) was identified as a TAC by CARB in August 1998. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 42 percent of the statewide total, with an additional 55 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines (CARB 2022b).

In California, diesel exhaust particles have been identified as a carcinogen accounting for an estimated 70 percent of the total known cancer risks in California. Non-cancer health effects associated with exposure to DPM include premature death, exacerbated chronic heart and lung disease, asthma, and decreased lung function in children. Short-term exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs; and it can cause coughs, headaches, lightheadedness, and nausea (CARB 2022b). In addition to its health effects, DPM significantly contributes to haze and reduced visibility.

4.3.2.8 Naturally Occurring Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals with useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the U.S. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (i.e., a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (i.e., a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings constructed prior to 1977 when it was banned for use in buildings. Exposure to naturally occurring asbestos can occur during soil disturbing activities in areas with deposits present.

4.3.2.9 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiovascular diseases. Examples of sensitive receptors include residences, hospitals, and schools. The nearest sensitive receptor locations include the residential property at 25001 Poleline Road, about 3,750 feet northwest of the Project site, and the property at 24477 S. Woo Road, approximately 4,330 feet north of the Project site.

4.3.2.10 Valley Fever

Valley Fever is an infection caused by a fungus that lives in the soil. About 10,000 U.S. cases are reported each year, mostly from Arizona and California. Valley Fever can be misdiagnosed because its symptoms are like those of other illnesses.

The fungus that causes Valley Fever, *Coccidioides*, grows naturally and is found in the southwestern U.S., parts of Mexico, Central America, and South America. The fungus is endemic in many areas within the SJVAB. People can get this infection by breathing in fungal spores from the air, especially when the wind blows or when dirt with the fungal spores is moved by human activity. About 40 percent of the people who come into contact with the fungal spores will develop symptoms that may require medical treatment, and the symptoms will not go away on their own. Some people may develop a more severe infection, especially those with compromised immune systems (CDC 2020).

4.3.3 Environmental Impacts

This section analyzes the Project's potential to result in significant air quality impacts. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.3.3.1 Methodology

The Project would result in both short- and long-term emissions of criteria air pollutants. Construction emissions would include exhaust from the operation of heavy-duty construction equipment and vehicles and fugitive dust as a result of grading, equipment, and vehicle travel on unpaved surfaces. Operational

emissions would include exhaust from on-road vehicle trips, as well as emissions from backup generators for the Project's BESS and natural gas use from the on-site buildings.

Construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2022.1.1.25 and CARB's EMFAC2021. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants associated with both construction and operation of a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use) and indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and removal, and water use.

The model was developed in collaboration with the air districts in California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory) have been provided by the various California Air Districts to account for local requirements and conditions. CalEEMod is a comprehensive tool for quantifying air quality impacts from land use projects located throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable, such as preparing CEQA.

For modeling construction and decommissioning of the Project, site-specific phase timing, equipment types, and vehicle trips use were developed in consultation with the Applicant and the County. For modeling Project operations, motor vehicle trips assumed that the Project would employ up to 10 full-time employees and up to 10 part-time employees. The vehicle fleet mix was based on the default fleet mix for the County for the operational year. Operational emissions from area sources were primarily based on CalEEMod default values for the land use type. CalEEMod was also used to model emissions associated with operational use of the emergency diesel generator. Pick-up truck and water truck emissions were calculated with CARB's EMFAC2021 assuming emission factors for Merced County.For further information regarding the assumptions used in the emission modeling, refer to the Air Quality and Greenhouse Gas Impact Assessment prepared for the Project (Appendix E).

4.3.3.2 Thresholds of Significance

According to the CEQA Guideline's Appendix G Environmental Checklist and the SJVAPCD CEQA Guidelines, the following questions are analyzed and evaluated to determine whether impacts to air quality would be significant.

Would the project:

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

While the final determination of significance thresholds is within the purview of the Lead Agency pursuant to CEQA Guidelines Section 15064(b), SJVAPCD has adopted quantitative air pollution thresholds to assist lead agencies in determining the significance of project emissions. Table 4.3-4 presents the SJVAPCD air quality thresholds of significance relied upon in this analysis.

Table 4.3-4. San Joaquin Valley Air Pollution Control District Significance Thresholds

Pollutant	Construction Emissions (tons/year)	Operational Emission (tons/year)
CO	100	100
NOx	10	10
ROG	10	10
SOx	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15

Source: San Joaquin Valley Air Pollution Control District. 2015. Guidance for Assessing and Mitigating Air Quality Impacts.

To address the potential for air pollutant hotspots, SJVAPCD has provided guidance for screening localized impacts in the GAMAQI that establishes a screening threshold of 100 pounds per day of any criteria pollutant. If a project exceeds 100 pounds per day of any criteria pollutant, then ambient air quality modeling would be necessary. If the project does not exceed 100 pounds per day of any criteria pollutant, then it can be assumed that it would not cause a violation of an ambient air quality standard. SJVAPCD also has adopted thresholds of significance for health risks from exposure to TACs. A project would result in a significant impact if the project would increase the cancer risk for the person with maximum exposure potential by 20 in a million or result in a non-cancer hazard index greater than 1.

4.3.3.3 Project Impacts

This section discusses potential impacts related to air quality associated with the Project and provides mitigation measures where necessary.

Air Quality Plan

Impact AQ-1 The Project would not conflict with or obstruct implementation of the applicable air quality plan.

The SJVAPCD GAMAQI states that projects that fall below the thresholds of significance for criteria air pollutants would be determined to not conflict with the SJVAPCD's air quality plans. In addition, this document proposes the following criteria for determining project consistency with the current AQMPs:

- Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMPs?
- Will the project conform to the assumptions in the AQMPs?
- Will the project comply with applicable control measures in the AQMPs?

As explained previously, AQMPs are plans for reaching attainment of the NAAQS and CAAQS. The assumptions, inputs, and control measures are analyzed to determine whether the SJVAB can reach attainment for the ambient air quality standards. To show attainment of the standards, SJVAPCD analyzes the growth projections in the valley, contributing factors in air pollutant emissions and formations, and existing and adopted emissions controls. The SJVAPCD then formulates a control strategy to reach attainment that includes both state and SJVAPCD regulations and other local programs and measures. The applicable AQMPs include the 2004 Carbon Monoxide Plan, the 2022 8-Hour Ozone Plan, the 2023 1-Hour Ozone Maintenance Plan, the 2007 PM_{10} Maintenance Plan, and the 2018 $PM_{2.5}$ Plan.

Contribution to Air Quality Violations

A measure of determining whether a project is inconsistent with the AQMPs is whether a project would result in increased frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMPs. Because of the region's nonattainment status for O_3, $PM_{2.5}$, and PM_{10}, if Project-generated emissions of either of the O_3 precursor pollutants (ROG and NOx), PM_{10}, or $PM_{2.5}$ would exceed the SJVAPCD's significance thresholds, then a project would be considered to conflict with the attainment plans.

As shown in Impact AQ-2 below, emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ from construction and operation of the Project would not exceed SJVAPCD's significance thresholds. In addition, as shown in Impact AQ-3 below, the Project would not expose sensitive receptors to a substantial pollutant concentration. Therefore, the Project would not contribute to any air quality violations for the SJVAB.

Consistency with Assumptions in Air Quality Plans

The primary way of determining consistency with the AQMPs' assumptions is determining consistency with the applicable general plan to see that the Project's population density and land use are consistent with the growth assumptions used in the AQMPs for the SJVAB.

As required by California law, general plans contain a land use element that details the types and quantities of land uses that the city or county estimates will be needed for future growth and designates locations for land uses to regulate growth. The Merced County Association of Governments uses the growth projections and land use information in adopted general plans and other sources to estimate future average daily trips and vehicles miles traveled, which are then provided to SJVAPCD to estimate future emissions in the AQMPs. Existing and future pollutant emissions computed in the AQMPs are based on land uses from area general plans. AQMPs detail the control measures and emission reductions required for reaching attainment of the air standards based on these growth and emission estimates.

The applicable general plan for the Project is the 2030 General Plan, which was adopted in 2013, prior to SJVAPCD's adoption of the applicable AQMPs. Per the 2030 Merced County General Plan, the land use designation for the Project site is Agricultural. The Agricultural designation allows for the development of energy generation facilities. In addition, as evaluated in Table 4.10-1, in Section 4.10, Land Use, of this EIR, the Project was determined to be consistent with the 2030 General Plan. Furthermore, the proposed

solar use would not induce population or housing growth that could result in a substantial increase in future average daily trips, vehicles miles traveled, or associated emissions within the County. Operational staff and associated vehicle trips would be limited and most of the operational labor force is expected to be from surrounding local communities. Further, many of the employees would be part-time employees who would only occasionally access the Project site for vegetation management, panel washing, contract maintenance, and other similar tasks. The Project would employ up to 20 staff, which falls within the 2030 General Plan's employment projections of 137,200 by 2030. Accordingly, long-term emissions associated with operational vehicle trips would be negligible and would not conflict with any assumptions of the applicable AQMPs. For example, the AQMPs assumes the regional fleet will trend towards cleaner technology with CARB incentive programs like the Low Emission Vehicle Program and Zero-Emission Vehicle Program. Therefore, the Project would be consistent with the buildout assumptions included in the County's General Plan and, therefore, the Project would also be consistent with the modeling used to prepare the AQMPs. The impact would be less than significant.

Based on the above, the Project is consistent with the buildout assumptions included in the County's General Plan and, therefore, the Project would conform to the assumptions used to prepare the AQMPs.

Control Measures

The AQMPs contain several control measures that are enforceable requirements through the adoption of rules and regulations. A detailed description of SJVAPCD rules and regulations that apply to the Project is provided in Section 4.3.1, Regulatory Setting. The Project would be required, through permit conditions, to comply with all applicable SJVAPCD rules and regulations and would not conflict with or obstruct implementation of the applicable AQMP. For example, construction and decommissioning activities would comply with Regulation VIII, Fugitive Dust Prohibitions and the BMPs disclosed within Rule 8021. The Project would also be subject to Rule 2010 when implementing new stationary sources, such as the proposed emergency generator. Pursuant to Rule 2010, the Project would coordinate with SJVAPCD to obtain an Authority to Construct and Permit to Operate all stationary sources on the Project site, as needed. Given the required implementation of all applicable SJVAPCD rules and regulations, the Project would comply with all applicable control measures in the AQMPs.

Based on the above, the Project would not conflict with or obstruct implementation of the applicable AQMPs, and a less-than-significant impact would occur.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Criteria Pollutants

Impact AQ-2 The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

Consistent with SJVAPCD guidance and the CEQA Guidelines, for a project to result in a less-than-significant impact related to a net increase of any criteria pollutant for which the region is in nonattainment, the following criteria must be true:

- **Regional Analysis.** Emissions of nonattainment pollutants must be below SJVAPCD's regional significance thresholds. This is an approach recommended by SJVAPCD in its GAMAQI.
- **Summary of Projections.** The project must be consistent with current AQMPs, including control measures and regulations. This is an approach consistent with CEQA Guidelines Section 15130(b).

Step 1: Regional Analysis

Air pollutant emissions have regional and localized impacts. This analysis assesses the regional impacts of the Project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities, short-term decommissioning activities, and long-term operation of the Project. Localized emissions from Project construction and operation are also assessed using concentration-based thresholds that determine if the Project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during Project construction and operation are ROG, NOx, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for ROG and NOx, SOx, CO, PM_{10}, and $PM_{2.5}$ (Table 4.3-4).

The SJVAB often exceeds the state and national O_3 standards. Therefore, if the Project emits a substantial quantity of O_3 precursors (ROG and NOx), the Project may contribute to an exceedance of the O_3 standard. The SJVAB also exceeds air quality standards for PM_{10} and $PM_{2.5}$; therefore, substantial Project emissions may contribute to an exceedance for these pollutants.

Construction and Decommissioning

Construction and decommissioning emissions associated with the Project are shown in Table 4.3-5. As shown in the table, the emissions from construction and decommissioning would be below the applicable SJVAPCD thresholds.

Table 4.3-5. Construction Emissions in Tons per Year

Emissions Source		Reactive Organic Gas	Oxides of Nitrogen	Carbon Monoxide	Sulfur Oxides	Particulate Matter ≤10 Microns Diameter	Particulate Matter ≤2.5 Microns Diameter
Construction	Year 2025	0.66	4.94	12.62	0.02	2.31	0.61
	Year 2026	0.81	6.26	14.02	0.03	2.31	0.64
Decommissioning	Year 2065[1]	0.35	3.12	5.94	0.02	3.40	1.22
Significance Thresholds		**10**	**10**	**100**	**27**	**15**	**15**
Any Year Exceed Significance Thresholds?		**No**	**No**	**No**	**No**	**No**	**No**

Source of Emissions: Appendix E.
Source of Thresholds: San Joaquin Valley Air Pollution Control District. 2015. Guidance for Assessing and Mitigating Air Quality Impacts.
Notes:
[1] The last year CalEEMod will calculate on-road emissions is 2050. As such, decommissioning emissions were calculated with a construction year of 2050. This is a conservative approach to analysis, as actual decommissioning would occur in the year 2065 and the emissions associated with such would be less than the emissions presented above.
The Project applicant intends to use a "green fleet" for construction. The green fleet would include the use of lower emission engines for off-road equipment. The construction emissions presented in Table 4.3-5 do not account for the emission reductions that would occur from the green fleet and, as such, Table 4.3-5 presents a conservative estimate of construction emissions.
Key: ≤ means less than or equal to

The Project would also comply with SJVAPCD rules and regulations designed to reduce emissions. SJVAPCD Regulation VIII would require fugitive dust control measures that are consistent with BMPs established by the SJVAPCD to reduce the Project's construction-generated fugitive dust impacts to a less-than-significant level. Regulation VIII BMPs include:

- Applying water before/during earthwork activity and onto unpaved traffic areas, phasing work to limit dust, and setting up wind fences to limit Visible Dust Emissions to 20 percent opacity.
- Applying soil stabilization at regulated construction sites after normal working hours, on weekends, and on holidays.
- In the event of carryout and track out dust, the material must be cleaned up at least daily and immediately if it extends more than 50 feet from the exit point of a paved road. Larger construction site or sites with a high amount of traffic must prevent carryout and track out from occurring by installing gravel pads, grizzlies, wheel washers, paved interior roads, or a combination thereof at each exit point from the Project site.
- Unpaved roads should limit speeds to 15 miles per hour or less.
- Storage piles and bulk materials should be watered, wetted, or covered to limit visible dust emissions.

Moreover, the Project applicant intends to use a "green fleet" for construction. The green fleet would include the use of lower emission engines for off-road equipment. The construction emissions presented in Table 4.3-5 do not account for the emission reductions that would occur from the green fleet and, as such, Table 4.3-5 presents a conservative estimate of construction emissions.

Operation

Emissions during operation of the Project would be generated during routine site maintenance, periodic PV panel washing, employee trips to and from the site, and routine maintenance and testing of the backup generator. The Project is anticipated to hire 10 full-time employees and up to 10 part-time employees. Operational emissions are presented in Table 4.3-6. As shown therein, the emissions are below the applicable thresholds of significance.

Table 4.3-6. Operational Emissions

Emissions Source	Reactive Organic Gas	Oxides of Nitrogen	Carbon Monoxide	Sulfur Oxides	Particulate Matter ≤10 Microns Diameter	Particulate Matter ≤2.5 Microns Diameter
Mobile	0.07	0.27	1.28	<0.01	0.37	0.10
Area	0.02	<0.01	0.02	<0.01	<0.01	<0.01
Energy	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Off-Road	0.06	0.33	0.41	<0.01	0.01	0.01
Stationary	0.02	0.06	0.06	<0.01	<0.01	<0.01
Total	*0.18*	*0.67*	*1.76*	*0.01*	*0.39*	*0.11*
Significance Thresholds	**10**	**10**	**100**	**27**	**15**	**15**
Exceed Significance Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix E.
Note: Emissions were quantified using CalEEMod based on Project details and estimated operating year for the Project. Totals may not sum exactly due to rounding.
Key: < means less than; ≤ means less than or equal to.

The criteria pollutant emissions analysis, presented above, assessed whether the Project would exceed SJVAPCD's thresholds of significance. As shown in Tables 4.3-5 and 4.3-6, criteria pollutant emissions would not exceed any threshold of significance during Project construction, operation, or decommissioning. Therefore, Project emissions would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment according to the regional analysis criterion.

Step 2: Summary of Projections

CEQA Guidelines Section 15130(b) states the following:

> *The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been*

> *adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.*

In accordance with CEQA Guidelines Section 15130(b), this analysis of cumulative impacts is based on a summary of projections analyses. The SJVAB is in nonattainment for O_3, PM_{10} and $PM_{2.5}$, which means that concentrations of these pollutants currently exceed the applicable ambient air quality standards.

Cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the boundaries of the SJVAB, because that is the area in which the air pollutants generated by the sources within the SJVAB circulate and are often trapped. SJVAPCD is required to prepare and maintain air quality attainment plans and a SIP to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While SJVAPCD does not have direct authority over land use decisions, it is recognized that changes in land use and circulation planning would help the SJVAB achieve clean air mandates. SJVAPCD evaluated emissions from land uses and transportation in the entire SJVAB when it developed its attainment plans and AQMPs.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative impact is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program.

As discussed in Impact AQ-1, the Project would be consistent with all applicable control measures in the SJVAPCD's AQMPs, and the Project was determined to be consistent with current AQMPs, including control measures and regulations.

As noted in the regulatory setting section, the NAAQS and CAAQS are set to be protective of human health, and SJVAPCD's thresholds are designed to allow SJVAPCD to come into attainment with the NAAQS and CAAQS. The regional analysis of construction and operational emissions, as shown above, indicates that the Project would not exceed the SJVAPCD's significance thresholds, and the Project is consistent with the applicable AQMPs. Therefore, the Project is within emission levels that were established to be protective of human health. The Project's emissions would not have a measurable impact on human health and would not result in significant cumulative health impacts from nonattainment pollutants.

Based on the analysis above, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Sensitive Receptors

Impact AQ-3 The Project would not expose sensitive receptors to substantial pollutant concentrations.

This discussion addresses whether the Project would expose sensitive receptors to localized concentrations of air pollutants or TACs during construction or operations.

A sensitive receptor is a person in a population who is particularly susceptible to health effects due to exposure to an air contaminant. The following are land uses (i.e., sensitive sites) where sensitive receptors are typically located:

- Long-term health care facilities
- Rehabilitation centers
- Convalescent centers
- Hospitals
- Retirement homes
- Residences
- Schools, playgrounds, and childcare centers

The Project site is surrounded by agricultural lands and lies east of the California Aqueduct and Interstate 5. The closest sensitive receptor is a residence located approximately 3,750 feet northwest of the Project site.

Construction

During construction activities associated with the Project, the potential exists for sensitive receptors in the Project area to be exposed to localized impacts from criteria pollutants (i.e., CO, NO_2, PM, ROG), naturally occurring asbestos, fugitive dust, Valley Fever, and DPM. The potential impacts are evaluated below.

Localized Impacts

Emissions occurring at or near the Project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant when, combined with background emissions, they would result in exceedance of any health-based air quality standard. In locations that already exceed standards for these pollutants, a significant impact level represents the

amount that is considered a cumulatively considerable contribution to an existing violation of an air quality standard.

SJVAPCD has provided guidance for screening localized air quality impacts in the GAMAQI that establishes a screening threshold of 100 pounds per day of any criteria pollutant. If a project exceeds 100 pounds per day of any criteria pollutant, then ambient air quality modeling would be necessary. If a project does not exceed 100 pounds per day of any criteria pollutant, then it can be assumed that it would not cause a violation of an ambient air quality standard nor result in significant localized impacts.

Table 4.3-7 presents the Project's daily construction emissions in comparison to the SJVAPCD's screening threshold. As demonstrated therein, emissions would be less than the 100 pound-per-day screening level and, based on SJVAPCD's guidance, the construction emissions would not cause an ambient air quality standard violation or significant localized impacts.

Table 4.3-7. Localized Concentrations of Emissions for Construction (Pounds Per Day)

Emissions Source	Oxides of Nitrogen[1]	Carbon Monoxide	Particulate Matter ≤10 Microns Diameter[2]	Particulate Matter ≤2.5 Microns Diameter[2]
Construction Maximum	28.54	37.87	0.93	0.84
Decommissioning Maximum[3]	8.38	10.77	0.32	0.21
Significance Thresholds	**100**	**100**	**100**	**100**
Any Year Exceed Significance Thresholds?	**No**	**No**	**No**	**No**

Source of Emissions: Appendix E.
Source of Thresholds: San Joaquin Valley Air Pollution Control District Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPDC 2015).
Notes:
[1] Oxides of Nitrogen emissions used as a proxy for Nitrogen Dioxide.
[2] PM_{10} and $PM_{2.5}$ emissions are from the unmitigated output and as a result are more conservative as they do not reflect compliance with Regulation VIII—Fugitive PM_{10} Prohibitions. The table only accounts for on-site construction emissions.
[3] The last year CalEEMod will calculate on-road emissions is 2050. As such, decommissioning emissions were calculated with a construction year of 2050. This is a conservative approach to analysis, as actual decommissioning would occur in the year 2065 and the emissions associated with decommissioning would be less than the emissions presented above.
Key: ≤ means less than or equal to

Reactive Organic Gas

ROG is emitted during paving activities, and the amount emitted is dependent on the amount of ROG in the paving materials. There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. SJVAPCD Rule 4641 prohibits the use of rapid cure cutback asphalt, medium cure cutback asphalt, slow cure asphalt that contains more than a half percent of organic compounds that evaporate at 500 degrees Fahrenheit (°F) or lower, and emulsified asphalt containing organic compounds over 3 percent by volume that evaporate at 500°F or lower. An exception to this allows the use of medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (i.e., short-term) health effects of direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function changes.

However, the closest sensitive receptor is located approximately 3,750 feet northwest of the Project site. At that distance, possible exposure to ROG emissions from paving materials would be negligible. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt.

The Project would construct on-site roadways and pathways throughout the Project site. However, the roads would be gravel, and the only paving that would occur would be in areas such as the parking lot (in compliance with Americans with Disabilities Act regulations) or via the addition of an apron to the county road. Therefore, asphalt paving at the Project site would be minimal, and the impact to sensitive receptors from ROG during construction would be less than significant.

Naturally Occurring Asbestos

According to the U.S. Geological Survey, naturally occurring asbestos is not present within the Project area (USGS 2011). Therefore, construction of the Project is not anticipated to expose receptors to NOA, and the impacts would be less than significant.

Fugitive Dust

The potential for localized PM_{10} and $PM_{2.5}$ health impacts is a concern for sensitive receptors. The closest sensitive receptor is located approximately 3,750 feet northwest of the Project site. At that distance, possible exposure to fugitive dust emissions would be minimal. In addition, PM_{10} emissions would not exceed the Project-level thresholds of significance (Table 4.3-5) nor the screening levels for localized concentrations (Table 4.3-7). Furthermore, as noted in Section 2.5.2 of the Project Description and in Section 4.3.1.3 herein, the Project would comply with SJVAPCD's Regulation VIII by preparing and complying with a Dust Control Plan that incorporates BMPs for reducing fugitive dust. With implementation of the required BMPs, potential impacts to sensitive receptors resulting from fugitive dust would be less than significant.

Valley Fever

Valley Fever is endemic to the San Joaquin Valley; as a result, construction activities associated with the Project could generate dust containing *C. immitis* spores. Given the substantial distance to the nearest receptors, exposure to dust that may contain *C. immitis* spores is not expected to occur. In addition, the Project would minimize the generation of fugitive dust during construction activities by complying with SJVAPCD's Regulation VIII and implementing the BMPs contained therein. BMPs include using water or chemical stabilizers to reduce opacity to less than 20 percent to prevent airborne dust that carries Valley Fever. Nevertheless, to ensure that existing sensitive receptors and on-site construction workers would not be exposed to *C. immitis* spores during construction activities, Mitigation Measure AQ-1 is required. Impacts would be less than significant with mitigation incorporated.

Diesel Particulate Matter

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road, heavy duty diesel equipment used for site grading and other construction activities could result in the generation of DPM, which is a primary

pollutant of concern when evaluating the health risk posed to sensitive receptors. According to CARB, the concentration of DPM is a factor of distance from the source of emissions. DPM concentrations decrease dramatically within the first 500 feet of the source, with an 80 percent drop off in concentration at approximately 1,000 feet from the source (CARB 2005).

There are no sensitive receptors located within 1,000 feet of the Project site as the closest sensitive receptor is approximately 3,750 feet northwest of the Project site. At that distance, there would be no possibility of localized health risks from Project TACs, including DPM, and preparation of a quantitative health risk assessment was not warranted. The concentration of DPM associated with Project construction at the nearest receptor would be negligible, and the impact would be less than significant.

Operation

The potential for sensitive receptors in the Project area to be exposed to localized impacts from criteria pollutants (i.e., CO, NO_2, PM), fugitive dust, Valley Fever, and DPM are evaluated below.

Localized Impacts

Localized impacts could occur in areas with a single large source of emissions, such as a fuel power plant, or with multiple sources concentrated in a small area, such as an industrial distribution center. The Project would include development of a solar generation Project that will produce clean energy; therefore, the proposed land use is not associated with localized concentration impacts. Nevertheless, Table 4.3-8 presents the daily operational emissions from the Project and demonstrates that, during operations, the Project would not exceed the SJVAPCD's screening thresholds.

Table 4.3-8. Localized Concentrations of Emissions for Operation (Pounds Per Day)

Emissions Source	Oxides of Nitrogen[2]	Carbon Monoxide	Particulate Matter ≤10 Microns Diameter	Particulate Matter ≤2.5 Microns Diameter
Project Operation	4.61	12.4	2.19	0.67
Significance Thresholds	**100**	**100**	**100**	**100**
Exceed Significance Thresholds?	**No**	**No**	**No**	**No**

Source of Emissions: Appendix E.
Source of Thresholds: San Joaquin Valley Air Pollution Control District Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015)
Notes:

[2] NOx emissions used as a proxy for NO_2.
Key: ≤ means less than or equal to

Fugitive Dust and Valley Fever

During operation, dust emissions are anticipated to be negligible because most of the Project area would be occupied by buildings, solar paneling infrastructure, and gravel roads and pathways. Thus, the potential for the Project to generate fugitive dust, including dust that may expose sensitive receptors to Valley Fever, during operations would be less than significant.

Diesel Particulate Matter

The greatest potential during long-term operations for exposure to TACs is from the use of heavy-duty diesel trucks and stationary generators that use diesel fuel. The Project is a solar generation plant. Once operational, the Project would employ approximately 10 full-time employees and up to 10 part-time employees for occasional maintenance on the site.

During operations, the majority of vehicle trips to and from the Project site would be from employees in passenger cars; and Project operation would generate very few diesel truck trips. The Project site would have a small number of diesel trucks available for on-site use. However, as discussed above, DPM concentration dissipates with distance from the Project site.

The Project may have an emergency generator on the Project site. However, the emergency generator would only be in operation for standard testing procedures or an unusual circumstance where primary power is lost requiring emergency power generation for BESS heating, ventilation, and air conditioning systems. As a result, the generator is not expected to result in significant emissions of DPM. Furthermore, as discussed above, DPM concentration dissipates with distance from the site. Because the nearest sensitive receptor lies approximately 3,700 feet from the Project site, any DPM generated by the emergency generator would dissipate with distance from the source. Additionally, the generator would be permitted by SJVAPCD and would be regulated below thresholds. Once operational, the Project is not expected to expose sensitive receptors to substantial amounts of DPM.

Based on the analysis above, the Project would not expose sensitive receptors to substantial pollutant concentrations during operations. During construction, the potential exists for receptors to be exposed to dust containing *C. immitis* spores, which could lead to Valley Fever infection. This is considered a potentially significant impact. However, with implementation of Mitigation Measure AQ-1, which requires the preparation and implementation of a Valley Fever Management Plan, the impact would be reduced to a less-than-significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AQ-1: Valley Fever Management Plan. Prior to the initiation of ground disturbing activities, a Valley Fever Management Plan shall be provided to the County for review and approval. The Valley Fever Management Plan shall include a program to limit the potential for exposure to *C. immitis* from construction activities and to identify appropriate worker training, dust management, and safety procedures that shall be implemented. In addition to awareness and recognition training, these measures include performing job hazard assessments (JHAs) for all job classifications employed on site during construction. These JHAs shall identify the potential for exposure as well as the appropriate precautions and controls to minimize exposure.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Odors and Other Emissions

Impact AQ-4 The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people.

While offensive odors rarely cause any physical harm, they can still be unpleasant and lead to considerable distress among the public, often generating citizen complaints to local governments and SJVAPCD. The occurrence and severity of odor impacts depends on numerous factors, including nature, frequency, and intensity of the source, the wind speed and direction, and the sensitivity of the receptor.

Construction and decommissioning activities associated with the Project could result in short-term odor emissions from diesel exhaust associated with diesel-fueled equipment. However, these emissions would be intermittent and would dissipate rapidly from the source. In addition, the diesel-powered equipment would only be present on-site temporarily during construction and decommissioning activities. Further, the Project site is not located close to sensitive receptors that would be potentially impacted by odors. In general, construction and decommissioning activities would not create objectionable odors affecting a substantial number of people, and the impact would be less than significant.

Land uses typically considered as associated with odors include wastewater treatment facilities, waste disposal facilities, or agricultural operations. The Project does not contain land uses typically associated with emitting objectionable odors and is not located within the screening distances to sources of odors recommended by the SJVAPCD. In addition, the Project site is not located in the immediate vicinity of sensitive receptors that would be potentially impacted by odors. Thus, the impact would be less than significant.

The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people, and the impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.3.3.4 PG&E Interconnection Infrastructure

As part of the Project's interconnection, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker. These improvements would occur within areas previously disturbed and occupied by existing electrical facilities. As shown in Tables 4.3-5 and 4.3-7, the construction emissions associated with construction of the other aspects of the Project would fall below SJVAPCD annual and daily localized thresholds. Emissions related to the substation improvements would be minimal compared to construction of the rest of the Project. Operation of the power line connection would not result in the generation of emissions, and maintenance of the power line connection would result in negligible emissions associated with periodic inspections. PG&E also would implement best management practices and comply with all applicable state and federal laws and regulations during construction and operation, including those regulations that relate to the protection of air quality. These improvements would result in less-than-significant impacts to air quality.

4.3.3.5 Cumulative Impacts

The geographic context for this cumulative air quality analysis includes Merced County and surrounding areas within the SJVAB that are designated nonattainment for O_3, PM_{10}, $PM_{2.5}$.

By nature, air pollution is largely a cumulative impact. Any criteria pollutant emissions associated with the Project in combination with other reasonably foreseeable projects within the SJVAB would contribute to the air quality conditions on a cumulative basis and could potentially delay attainment of the NAAQS and CAAQS or require the adoption of additional controls to offset emissions increases. Thus, the Project's emissions of criteria air pollutants would contribute to cumulative regional air quality effects.

As described in Section 8.8. (Thresholds of Significance – Cumulative Impacts) of the GAMAQI, Project consistency with the applicable AQMPs and compliance with SJVAPCD rules and regulations would reduce a project's contribution to the cumulative air quality impact. The Project was determined to be consistent with the applicable AQMPs in Impact AQ-1. Furthermore, the Project would comply with all applicable SJVAPCD rules, as demonstrated in Impact AQ-2. As discussed under AQ-3, the Project also would not exceed localized significance thresholds and would not emit DPM or other TACs near an existing sensitive receptor.

SJVAPCD established its thresholds of significance based on the amount of pollutants that would be cumulatively considerable. As discussed under Impact AQ-2 and demonstrated in Table 4.3-6, operational criteria pollutant emissions associated with the Project would be below the applicable thresholds of significance. Therefore, implementation of the Project would not result in a cumulatively considerable contribution to a cumulative violation of any air quality standards, contribute substantially to an existing or projected air quality violation, or conflict with and/or obstruct implementation of the SJVAPCD's air quality planning efforts. In conclusion, the Project's incremental contribution to regional air quality impacts would be less than cumulatively considerable.

4.4 BIOLOGICAL RESOURCES

Included is a review of existing conditions, a summary of applicable policies and regulations related to biological resources, and an analysis of the environmental impacts of the project. Where applicable, mitigation measures are included for significant impacts. The County received Notice of Preparation comments regarding biological resources (Appendix A). A Biological Resources Assessment was prepared for the project and is included as Appendix F.

4.4.1 Regulatory Setting

4.4.1.1 Federal

Federal Endangered Species Act

Pursuant to the Federal Endangered Species Act (FESA), U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have authority over projects that may result in take of a species listed as threatened or endangered under FESA. Under FESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct." Under federal regulations, take is further defined to include habitat modification or degradation that results in or is reasonably expected to result in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. FESA Section 7 requires federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to see that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. FESA Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found at Code of Federal Regulations (CFR) Title 50, Sections 13 and 17 for species under the jurisdiction of USFWS, and at CFR Title 50, Sections 217, 220, and 222 for species under the jurisdiction of NMFS.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) domestically implements a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. It further provides that it is unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (16 U.S. Code [USC] 703). The current list of species protected by the MBTA was updated in 2023 and includes essentially all native migratory birds (i.e., nonmigratory birds, such as wild turkey or quail, are not included but may be otherwise protected). Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and of personal property. USFWS published a Birds of Conservation Concern 2021 report to identify migratory nongame birds that are likely to become candidates for listing under FESA without additional conservation actions. The report is intended to stimulate coordinated and collaborative conservation efforts among federal, state, tribal, and private parties.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 protects bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of these species; and it 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." To disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (Federal Register volume 72, page 31132; 50 CFR 22.3).

Clean Water Act

Wetlands and other waters of the United States are protected under Section 404 of the Clean Water Act (CWA). Any activity that involves any discharge of dredged or fill material into waters of the U.S., including jurisdictional wetlands, is subject to regulation by the U.S. Army Corps of Engineers (USACE). Waters of the U.S. are defined to encompass navigable waters; interstate waters; all other waters where their use, degradation, or destruction could affect interstate or foreign commerce; tributaries of any of these waters; and wetlands that have a continuous surface connection to any of these waters or their tributaries.[1]

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

The PG&E San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (HCP) covers 23 wildlife and 42 plant species for routine operations and maintenance activities for PG&E's electric and gas transmission and distribution systems within nine counties of the San Joaquin Valley, including Merced County.

4.4.1.2 State

California Endangered Species Act

The California Endangered Species Act (CESA) (Sections 2050–2116 of the California Fish and Game Code), states that all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation will be protected or preserved.

Under Section 2081 of the California Fish and Game Code, a permit from California Department of Fish and Wildlife (CDFW) is required for projects that could result in the take of a species that is state listed as threatened or endangered. Under CESA, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Habitat degradation or modification is not included in the definition of "take" under CESA.

[1] Sackett v. EPA, 598 U.S. (2023). Decided May 25, 2023.

Fully Protected Species

Sections 3511, 3513, 4700, and 5050 of the California Fish and Game Code pertain to fully protected wildlife species (i.e., birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. In July 2023, the Legislature amended California's "fully protected" species laws, allowing for permits to take fully protected species for certain renewable energy and infrastructure projects, including utility scale solar energy projects. Under the new law, permits to take fully protected species must be processed under CESA and must meet certain conservation standards by requiring the permittee to implement methods and procedures necessary to bring the species in question to the point at which minimizing and fully mitigating take is no longer necessary.

California Native Plant Protection Act

Section 1900 et seq. of the California Fish and Game Code, the California Native Plant Protection Act (CNPPA) of 1977, prohibits take, possession, transportation, exportation, importation, or sale of rare and threatened plants, except as a result of agricultural practices, fire control measures, timber operations, mining, or actions of public agencies or private utilities. Private landowners are also exempt from the prohibition against removing rare and endangered plants from their property, although they must provide 10-day notice to CDFW before removing the plants.

Protection of Birds and Raptors

Section 3503 of the California Fish and Game Code prohibits the killing of birds, the destruction of bird nests, the killing of raptors, and the destruction of raptor nests. Typical violations include destruction of active nests as a result of tree removal and failure of nesting attempts (e.g., loss of eggs or young) as a result of disturbance of nesting pairs caused by nearby human activity. Section 3513 adopts the list of federally protected migratory birds and take provisions under the MBTA that prohibit the intentional take or possession of birds designated by the MBTA as migratory nongame birds except as allowed by federal rules and regulations pursuant to the MBTA.

Lake and Streambed Alteration Agreements

Sections 1600–1603 of the California Fish and Game Code state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources or to use any material from the streambeds without first notifying CDFW. A Lake and Streambed Alteration Agreement (LSAA) must be obtained if effects are expected to occur. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports wildlife, fish, or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under jurisdiction of the nine Regional Water Quality Control Boards (RWQCBs). Projects in the County fall under the jurisdiction of the Central Valley RWQCB, Region 5. Under the Act, each RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution. Pursuant to CWA Section 401, an applicant for a Section 404 permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the RWQCB that such discharge will comply with state water quality standards. Drainages that are not subject to federal jurisdiction do not require a water quality certification from the RWQCB. However, projects that affect waters of the state (including wetlands and other waters) must file a report of waste discharge with the RWQCB, which then issues Waste Discharge Requirements (WDRs).

4.4.1.3 Local

2030 Merced County General Plan

The 2030 Merced County General Plan (Merced County 2013a) outlines several policies intended for the protection of biological resources countywide, including the following, which apply to the project:

Natural Resources Element

- **Goal NR-1:** Preserve and protect, through coordination with the public and private sectors, the biological resources of the County.
    - **Policy NR-1.17: Agency Coordination.** Consult with private, local, state, and federal agencies to assist in the protection of biological resources and prevention of degradation, encroachment, or loss of resources managed by these agencies.
    - **Policy NR-1.21: Special-Status Species Surveys and Mitigation.** Incorporate the survey standards and mitigation requirements of state and federal resource management agencies for use in the County's review processes for both private and public projects.
    - **Policy NR-2.6: Open Space Impacts.** Work with public agencies and private energy providers to ensure that energy projects avoid or minimize impacts to open space, natural resources, and productive agricultural land.

4.4.2 Environmental Setting

4.4.2.1 Survey Methods

Multiple biological surveys were conducted by Stantec biologists from 2021 to 2023, with the results detailed in the Biological Resources Assessment (Appendix F). Prior to the surveys, Stantec biologists conducted a desktop review of the special-status species within 5 miles of the project site using data downloaded from the California Natural Diversity Database (CNDDB) (CDFW 2023a). The biologists

queried the California Native Plant Society (CNPS) Inventory for special-status plants that may occur in the *Charleston School, California,* USGS 7.5-minute quadrangle and surrounding nine quadrangles (CNPS 2023a). They queried the USFWS Information for Planning and Conservation tool for FESA-listed species known or potentially occurring in the area (USFWS 2023). They also queried eBird for recorded observations of special-status birds potentially occurring in the vicinity. The National Wetlands Inventory (NWI) mapping system and the National Hydrography Dataset (NHD) were reviewed to identify whether any aquatic features have been identified at the project site. See Table 4.4-1 for the survey types and dates. Surveys conducted in 2023 occurred after an above-average rainfall; therefore, site conditions were favorable to identify potential species.

Table 4.4-1. Biological Field Survey Dates

Date	Survey
April 19, 2021	Wildlife survey (including Swainson's hawk and other raptor nests)
September 21 and 22, 2021	Wildlife survey/burrow mapping (including Swainson's hawk and other raptor nests), aquatic resource delineation, vegetation mapping
September 8 and 14, 2022	Round one San Joaquin Kit Fox monitoring
September 28 and October 3, 2022	Round two San Joaquin Kit Fox monitoring
April 25 and 26, 2023	Wildlife survey/burrow mapping, botanical survey (including Swainson's hawk and other raptor nests)
May 18 and 24, 2023	Round three San Joaquin Kit Fox monitoring
June 5 and 12, 2023	Round four San Joaquin Kit Fox monitoring
June 15 and 16, 2023	Botanical survey

During field surveys, biologists walked transects across the project site wide enough to achieve complete coverage and recorded locations of special-status species observed and potential aquatic resources. In addition, biologists scanned for nesting substrates suitable for raptors within 0.5 mile from the project site and bordering roads.

The San Joaquin Kit Fox (SJKF) (*Vulpes macrotis mutica*) monitoring consisted of four rounds, using trail cameras placed near large burrows on the project site. During each monitoring event, six wildlife cameras were installed on-site facing large burrows that could potentially be used by SJKF. See the Biological Resources Assessment (Appendix F) for more details on survey methodology.

4.4.2.2 Current Conditions and Land Use

The project is located on privately-owned land in southwestern Merced County, approximately 9 miles south of Los Banos. The land use surrounding the project site comprises undeveloped active agricultural lands to the north, south, and east; a small (0.15 acre), developed area to the south housing a cell tower; and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 mile northwest of the project site, respectively. The surrounding active agricultural lands and grasslands are currently used for grazing and provide habitat in varying quality for a variety of species.

Stantec biologists conducted an aquatic resource survey within the entire project site. They mapped 44 aquatic resource features (2.4 acres and 29,026 linear feet) and assessed the features for potential

jurisdiction under USACE, RWQCB, and CDFW. All these features were observed to be ephemeral. It was determined during the delineation that all these features were part of an irrigation system that is no longer functioning. Therefore, these features do not appear to meet the qualifications for jurisdictional features. The Project received an Approved Jurisdictional Determination from the USACE, and they concurred that none of the aquatic features on the project site fall under their jurisdiction. See the project's Aquatic Resources Survey Report (Appendix G) for more details about survey methods and results.

4.4.2.3 Plant Communities

The project site is located almost entirely within fallow agricultural fields where vegetation has been highly disturbed by historical human activity, such as clearing, grading, and extensive alteration of hydrology. Sheep were actively grazing the project site as a noxious weed control measure during the September 2021 survey. Noxious weeds and other non-native plants were prevalent, and remnant common wheat (*Triticum aestivum*) crops remained. Stantec biologists mapped vegetation communities on the project site in September 2021, following the technical approach and vegetation alliance classification system described in the CNPS Manual of California Vegetation (MCV) online edition (CNPS 2023b). One vegetation community was mapped on the project site, Ripgut Brome and Wild Oats Annual Grassland.

Ripgut Brome and Wild Oats Annual Grassland (*Bromus diandrus – Avena* spp. Herbaceous Semi-Natural Association)

This non-native vegetation association covered nearly all of the project site (631.2 acres). The project site was previously used for growing common wheat but has not been cultivated for at least 10 years. Remnant patches of common wheat are present throughout the project site, along with other non-native grass species that are dominant with greater than 30 percent relative cover. Dominant grass species observed include wild oats, ripgut brome, and foxtail barley (*Hordeum murinum*). Dominant non-native forbs include perennial pepperweed (*Lepidium latifolium*), Russian thistle (*Salsola tragus*), and prickly lettuce (*Lactuca serriola*). Scattered individual tamarisk (*Tamarix ramosissima*) shrubs are also present. The biologists observed senesced fiddleneck (*Amsinckia* spp.), a native forb, at less than two percent cover throughout the project site. CDFW does not consider Ripgut Brome and Wild Oats Annual Grassland a sensitive natural community. Refer to the Biological Resources Assessment (Appendix F) for representative photographs.

Developed Areas

Developed areas make up the remaining portion (18.7 acres) of the project site and include unvegetated areas, such as unpaved roads, paved roads, and sections of riprap.

4.4.2.4 Special-Status Species

Special-status species are defined as those plants and wildlife that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies as under threat from human-associated developments. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been

designated as special status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Special-status species include:

- Species that are listed or proposed for listing as threatened or endangered under FESA (50 CFR 17.11–listed animals and 50 CFR 17.12–listed plants); and various notices in the Federal Register (FR)
- Species that are candidates for possible future listing as threatened or endangered under FESA (77 FR 69993, November 21, 2012)
- Species that are listed or proposed for listing or are candidates for possible future listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5)
- Species that meet the definitions of rare or endangered under CEQA (CEQA Guidelines Section 15380)
- Plants listed as rare under the CNPPA (CDFW Commission 1900 et seq.)
- Plants with a California Rare Plant Rank (CRPR) of 1A, 1B, 2A, and 2B
- Animals listed as species of special concern on CDFW's Special Animals List (CDFW 2023b)
- Animals that are fully protected in California (CDFW Commission, California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish])
- Species covered under an adopted National Community Conservation Planning Act/Habitat Conservation Plan (HCP)
- Bird species protected by the MBTA, Bald and Golden Eagle Protection Act of 1940, and California Fish and Game Code (Sections 3500–3516)

It should be noted that most bird species are afforded certain protections by the MBTA and California Fish and Game Code (Sections 3500–3516). However, many of these, including some raptors, are common species and are not considered special status on that basis alone.

Special-status plant and wildlife species were identified during the literature and database search as part of the Biological Resources Assessment (Appendix F). The database searches were updated concurrently with the preparation of this report, and the results are provided in this section. No new species were identified in the updates. All special-status plant and wildlife species were analyzed based on the following "potential to occur" definitions.

- **Present:** The species has been confirmed present during project surveys.
- **High:** The species has been documented within 5 miles of the project site in the last 25 years, and potential habitat for the species is present.

- **Medium:** The project site is within the species range and suitable habitat is present. Records of the species within 5 miles, if any, are more than 25 years old.
- **Low:** The project site is located within the range of the species, but only low quality or marginal potential habitat is present.
- **Absent:** The project site is located outside of the species range, and/or potential habitat to support the species is absent.

4.4.2.5 Special-Status Plant Species and Sensitive Natural Communities

Seventeen special-status plant species were identified in the literature review and database search. They are listed and described in Table 4.4-2, which identifies the protective status for each plant species and the potential for each species to occur on the project site based on focused survey results and the presence or absence of suitable habitat. No special-status plant species or sensitive natural communities were detected on the project site during the April and June 2023 botanical surveys nor incidentally during other surveys (Appendix H). Based on field observations, the project site provides only low-quality habitat for special-status plant species.

Sensitive natural communities are designated as such by various resource agencies, such as the CDFW, or in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution such that they are considered threatened enough to warrant some level of protection. For example, many local agencies in California consider protection of oak woodlands important; and federal, state, and most local agencies also consider wetlands and riparian habitat as sensitive communities. CDFW tracks communities it believes to be of conservation concern through its List of California Sensitive Natural Communities (CDFW 2023c) and the CNDDB (CDFW 2023a). This analysis considers these to be special-status communities.

Table 4.4-2. Special-Status Plant Species Potentially Occurring on the Project Site

Common Name	Scientific Name	CNPS Status[1]	Flowering Period	Potential to Occur Within Project Site[2]
Heartscale	*Atriplex cordulata* var. *cordulata*	1B.2	Apr. – Oct.	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by competition with non-native plants, which dominate the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Lost Hills crownscale	*Atriplex coronata* var. *vallicola*	1B.2	Apr. – Sep.	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agricultural conversion and grazing, which have historical and current practices, respectively, on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Lesser saltscale	*Atriplex minuscula*	1B.1	May. – Oct.	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agriculture, which is a historical land practice on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Lemmon's jewelflower	*Caulanthus lemmonii*	1B.2	Feb. – May	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by grazing, which is a current land practice on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Hispid salty bird's-beak	*Chloropyron molle* ssp. *hispidum*	1B.1	June – Sep.	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agricultural conversion and grazing, which have historical and current practices, respectively, on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Recurved larkspur	*Delphinium recurvatum*	1B.2	Mar. – June	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agricultural conversion, grazing, and non-native plants, which are the key factors in the current condition of the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Spiny-sepaled button-celery	*Eryngium spinosepalum*	1B.2	Apr. – June	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agricultural conversion and grazing, which have historical and current practices, respectively, on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Alkali-sink goldfields	*Lasthenia chrysantha*	1B.1	Feb. – Apr.	**Absent.** One documented CNDDB occurrence (1937) on the west side of I-5. There is no suitable vernal pool habitat within or adjacent to the project site.
Munz's tidy-tips	*Layia munzii*	1B.2	Mar. – Apr.	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by competition with non-native plants, which dominate the project site. One documented CNDDB occurrence (1936) on the west side of I-5.

Common Name	Scientific Name	CNPS Status[1]	Flowering Period	Potential to Occur Within Project Site[2]
Panoche pepper-grass	*Lepidium jaredii* ssp. *album*	1B.2	Feb. – June	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by grazing, which is a current land practice on the project site. One documented CNDDB occurrence (1935) on the west side of I-5.
Showy golden madia	*Madia radiata*	1B.1	Mar. – May	**Low.** There are no CNDDB occurrences of this species within 5 miles of the project site, and marginal habitat is present in the project site in the non-native grassland in the fallow agricultural fields.
Prostrate vernal pool navarretia	*Navarretia prostrata*	1B.1	Apr. – July	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by grazing and non-native plants, which are key factors in the current condition of the project site. There are no known CNDDB occurrences within 5 miles of the project site.
California alkali grass	*Puccinellia simplex*	1B.2	Mar. – May	**Low.** Annual grasslands provide suitable habitat, but this species is threatened by agricultural conversion and grazing, which have historical and current practices, respectively, on the project site. There are no known CNDDB occurrences within 5 miles of the project site.
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2	May – Oct.	**Low.** There are no CNDDB occurrences of this species within 5 miles of the project site, and marginal habitat is present in the project site in the non-native grassland in the fallow agricultural fields.
Chaparral ragwort	*Senecio aphanactis*	2B.2	Jan. – Apr.	**Absent.** There are no CNDDB occurrences of this species within 5 miles of the project site, and there is no suitable habitat within the project site.
Arburua Ranch jewelflower	*Streptanthus insignis* ssp. *lyonii*	1B.2	Mar. – May	**Low.** There are no CNDDB occurrences of this species within 5 miles of the project site, and marginal habitat is present in the project site in the non-native grassland in the fallow agricultural fields.
Wright's trichocoronis	*Trichocoronis wrightii* var. *wrightii*	2B.1	May – Sep.	**Low.** There are no CNDDB occurrences of this species within 5 miles of the project site, and marginal habitat is present in the project site in the non-native grassland in the fallow agricultural fields.

Sources: CDFW 2023a; CNPS 2023b
Notes:
1. No federal or state threatened or endangered plants are expected to occur on the project site.
2. Occurrence data reviewed within 5 miles of the project site.

CNPS Rare Plant Rank: Indicates the California Native Plant Society list to which the taxon is assigned.
List 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California.
List 1B.2: Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California.
List 2B.1: Plants rare, threatened, or endangered in California but common elsewhere; seriously threatened in California.
List 2B.2: Plants rare, threatened, or endangered in California but common elsewhere; fairly threatened in California.
Key:
CNPS = California Native Plant Society; CNDDB = California Natural Diversity Database; I-5 = Interstate 5

4.4.2.6 Special-Status Wildlife Species

Based on the literature and database review, 22 special-status wildlife species were preliminarily identified as having the potential to occur on the project site or within the immediate vicinity. They are listed and described in Table 4.4-3 and Appendix F, which identifies the protective status and habitat requirements of each wildlife species and the potential for each species to occur on the project site based on survey results and the presence or absence of suitable habitat. In addition to the species listed in the table below and Appendix F, numerous migratory species, including many which are listed as threatened or endangered under FESA or CESA, have the potential to occur on the project site.

Table 4.4-3. Special-Status Wildlife Species Known or Potentially Occurring on the Project Site

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur Within project Site[1]
American badger	*Taxidea taxus*	—	Species of Special Concern	**Medium**. One documented CNDDB occurrence within 5 miles, west of I-5 more than 25 years old (1928). However, suitable friable soils and burrows large enough to support the species are present on-site. No individuals or signs observed during surveys.
Blunt-nosed leopard lizard	*Gambelia sila*	Endangered	Endangered, Fully Protected	**Low**. Three documented CNDDB occurrences within 5 miles, more than 25 years old. Project site is at the end of the species' range. Suitable small mammal burrows are present on-site; however, during the 2023 surveys, dense non-native vegetation was growing throughout the site and was approximately 4 to 5 feet tall. This species prefers open, patchy vegetated areas. No individuals or signs observed during surveys.
Burrowing owl	*Athene cunicularia*	—	Species of Special Concern	**Present**. Six documented CNDDB occurrences and two eBird occurrences within 5 miles. One individual recorded on the project site in September 2021 and one in 2022. Burrows large enough to support the species are present in various locations on the project site.
California red-legged frog	*Rana draytonii*	Threatened	Species of Special Concern	**Low**. No documented CNDDB occurrences within 5 miles. No suitable waterbodies or wetlands on the project site. Marginal upland/dispersal habitat possible, but project site was historically cropland. There is no suitable breeding habitat within 2 miles of the project site. No individuals or signs observed during surveys.

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur Within project Site[1]
California tiger salamander	*Ambystoma californiense*	Threatened	Threatened	**Low**. No documented CNDDB occurrences within 5 miles. No suitable waterbodies or wetlands on the project site. Marginal upland/dispersal habitat possible, but project site was historically cropland. There is no suitable breeding habitat within 2 miles of the project site. No individuals or signs observed during surveys.
Crotch's bumble bee	*Bombus crotchii*	—	Candidate Endangered	**Low.** No documented CNDDB occurrences within 5 miles; however, there is one historical CNDDB occurrence (1952) located approximately 9.6 miles northeast of the project site. The project site provides suitable nesting and foraging habitat for this species, with small mammal burrows and herbaceous flowering plants present on-site. No individuals or signs observed during surveys.
Delta smelt	*Hypomesus transpacificus*	Threatened	Endangered	**Absent**. Occurs only in the San Francisco Estuary.
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	Endangered	Endangered	**Absent**. No known populations within Merced County. No CNDDB occurrence records within 5 miles.
Giant gartersnake	*Thamnophis gigas*	Threatened	Threatened	**Absent**. One documented CNDDB occurrence (unknown date) within 5 miles. Species uses agricultural wetlands (e.g., rice fields) and waterways (e.g., irrigation/drainage ditches with emergent wetland vegetation). No suitable aquatic habitat on project site. Irrigation ditches/canals on the project site no longer hold water. Active ditches/canals adjacent to the project site lacked emergent wetland vegetation needed for cover and foraging. No individuals or signs observed during surveys.
Giant kangaroo rat	*Dipodomys ingens*	Endangered	Endangered	**Absent**. One documented CNDDB occurrence within 5 miles, overlaps the southern tip of the project site (1932). The project site has friable soils for burrowing, and small mammal burrows are present. However, current distribution is not believed to include Merced County. Surveys of the area in 1989 resulted in no detections. No individuals or signs observed during recent surveys.

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur Within project Site[1]
Golden eagle	*Aquila chrysaetos*	—2	Fully Protected	**Low**. One documented CNNDB occurrence (1987) within 5 miles. Numerous eBird records within 5 miles recorded during winter months. Nesting habitat (i.e., cliff faces/outcrops) are not present near the project site, but the project site provides marginal foraging habitat (i.e., the species typically avoids areas of heavy human activity). No individuals observed during surveys.
Loggerhead shrike	*Lanius ludovicianus*	—	Species of Special Concern	**Present**. Numerous eBird occurrences within 5 miles. Multiple observations during 2021 and 2023 surveys. Evidence of potential breeding (i.e., recently fledged young). The species could forage across the entire project site and use nearby trees or shrubs for nesting and perching.
Nelson's antelope squirrel	*Ammo-spermophilus nelsoni*	—	Threatened	**Low**. One documented CNDDB occurrence (1920) within 5 miles—a generalized polygon that overlaps the southern tip of the project site. The project site was historically cropland but has been fallow in recent years. The non-native grassland provides low quality habitat but has suitable-sized burrows. However, this species competes with grazing sheep for vegetation and California ground squirrels which were observed on-site. No individuals or signs observed during surveys.
Northern California legless lizard	*Anniella pulchra*	—	Species of Special Concern	**Low**. One documented CNDDB occurrence (1942) within 5 miles, on the west side of I-5. The project site has soils suitable for burrowing but also has limited moisture and very few shrubs or trees to provide leaf litter, which are preferred habitat characteristics. The project site provides marginal habitat. No individuals or signs observed during surveys.
Northern harrier	*Circus hudsonius*	—	Species of Special Concern	**Present**. Several eBird occurrences but no CNDDB occurrences within 5 miles. One individual recorded on the project site in September 2021. Species uses treeless, open habitats with good prey base, which the project site provides.
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	—	Species of Special Concern	**Medium**. Two documented CNDDB occurrences (1980s) within 5 miles. The species generally occupies open, treeless areas and uses mammal burrows for refuge. No individuals or signs observed during surveys.

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur Within project Site[1]
San Joaquin kit fox	*Vulpes macrotis mutica*	Endangered	Threatened	**Low**. Three documented CNDDB occurrences within 5 miles, including one record that overlaps the western portion of the project site; however, these records range from 1920 to 1975. The Vega Solar project approximately 0.25 mile to the north of the project site received a no-take statement for this species. The project site has friable soils for burrowing and burrows large enough to support the species that are present. This species occupies human-modified open habitats, including non-native grasslands like those on the project site. Species was not observed during the 2022–2023 burrow camera monitoring or other surveys.
Swainson's hawk	*Buteo swainsoni*	—	Threatened	**Present**. Sixteen documented CNDDB records for nesting occurrences (1994 to 2018) and numerous eBird occurrences within 10 miles. Based on aerial imagery, eight of the CNDDB occurrences have had the nesting trees removed. A pair of Swainson's hawks was observed foraging and courting during the April 25 and 26, 2023, surveys. No nests were observed during this and four subsequent site visits in May and June 2023. This species will not nest on the project site as there are no trees or other nest substrates. However, numerous trees in the surrounding landscape, including the neighboring orchard, provide potential nesting substrates. The project site is more likely to provide foraging habitat for area breeding birds. The Vega Solar project documented Swainson's hawks foraging on its project site during preconstruction surveys.
Tricolored blackbird	*Agelaius tricolor*	—	Threatened, Species of Special Concern	**Low**. Three documented CNDDB records for nesting colonies (2010–2011) within 5 miles. Nesting typically occurs in emergent wetlands and ponds, and they have adapted to nesting in agricultural grain fields. The project site may provide marginal foraging habitat; however, it does not provide suitable wetlands or grain fields for nesting. No individuals observed during surveys.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened	—	**Absent**. No documented CNDDB occurrences within 5 miles and no suitable habitat (i.e., elderberry along rivers or streams). No elderberry shrubs observed during surveys.
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	—	**Absent**. No documented CNDDB occurrences within 5 miles and no vernal pools on the project site.

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur Within project Site[1]
Western spadefoot	*Spea hammondii*	Proposed Threatened	Species of Special Concern	**Low.** No documented CNDDB occurrences within 5 miles. No suitable waterbodies or wetlands, including vernal pools, on the project site. Marginal upland/dispersal habitat possible. Project site was historically crop fields, and there is no suitable breeding habitat within 2 miles of the project site. No individuals or signs observed during surveys.

Sources: USFWS 1998; Merced County 2013a; Billerman et al. 2021; CDFW 2023b; CSU 2021; eBird 2023; Nafis 2021; University of Michigan 2021; USFWS 2023
Notes:
[1.] Occurrence data reviewed within 5 miles of the project site. Same potential to occur criteria as for special-status plants.
[2.] Species is protected federally by the Bald and Golden Eagle Protection Act.
Key:
— = no status; CNDDB = California Natural Diversity Database; I-5 = Interstate 5

Of the 22 special-status wildlife species identified in Table 4.4-3, Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus hudsonius*), and loggerhead shrike (*Lanius ludovicianus*) were found to be present on-site. Suitable habitat for species with a medium potential to occur on-site include American badger (*Taxidea taxus*) and San Joaquin coachwhip (*Masticophis flagellum ruddocki*). Each of the species that are known to be present on-site or have a medium or high potential to occur are discussed in further detail below. Although SJKF has a low potential to occur, this species is discussed in more detail below because additional surveys were conducted for this species. Crotch's bumble bee (*Bombus crotchii*) also has a low potential to occur but is discussed in more detail below due to suitable nesting habitat being present on-site. For the remaining 14 species, eight have a low potential to occur on the project site, and six have been determined to be absent from the project site due to either the lack of suitable habitat or the project site being outside of the species' known range.

The project site contains numerous burrows and burrow complexes along the irrigation ditches and access roads within the site. The largest concentration of burrows was in the south-central portion of the project site, where both small mammal-sized burrows and large burrows suitable for species like burrowing owls and American badgers were present. Most large burrows were surrounded by an average of four to eight small burrows. Several large burrows were about 8 to 10 inches wide at the opening with the same width extending down into the burrow about 2 to 3 feet. Burrows were uncommon in the northern half of the project site, and the biologists observed only one large burrow along the gen-tie corridor (Appendix F). The annual grasslands within the project site provide suitable foraging habitat for many species, including birds, mammals, and reptiles. A list of observed wildlife within or adjacent to the project site is provided in the Biological Resources Assessment (Appendix F). The potential for special-status wildlife to be present at the project site is described below.

American Badger

The American badger can be found throughout most of the state barring the northern extent of the North Coast area. While it is widely distributed throughout the state, this permanent resident is uncommon. The American badger thrives in dry and open areas within shrub, forest, and herbaceous habitats. The habitat

must have friable soil that is open and uncultivated for digging burrows. There must also be a sufficient population of burrowing rodents for them to feed on. Ground squirrels and pocket gophers are particularly important prey species for American badger. Major threats to the American badger include the loss of suitable habitat, disease outbreak, and secondary poisoning.

American badger is a California Species of Special Concern (SSC) and has no federal special status. There is one historical CNDDB occurrence (Occ. No. 162, 1928) located 1.5 miles southwest of the project site. During the wildlife surveys, biologists observed and mapped burrows large enough to support American badgers within the project site; however, no individuals or signs of badger use were observed. Although the project site provides suitable burrowing habitat for this species, it only has a medium potential of occurring on-site due to lack of recorded occurrences and the surrounding fragmented habitat (e.g., active agriculture, California Aqueduct).

Burrowing Owl

Burrowing owls are small owls with sandy coloring on the head, back, and upper parts of the wings; and they are white-to-cream with barring on the breast and belly. Burrowing owls live year-round in several parts of the state, including the Central Valley. Burrowing owls generally live in grassland habitat, but they have adapted well to some agricultural and developed areas that have suitable burrows for roosting and nesting in relatively short vegetation. Nesting habitat consists of open areas with mammal burrows, typically created by ground squirrels; although the owls can dig their own burrows in soft soil. Habitat loss due to urbanization and agricultural conversion is the greatest threat to the owls; and they can also be impacted by ground squirrel extermination programs, traffic, wind turbines, pesticides, and electric fencing (Shuford and Gardali 2008).

Burrowing owl is a California SSC and has no federal special status. There are six CNDDB occurrences (1993-2005) within 5 miles of the project site, with the nearest occurrence (Occ. No. 186, February 1993) adjacent to the western boundary of the project site. During the September 2021 wildlife survey and September–October 2022 camera monitoring, an adult burrowing owl was observed within the project site. In September 2021, the burrowing owl was perched adjacent to a large burrow entrance along an irrigation ditch bank in the south-central portion of the site. In September–October 2022, a burrowing owl (potentially the same one) was observed through a trail camera. The owl was perched outside a burrow entrance and would occasionally enter the burrow. By mid-morning, the burrowing owl left the burrow site and did not return during the observation period. The burrowing owl was not seen on any other trail cameras and was only observed on that one day. No burrowing owls were observed during field surveys in April, May, and June 2023. Burrows within the project site provide suitable nesting habitat for this species.

Crotch's Bumble Bee

Crotch's bumble bee is easily distinguished from other species in the Apidae family based on hair coloration. The size of a Crotch's bumble bee varies: Queens range from approximately 0.9 to 1 inch long, workers range from approximately 0.5 to 0.8 inch, and males range from 0.6 to 0.7 inch long (XSIC et al. 2018). Historically, Crotch's bumble bees were common throughout most of the southern two-thirds of California, northern Mexico, and southwest Nevada. Currently, this species occurs in limited

populations along the California coast, deserts, Central Valley, and adjacent foothills through most of southwestern California (XSIC et al. 2018). The decline of the Crotch's bumble bee is attributed to the modification and destruction of habitat (especially in the Central Valley due to extensive agriculture), overexploitation, competition with managed honeybees, and disease. Crotch's bumble bees inhabit open grasslands and scrub habitats for both foraging and nesting habitat. They primarily nest underground in ground squirrel or other animal burrows. Crotch's bumble bees visit a large variety of flowering plants to forage for nectar. Plant families most associated with this species include *Fabaceae*, *Apocynaceae*, *Asteraceae*, *Lamiaceae*, and *Boraginacea* (XSIC et al. 2018). These plant families are not particularly this species' preference; however, they represent the majority of flowers in the landscapes where this species occurs. Very little is known about overwintering sites, but studies show that they overwinter in soft, disturbed soils or under leaf litter (XSIC et al. 2018). Crotch's bumble bee colonies can be active from April to August, and nest sites have the highest detection probability during this time (CDFW 2023e). The queen flight season is approximately from February to March and the gyne[2] flight season is approximately from September to October. The gyne leave the active nest in fall to mate and establish new colonies away from their birth colony. Colonies are annual, and only the new, mated queens overwinter in new sites away from their birth nest. These queens emerge from hibernation in the early spring and immediately start foraging for pollen and nectar and search for a nest site (Hatfield et al. 2015).

The Crotch's bumble bee is a CESA candidate endangered species. There are no documented CNDDB occurrences within 5 miles of the project site, but there is one historical CNDDB occurrence (1952) located approximately 9.6 miles northeast of the project site. During the wildlife surveys, biologists observed and mapped burrows that could provide nesting habitat for Crotch's bumble bee within the project site; however, no individuals or other signs of bumble bee use were observed. In addition, the project site provides suitable foraging habitat for this species, with a variety of flowering herbaceous species.

Loggerhead Shrike

Loggerhead shrikes are big-headed songbirds with a hooked bill and a gray head with a black mask wrapped across the top of the bill. This species inhabits open lowlands and foothills throughout most of California. It is found in a variety of habitats that provide suitable perches such as shrubs, trees, posts, fences, and utility lines where they can search for prey. Prey items include large insects and occasionally small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. They are known to cache their prey by impaling them on barbed wire, sharp thorns, or sharp twigs. They take cover and nest in densely foliaged shrubs or trees; and in the absence of trees or shrubs, they sometimes nest in brush piles or tumbleweeds (Cornell University 2023).

Loggerhead shrike is a California SSC and has no federal special status. Within 5 miles of the project site, there are no CNDDB occurrences, but there are numerous eBird occurrences. In addition, this species was observed multiple times on-site during the 2021 and 2023 surveys. The entire project site provides foraging habitat, and nearby trees and shrubs may provide suitable nesting and perching habitat.

[2] Gyne are the female bumble bees destined to become a queen.

Northern Harrier

Northern harriers are medium-sized raptors with long, broad wings; a long tail; and a characteristic white rump patch. This species is found throughout California and can be year-round residents or migratory. This species forages close to the surface over fresh and saltwater emergent wetlands, meadows, grasslands, and rangelands. It is seldom found in woodland habitat. Pairs move to breeding grounds in late February through early March and establish a ground nest in shrubby vegetation. They usually nest at marsh edges where they build a nest consisting of a large mound of sticks on wet areas or in small grassy depressions at drier sites (Polite 2005).

Northern harrier is a California SSC and has no federal special status. Within 5 miles of the project site, there are no CNDDB occurrences, but there are several eBird occurrences. One adult was observed foraging on-site during the September 2021 surveys. The entire project site provides foraging and potential nesting habitat for northern harrier.

San Joaquin Coachwhip

San Joaquin coachwhip is a slender nonvenomous snake with smooth tan, olive-brown, or yellowish-brown scales; a large head and eyes; a thin neck and tail; and 17 scale rows at midbody. There are also large scales above its eyes. Although it has the braided scale pattern on its tail like other subspecies of coachwhips, it is differentiated by the lack of a dark head and neckbands. It can be found in the Sacramento Valley, San Joaquin Valley, the inner south Coast Range, and the Sutter Buttes (Brattstrom and Warren 1953). This species is typically found in open terrain of grasslands, deserts, scrub, chaparral, and pastures. Preferred shelters include rodent burrows, bushes, trees, and rock piles. In arid regions, the snake can be found near sources of water. Threats to the San Joaquin coachwhip include habitat loss from agriculture and urban development (Brattstrom and Warren 1953).

San Joaquin coachwhip is a California SSC and has no federal special status. There are two CNDDB occurrences (1980s), with the nearest occurrence (Occ. No. 60, June 1985) located 0.5 mile south of the project site. During the wildlife surveys, biologists observed and mapped burrows large enough for San Joaquin coachwhip within the project site; however, no individuals or signs of use were observed. The project site provides suitable habitat for San Joaquin coachwhip.

San Joaquin Kit Fox

SJKF are the smallest foxes in North America, with an average body length of 20 inches and a weight of about 5 pounds. Currently, they occur in some areas of suitable habitat within the San Joaquin Valley and in the surrounding foothills of the Coast Range, Sierra Nevada, and Tehachapi Mountains from Kern County north to Contra Costa, Alameda, and San Joaquin Counties. Historically, SJKF were believed to inhabit the area from Contra Costa and Jan Joaquin Counties in the north to Kern County in the south. SJKF occurs in a variety of habitats, including grasslands; scrublands; vernal pool areas; alkali meadows and playas; and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands. They prefer habitats with loose textured soils that are suitable for digging, but they occur on virtually every soil type. Dens are generally located in open areas with grass and/or scattered brush, and seldom occur in areas with thick brush. They feed primarily on small mammals, including

California ground squirrels, rabbits, mice, kangaroo rats, and have been known to prey on ground-nesting birds, reptiles, and insects (USFWS 1998).

SJKF is a federally listed endangered species and state-listed threatened species. There are three CNDDB occurrences (1920–1975) within 5 miles of the project site, with the nearest occurrence (Occ. No. 872, July 1975) overlapping the western portion of the project site. During the 2022 and 2023 SJKF camera monitoring, no individuals or signs were observed on the project site. The project site contains burrows large enough to support SJKF; however, the species has a low potential to occur based on the absence of occurrence data during the four species-specific field monitoring surveys and lack of incidental observations during other field surveys. SJKF is also considered unlikely to be present on-site due to the surrounding fragmented habitat (e.g., active agriculture, California Aqueduct).

Swainson's Hawk

Swainson's hawks are medium-sized raptors with white leading edges of wings, a dark bib, and lightly banded tail. This species has various color morphs that can make it difficult to identify. It breeds in stands with few trees in juniper-sage flats; riparian areas; or oak savanna adjacent to suitable foraging habitat, such as grasslands, alfalfa, or grain fields with rodent populations. Threats to Swainson's hawk include development resulting in the loss of foraging and nesting habitat.

Swainson's hawk is listed as threatened by the State of California and is not federally listed. There are 16 CNDDB occurrences (1994–2018) within 10 miles of the project site, with the nearest occurrence (Occ. No. 1,427, May 2005) approximately 2 miles northwest of the project site. After conducting a desktop review of each of these locations in 2023, it has been determined that all four locations' nesting trees were removed and no longer provide nesting substrates for Swainson's hawks. During the April 2023 wildlife surveys and May–June 2023 camera monitoring, the Stantec biologist observed a pair of Swainson's hawks foraging, courting, and soaring above the project site. No active Swainson's hawk nests were observed within or adjacent to the project site during these site visits. The entire project site provides moderate foraging habitat, and large trees and electric transmission towers within 0.5 mile of the project site may provide suitable nesting habitat (CDFW 2016).

4.4.2.7 Critical Habitat

USFWS does not identify any designated critical habitat on the project site or immediate vicinity. The nearest identified critical habitat is for the California tiger salamander (*Ambystoma californiense*) located 11 miles southwest of the project site. Due to the lack of nearby breeding habitat and historic agricultural use of the project site, this species is not anticipated to occur on-site. No project impacts are anticipated.

4.4.2.8 Wildlife Movement Corridors

Habitat corridors are segments of land that provide linkages between different habitats while also providing cover. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas. Habitat corridors often consist of riparian areas along streams, rivers, or other natural features. Habitat corridors have been recognized by federal agencies, such as the USFWS, and the state as

important habitats worthy of conservation. In general, movement corridors consist of areas of undisturbed land cover that connect larger, contiguous habitats. Although the project site is part of a defined essential connectivity area for terrestrial wildlife as identified in the California Essential Habitat Connectivity project (Spencer et al. 2010), it covers less than one percent of the entire essential connectivity area. The area south of the Dos Amigos Pumping Plant provides a natural land crossing of the California Aqueduct that may be used by terrestrial wildlife. The siting of the project would preserve an approximately 0.25-mile-wide corridor suitable for wildlife movement immediately east of this aqueduct crossing and north of the project site, between the project site and the existing Vega Solar project. The project site and surrounding area are not likely to serve as a large-scale terrestrial wildlife corridor due to the extensive historical and ongoing agricultural practices that have constrained wildlife movement within the area.

The *USFWS Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) identifies linkage areas that are important corridors for wildlife species. In Merced County, the nearest identified linkage area is Sandy Mush Road, which occurs approximately 20 miles northeast of the project site. Therefore, the project is not contained within any of these important linkage areas.

4.4.2.9 Jurisdictional Waters

Aquatic resources within the project site are part of an abandoned irrigation system, with two excavated earthen ditches, five concrete-lined ditches, four abandoned concrete impoundments, and 23 pipe culverts, totaling 2.4 acres and 29,026 linear feet. All these features were observed to be ephemeral. The concrete impoundments are located where ditches previously converged. Many of the culverts were crushed or plugged with debris, sediment, and tumbleweeds (*Salsola tragus*). All irrigation gates on the project site are no longer functional, and the connectivity between the aquatic features on the project site and features on adjacent land parcels had been severed. Therefore, with no continuous surface connectivity to a traditional navigable water and with these features being ephemeral, these drainages would not fall under the jurisdiction of USACE. The Project received an Approved Jurisdictional Determination from the USACE, and they concurred that none of the aquatic features on the Project site fall under their jurisdiction. These drainages would not fall under the jurisdiction of the RWQCB: because they are human-excavated irrigation ditches located in uplands that do not replace or relocate a natural feature. In addition, because the ditches no longer carry water, lack riparian vegetation, or support fish and other aquatic life, there is likely no CDFW jurisdiction. Stantec did not identify any wetlands on the project site. See the Aquatic Resources Survey Report (Appendix G) for more detail on survey methods and results.

4.4.3 Environmental Impacts

This section analyzes the project's potential to result in significant impacts on biological resources. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.4.3.1 Methodology

The analysis presented in this section is based on a review of relevant literature and field surveys. It also relies upon a Biological Resources Assessment (Appendix F) and Aquatic Resources Survey (Appendix

G), which document existing conditions and the findings of surveys on the project site and surrounding area.

The literature review included information available in peer-reviewed journals, standard reference materials, and relevant databases on sensitive resource occurrences, including the CNDDB (CDFW 2023a), CNPS Inventory for special-status plants (CNPS 2023a), and USFWS IPaC Species List Generator (USFWS 2023). The Special Animals List (CDFW 2023b) and Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2023d) were also reviewed to account for other special-status species with the potential to occur at the project site. Other sources of information reviewed include aerial photographs, topographic maps, soil survey maps, geologic maps, and climatic data.

4.4.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines' Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to biological resources are significant.

Would the project:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?
- 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 CDFW or USFWS?
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- 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?
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- Conflict with the provisions of an adopted HCP, Natural Community Conservation Planning (NCCP), or other approved local, regional, or state HCP?

4.4.3.3 Project Impact Analysis and Mitigation Measures

This section discusses potential impacts on biological resources associated with the project and provides mitigation measures where necessary.

Plants and Animals

Impact BIO-1 The proposed project would not 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 project has the potential to impact special-status plants and wildlife through the loss of habitat and direct and indirect impacts on species, such as mortality of individuals, interference with reproductive success, introduction of invasive species, and habitat degradation. Potential impacts to special-status plants and wildlife from construction, operation and maintenance, and decommissioning of the project are discussed below.

Special-Status Plants

The project would involve ground-disturbing construction and operational activities, including vegetation clearing; grading; trenching; installation of solar panels and support structures; and construction of the BESS, access roadways, and other needed infrastructure and improvements that could result in impacts to special-status plant species. Thirteen special-status plant species were identified within 5 miles of the project site in the literature review and database search (Appendix F). Biologists identified the protective status for each plant species and the potential for each species to occur on the project site based on focused survey results and the presence or absence of suitable habitat. No special-status plant species were detected on the project site during the April or June 2023 botanical surveys (Appendix H). The project site has been highly disturbed by historical human activity and sheep and goat grazing for noxious weed control purposes. Noxious weeds and other non-native plants are prevalent on the site, as well as remnant common wheat. Because the project site provides only low-quality habitat for potential special-status, and because none were observed during focused surveys within the appropriate blooming periods or are expected to occur, impacts on special-status plant species would be less than significant.

Special-Status Wildlife

The project would involve ground-disturbing construction activities that could result in impacts on special-status wildlife species if they are present during construction. Ground disturbances would include vegetation clearing; grading; trenching; installation of solar panels and support structures; and construction of the BESS and substation, access roads, and other needed infrastructure and improvements. This could result in impacts from removal and/or degradation of habitat, thereby reducing its availability to local wildlife populations. Wildlife also could be affected by interactions with on-site personnel, traffic, and equipment operation. Injury or mortality of wildlife could also occur from vehicle collisions, entrapment in trenches, crushing by equipment or stockpiled materials, and burial in collapsed burrows.

Impacts on special-status species could also occur during operation of the project, such as collisions with powerlines or other project components, or electrocution. In addition, project operation could result in indirect impacts to wildlife near the project if nighttime lighting is used during operation. The potential

impact from nighttime lighting during operation would be minimized through implementation of Mitigation Measure BIO-8. Potential direct impacts on avian species as a result of collisions with project infrastructure are discussed further below.

Special-status wildlife species were observed on the project site during the 2021, 2022, and 2023 field surveys. These species included Swainson's hawk, burrowing owl, northern harrier, and loggerhead shrike. These species were observed flying through and foraging within the project site; however, no active nests were recorded within or immediately adjacent to the project site. Additionally, the project site provides suitable habitat for American badger, San Joaquin coachwhip, and SJKF. Individual discussions for species determined to have the potential for significant impacts are provided below. These impacts would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-1 through BIO-8.

Nesting and Migratory Birds

Numerous bird species, including several special-status species protected under the California Fish and Game Code and MBTA, were observed on and adjacent to the site during project surveys. Project-related impacts on nesting birds unrelated to collision could include mortality of individuals by crushing and destruction of nests and eggs through clearing and grading activities. The direct removal or disturbance to active nests is prohibited under California Fish and Game Code Sections 3503 and 3503.5. Additional impacts could include interference with reproductive success and nest abandonment brought on by increased noise levels during construction within the breeding season (i.e., February 1 through August 31 for most species, and through September 15 for Swainson's hawk), which is also prohibited under Fish and Game Code. Furthermore, the Project would include external safety lighting for both normal and emergency conditions at the main Project gate, the Project substation, the BESS area, and the O&M area. The external lighting could impact migrating birds flying at night by attracting them to the lighted areas because of abundance of prey including insects.

Based on the existing plant community observed, historical agricultural practices, and active grazing by sheep and goats within the project site to control noxious weeds, nesting birds are not likely to occur on-site. However, there is still a potential for birds to nest on or adjacent to the project site, and resulting impacts on migratory birds and raptors, including direct and indirect, could be a significant impact. These impacts would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-4 through BIO-8. Mitigation Measure BIO-4 would require preconstruction nesting bird surveys if construction occurs during the nesting season, and establishment of a no-disturbance buffer around any active nests. Mitigation Measure BIO-5 would require preconstruction burrowing owl surveys to be conducted and establishment of no- disturbance buffers if active burrowing owl nests are found. Mitigation Measure BIO-6 would reduce bird electrocutions and collisions by following Avian Power Line Interaction Committee (APLIC) guidance for transmission line and electrical component design. Mitigation Measure BIO-7 would reduce bird collisions with the photovoltaic array by requiring panels to be placed in a nearly vertical position at the end of each day. Mitigation Measure BIO-8 would reduce impacts on birds from nighttime lighting during operation because it would require lighting to be downward facing, motion or manually activated, or shielded to focus illumination in the immediate area.

Swainson's Hawk

Although there is suitable nesting substrate within 0.5-mile of the project site, no active Swainson's hawk nests were observed during the 2021, 2022, and 2023 field surveys. There are sixteen CNDDB nesting occurrences within 10 miles of the project site ranging from 1994–2018 (Appendix F, Figure 4). After conducting a desktop review of each of these locations, it has been determined that eight of the nesting trees were removed and no longer provide nesting substrates for Swainson's hawks. The other 8 CNDDB nesting occurrences still had nesting trees present, but are over 5 miles from the project site. No direct impacts on nesting Swainson's hawk would occur. However, impacts could occur during construction if Swainson's hawk nest within 0.5 mile of the project site, which could disrupt the breeding cycle and result in nest abandonment or failure. Implementation of Mitigation Measure BIO-4 requires preconstruction nesting surveys within 0.5 mile of the project site if construction occurs during the nesting season, and establishment of no-disturbance buffers around active nests. If an active nest is found and construction activities would need to occur within the no-disturbance buffer, CDFW would be consulted to discuss the option for a modified or a reduced buffer and ensure the measures are appropriate to avoid or sufficiently reduce the risk of take. No work would occur within the no disturbance buffer prior to discussion with CDFW and their approval of a modified or a reduced buffer. Implementation of these measures would reduce potential impacts on Swainson's hawk nests to a level that is less than significant.

The project site provides suitable foraging habitat for Swainson's hawks, and a pair were observed foraging on-site during the 2023 field surveys. The site consists of fallow agricultural habitat dominated by annual grasslands and invasive weeds, which is considered moderate quality foraging habitat, in comparison to certain agricultural fields (CDFW 2016). Installation of the project's solar panel arrays and associate facilities could reduce the amount of available habitat for foraging. Although this loss would not be permanent, as it would last for the duration of the operation phase of the project (approximately 40 years), it is considered a potentially significant impact.

To better understand the availability of foraging habitats for Swainson's hawks near the project, biologists conducted a desktop review of suitable foraging habitat within 10 miles of the project site. Based on this review, there are approximately 186,218 acres of potentially suitable foraging habitat within 10 miles, with approximately 56,664 acres of high-quality foraging habitat, 129,091 acres of moderate quality foraging habitat, and 463 acres of low-quality foraging habitat (Appendix F). With natural foraging habitats being converted to agriculture, Swainson's hawks have adapted to foraging within certain types of agricultural fields. High quality foraging habitat includes low-growing row crops such as alfalfa, wheat, tomatoes, and beets. Moderate quality foraging habitat includes irrigated and non-irrigated pastures, annual grasslands, and other annually rotated crops (CDFW 2016). Low quality foraging habitat includes grasslands with dense shrubs growing throughout. The project site provides approximately 631 acres of moderate quality foraging habitat, which is approximately 0.3 percent of all the foraging habitat within 10 miles. Non-suitable foraging habitat within 10 miles included developed areas, orchards, ponds, and flooded wetlands. Approximately 30 percent of the foraging habitat within 10 miles consists of low-growing row and field crops, which is considered high quality, and most of the remaining foraging habitat consists of moderate-quality annual grasslands and pastures. With the large amount of higher quality-foraging habitat within 10 miles of the project, and because the expected loss of forging habitat due to the project would be approximately 0.3 percent of the available foraging habitat within 10 miles, the project impact on foraging habit would be very low; however, this impact would still be potentially significant.

Impacts on Swainson's hawk foraging habitat would be reduced to less than significant with implementation of Mitigation Measure BIO-2. Mitigation Measure BIO-2 requires preparation and implementation of a Vegetation and Soil Management Plan, which would include reseeding at the end of construction and maintaining low-stature annual grasses and other plants with annual maintenance and weed control during operation. Mitigation Measure BIO-2 also outlines the considerations for application of pesticide, herbicide, and fungicide application to control noxious weeds. Suitability for Swainson's hawk foraging is driven by accessibility of prey from the air (Estep 1989). Maintaining the site with low-stature vegetation would allow Swainson's hawk to detect rodents and other prey species and continue to use the site for foraging.

Burrowing Owl

A burrowing owl was observed on the project site in September 2021 and 2022 during field surveys, but no burrowing owls were observed during the Spring 2023 field surveys. The project site provides suitable nesting and foraging habitat for this species, with several small and large burrows occurring in portions of the site. The project's solar panel arrays would eliminate most or all nesting potential and would reduce foraging potential on the project site. This impact would last for the duration of the operation phase of the project (approximately 40 years). This impact on burrowing owl nesting and foraging habitat may be considered potentially significant. However, impacts on burrowing owl would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-2 and BIO-5. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. Mitigation Measure BIO-5 requires preconstruction burrowing owl surveys to be conducted and establishment of no-disturbance buffers if active burrowing owl nests are found.

On March 5, 2024, a petition was submitted to the California Fish and Game Commission to list burrowing owl as either endangered or threatened under CESA. Mitigation Measure BIO-5 includes consultation with CDFW if, at the commencement of project construction, burrowing owl is listed as candidate, threatened, or endangered under CESA.

Potential Bird Interactions with Powerlines

All bird species, especially raptors and other large birds, are susceptible to collisions with powerlines based on their physical and behavioral characteristics, such as a bird's body size and weight; wing shape; flight behavior; and perching, roosting, and nesting habits (APLIC 2012). Birds of prey are generally understood to have the ability to avoid obstacles; however, their collision risk increases when they are engaged in territorial defense and pursuing prey (APLIC 2012). Although the County is traversed by multiple high-voltage transmission lines, the project would introduce new hazards to the site with the installation of a new 1,700-foot aboveground powerline to connect the project to the point of interconnection. During both daytime and nighttime activity, special-status birds may collide with project infrastructure from the moment when structures are erected and continuing until the infrastructure is removed during decommissioning, causing injury or mortality due to collision and electrocution.

Collisions can occur when powerline wires have poor visibility. Electrocution can occur when phase conductors are separated by less than wrist-to-wrist distance (the wrist being the joint toward the middle

of the leading edge of a bird's wing); less than the head-to-foot distance of a bird; or when the distance between grounded hardware and any energized phase conductor is less than the wrist-to-wrist or head-to-foot distance of a bird (APLIC 2006). In addition, grounding conductors and bonded hardware without appropriate coverings can cause electrocution. Injury or mortality from electrocution would be a significant impact.

Impacts on protected raptors and other bird species would be reduced to a less-than-significant level by implementing Mitigation Measure BIO-6. This measure would reduce collisions and electrocution impacts on bird species by designing, installing, and maintaining transmission lines and electrical components in accordance with APLIC guidance to reduce the likelihood of large bird electrocutions and collisions (APLIC 2006, 2012).

Potential Bird Collisions with Solar Facilities

Much of what is assumed about collision-related bird injuries and mortality associated with solar PV facilities in California is based on 2014 preliminary bird monitoring data from the Desert Sunlight Solar Farm, a PV project built in the Mojave Desert. Existing data in this context is based on incidental opportunistic observations rather than monitoring and collection conducted in accordance with standardized or agency-approved methods. Such data do not have the scientific rigor to support conclusions about how many birds of which species would be affected by any solar PV project. The causes of bird injuries and fatalities at commercial-scale solar projects are continuing to be evaluated by USFWS, CDFW, and others. Nonetheless, available information, including USFWS's National Forensic Laboratory's Spring 2014 report, *Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis* (NFWFL 2014), is helpful to the County's consideration of potential significant impacts of the project and related uncertainties.

The numbers or species of birds that may be affected from collisions with solar panels or other infrastructure cannot be known with confidence, although monitoring data from the Desert Sunlight Solar Farm suggest that a broad ecological variety of birds may be susceptible to injury and mortality at PV solar farms (NFWFL 2014). As described in Section 4.4.2, Environmental Setting, the project site provides foraging habitat for common and special-status bird species (Appendix F). Any common or special-status bird species on the project site has the potential to collide with project infrastructure. Because the numbers and varieties of such birds cannot be known with certainty, it is possible that the project could cause a significant impact due to collision-related bird injuries and mortality.

Solar PV panels have a strong polarization signature, an element thought to mimic water. As a result, some biologists have theorized that PV panels can attract species that mistake the panels for bodies of water (Randall et al. 2010), potentially leading to increased risks of collisions, being stranded within site fencing once they land, or other forms of distress. The phenomenon is sometimes referred to as the "lake effect." The strongest evidence for lake effect is mortality of water-dependent species found at PV solar farms in desert environments with no natural waterbodies in the region (Kosciuch et al. 2021). Recent studies have shown that some species of birds that use aquatic habitats could be attracted to solar PV panels; however, it is unlikely that all aquatic birds at all times would be attracted to the panels (Kosciuch et al. 2021). The potential for this effect also depends on the regional context and the availability of natural waterbodies near the solar site. There are large waterbodies within 10 miles of the project site,

including San Luis Reservoir, Los Banos Reservoir, O'Neill Forebay, and duck ponds; but there are no large waterbodies within or directly adjacent to the project site. Therefore, the potential for aquatic birds to collide with solar PV panels due to "lake effect" is very small.

At night, the panels would be positioned where they last tracked the sun or pre-positioned toward the east to capture sunrise (i.e., panels would be in a close to vertical position). This may reduce the risk of birds attempting to land on the PV array at sunset or sunrise by mistaking it for water. Bird collisions with solar facilities could potentially be a significant impact, but this impact would be reduced to a less-than-significant level by implementing Mitigation Measure BIO-7. Mitigation Measure BIO-7 would reduce impacts on bird species by requiring panels to be placed in a close to vertical position at the end of each day.

Potential Bat Collisions with Solar Facilities

The project has the potential to attract bats that could mistake the grouped panels for a body of water, as discussed above. The attraction of bats to the project site as a source of drinking water could result in mortality from a collision with the panels. Bats are able to detect water by aiming their echolocation calls straight down to determine whether there is a flat, even surface below them (Greif and Siemers 2010). Greif and Siemers (2010) have shown that bats can mistake water for other horizontally placed flat, smooth surfaces, such as metal, plastic, and wood surfaces that are as small as 20 square feet. Theoretically, solar panels could have the same effect if they are oriented horizontally; however, the solar arrays at the project site would not be situated in a fixed horizontal plane. The solar arrays would be angled based on the position of the sun during a given time of year and would potentially track the sun throughout the day. At night, the panels would be positioned where they last tracked the sun or pre-positioned toward the east to capture sunrise (i.e., panels would be in a close to vertical position) as required by Mitigation Measure BIO-7. Therefore, the solar arrays would have a less-than-significant impact on bats.

Additionally, there are no CNDDB occurrences for special-status bats within 5 miles of the project site, and no potential bat roost structures are present in or directly adjacent to the project site. There may be potential suitable roosting habitat for common bat species in the vicinity of the project site (underpasses on I-5, large trees, etc.) and the project site contains marginal foraging habitat for bats. The project's solar panel arrays would only reduce foraging potential on the project site for bats. Therefore, impacts to bat foraging habitat would be less than significant.

Lighting

During operation, the project would have low-level lighting at the main project gate, the project substation, the BESS area, and the operation and maintenance area. Lighting would be designed to provide the minimum illumination needed to achieve safety and security. Nighttime lighting would typically not be needed. The lights would be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. The project design would minimize the effects of lighting on wildlife. The project may have a potentially significant impact to wildlife movement; but with the implementation of Mitigation Measure BIO-8, the project's impacts would be less than significant. Mitigation Measure BIO-8 would reduce lighting impacts on species by providing the minimum illumination needed to achieve safety

and security, with the lights downward facing, motion or manually activated, and shielded to focus illumination in the immediate area.

Impacts on Invertebrates

There is potential for Crotch's bumble bee to use the project site for nesting in burrows that provide suitable nesting habitat and foraging in flowering herbaceous species growing throughout the site. However, active sheep and goat grazing that occurs on-site to control weeds reduces the amount of suitable foraging habitat by reducing the availability of flowering herbaceous vegetation. Further, no individuals or signs of Crotch's bumble bee use were observed during surveys. There is a potential for this species to occur on the project site and be impacted by construction during clearing and grading activities.

The Crotch's bumble bee has a statewide distribution in a variety of habitats and agricultural fields, including but not limited to grasslands and chaparral shrublands, small mammal burrows, bunch grasses, thatch, brush piles, old bird nests, or dead trees. As such, there is an abundance of suitable habitat surrounding the project site and in the region. However, impacts on foraging habitat are considered potentially significant.

Biologists conducted a desktop review of potentially suitable foraging habitat for Crotch's bumble bee within 1 mile of the project site (including the site itself). Based on this review, there are approximately 4,489 acres of potentially suitable foraging habitat within 1 mile, with approximately 2,177 acres considered high quality foraging habitat and 2,313 acres of moderate quality foraging habitat. High quality foraging habitat includes grasslands and fallow fields, and moderate quality foraging habitat includes active agriculture and orchards. In its current state of fallow agricultural fields, including some flowering non-native plants, the project site provides approximately 631 acres of foraging habitat, which is approximately 12 percent of all foraging habitat within 1 mile. Impacts would be reduced to less than significant with the implementation of Mitigation Measure BIO-2. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. In addition, this mitigation measure will include the preparation of a Vegetation and Soil Management Plan prior to construction that provides a reseeding approach with native and desirable non-native species. Based on the abundance of foraging habitat in the surrounding area, and with implementation of Mitigation Measure BIO-2, which requires revegetation of temporarily disturbed areas and limits direct impacts to natural vegetation on the project site where possible, impacts on foraging habitat would be less than significant.

It is unlikely Crotch's bumble bee would occur on the project site due to active sheep and goat disturbances; however, there is still a potential for impacts on this species. If Crotch's bumble bee is present, impacts on the species would be considered potentially significant. However, impacts on this species would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-1, BIO-2, and BIO-3. Mitigation Measure BIO-1 requires a lead biologist or qualified biologist to be on the project site during vegetation clearing, grading, and other construction activities to identify and protect sensitive species. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. In addition, Mitigation Measure BIO-2 includes the preparation of a

Vegetation and Soil Management Plan prior to construction that will include a reseeding approach with native and desirable non-native species. Mitigation Measure BIO-3 requires preconstruction surveys in areas with suitable habitat by a qualified biologist for special-status species.

Impacts on Reptiles

There is potential for San Joaquin coachwhip to use burrows on-site for cover or overwintering; however, this species is sensitive to disturbance and does not persist in cultivated areas (Thomson et al. 2016). Given the historical agricultural use of the project site and surrounding areas and the active sheep and goat grazing that occurs on-site, it is unlikely this species would occur on the project site. Further, no individuals or other signs of the coachwhip were observed during surveys. There is a potential for this species to traverse the project site and be impacted by construction during clearing and grading activities.

Although it is unlikely San Joaquin coachwhip would occur on the project site, there is still a potential for impacts on this species. Impacts on this species would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-1, BIO-2, and BIO-3. Mitigation Measure BIO-1 would reduce impacts on San Joaquin coachwhip by requiring a lead biologist to be on the project site during vegetation clearing, grading, and other construction activities to identify and protect sensitive species. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. Mitigation Measure BIO-3 requires preconstruction surveys in areas with suitable habitat by a qualified biologist for special-status species.

Impacts on Mammals

The project site consists of fallow agricultural fields with burrows and burrow complexes, including small mammal-sized and large burrows, throughout the south-central portion of the site and along the irrigation ditches and access roads within the project site. The largest concentration of burrows was in the south-central portion of the project site, where there were both small mammal-sized burrows and large burrows. Burrows were uncommon in the northern half of the project site, and only one large burrow was observed along the gen-tie corridor. The large burrows are suitable for special-status species, including SJKF and American badger, which are discussed below.

San Joaquin Kit Fox. There are three documented CNDDB occurrences within 5 miles of the project site, including one record that overlaps the western portion of the project site. However, these records range from 1920–1975, with the occurrence overlapping the project site being from July 1975. As stated in Table 4.4-1 and in Appendix H, biologists conducted SJKF monitoring on the project site in September and October 2022 and May and June 2023. Monitoring consisted of four rounds, using trail cameras placed near large burrows on the project site. Cameras were left on-site for at least five consecutive nights during each round and were set to record 10-second videos when motion was detected. During these monitoring events, no SJKF were observed.

The project site provides suitable denning habitat for this species with friable soils for burrowing and burrows large enough to support SJKF. However, it is unlikely this species would occur on-site due to the surrounding fragmented habitat (i.e., active agriculture, California Aqueduct, Vega Solar project, I-5

corridor, Dos Amigos Pumping Plant). Present day movement habitat for SJKF in the region is mostly limited to areas west of I-5, because areas east of I-5, including the project area and surrounding properties, have excluded this species through ongoing agricultural operations and solar development. In addition, the Vega Solar project approximately 0.25 mile to the north of the project site received a no-take statement from USFWS for this species due to the fragmented habitat surrounding the site (Merced County 2013b).

American badger. The project site provides suitable burrowing habitat for American badger. However, no badgers were observed during surveys or camera monitoring, and biologists did not observe any signs of use by badgers near the mapped burrows.

As with the SJKF, it is unlikely that this species would occur on-site due to the surrounding fragmented habitat (i.e., active agriculture, California Aqueduct). In addition, only one historical CNDDB occurrence (1928) was recorded within 5 miles of the project site.

Although it is unlikely SJKF and American badger would occur on the project site, there is still a potential for impacts on these species during clearing and grading activities. Therefore, impacts on these species would be reduced to a less-than-significant level by implementing Mitigation Measures BIO-1, BIO-2, and BIO-3. Mitigation Measure BIO-1 requires a lead biologist or qualified biologist to be on the project site during vegetation clearing, grading, and other construction activities to identify and protect sensitive species. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. Mitigation Measure BIO-3 requires preconstruction surveys in areas with suitable habitat by a qualified biologist for special-status species.

Decommissioning

Upon decommissioning of the project, the project site would be disturbed and have some areas of compacted soil (e.g., roads, laydown yards, and structure foundations). As part of decommissioning, the project site would be restored to preconstruction conditions. If special-status species have recolonized the project site during operation, decommissioning could have impacts on these species. Decommissioning would only directly impact areas that were previously disturbed during project construction; therefore, direct impacts on native habitats and special-status plants are expected to be less than significant. If special-status wildlife re-occupy the project site during operations, these species could be directly impacted by decommissioning, similar to the direct impacts described for construction.

Depending on the species and biological resources present within and adjacent to the project site at the time of decommissioning, decommissioning activities could result in significant impacts to biological resources. However, implementation of Mitigation Measure BIO-1 through BIO-5 during decommissioning would reduce potential impacts to a less-than-significant level. Mitigation Measure BIO-1 requires a lead biologist to be on the project site during decommissioning to identify and protect sensitive species. Mitigation Measure BIO-2 requires implementing general measures for the avoidance and protection of biological resources, such as speed limits, clearly flagged sensitive areas, and worker environmental awareness training. Mitigation Measure BIO-3 requires preconstruction surveys in areas with suitable habitat by a qualified biologist for special-status species prior to decommissioning. Mitigation Measure

BIO-4 requires preconstruction nesting bird surveys if decommissioning occurs during the nesting season and establishment of no-disturbance buffers if an active nest is found. Mitigation Measure BIO-5 requires preconstruction burrowing owl surveys to be conducted and establishment of no-disturbance buffers if active burrowing owl nests are found.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-1: Lead Biologist During Construction and Decommissioning

- Prior to the issuance of grading or building permits and prior to decommissioning, the project operator will designate a lead biologist with the qualifications (i.e., relevant training and experience with special-status species that could potentially occur on-site) to oversee compliance with protection measures for all listed and other special-status species. The lead biologist or another qualified biologist will be on the project site during initial vegetation clearing and grading.
- After grading is complete, the lead biologist or another qualified biologist will visit the project site at least weekly during construction activities throughout the construction phase, and as-needed during decommissioning.
- The lead biologist and qualified biologists will have the right to halt all activities to avoid impacts on special-status species and to establish no-disturbance buffers. Work will proceed only after hazards to special-status species are removed, and the species is no longer at risk. While on-site, the lead biologist or qualified biologist will carry a copy of all compliance measures and appropriate plans.

MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources

During construction, operation and maintenance, and decommissioning of the facility, the operator or contractor will implement the following general avoidance and protective measures to protect special-status wildlife species:

- Prior to the start of construction, a Vegetation and Soil Management Plan will be prepared for the project that includes an end of construction revegetation approach and operation phase vegetation and soil management practices. The plan will include details on 1) soil testing and soil amendments if deemed necessary by test results; 2) site preparation; 3) the seed mixture to be used on-site, including native and desirable non-native low-stature species, and application methods; 4) areas to be reseeded; 5) weed identification and control measures; 6) vegetation and soil maintenance procedures; 7) implementation timing; 8) vegetation and soil condition goals and monitoring protocols; 9) adaptive management guidelines and success criteria; and 10) a clear prohibition of the use of toxic rodenticides. During operation, steps will be taken to establish and maintain a ground cover of low-stature (e.g., less than 18 inches tall) native and desirable non-native grasses and other plants. The seed mix will be determined through consultation with a

vegetation restoration professional with local knowledge and in consideration of soil test results. Phased seeding may be used if a phased construction approach is used (i.e., the entire site need not be seeded all at the same time). The revegetation of the site will be monitored annually following restoration activities that occur post-construction and post-decommissioning. The monitoring program is intended to help achieve a ground cover of native and desirable non-native low-stature species, where feasible.

- The operator will limit the areas of disturbance to the extent feasible. Parking areas, new roads, staging, storage, excavation, and disposal site locations will be confined to the smallest areas possible. All project disturbance areas will be clearly demarcated with signs, stakes, and/or flagging prior to construction to avoid non-project areas and natural resources where possible.

- Spoils will be stockpiled in disturbed areas that lack native vegetation. BMPs will be employed to prevent erosion in accordance with the project's approved Stormwater Pollution Prevention Plan (SWPPP). All detected erosion will be remedied within two days of discovery or as described in the SWPPP.

- All personnel entering the project site will attend worker environmental awareness training provided by the lead biologist or their designee before beginning work on-site. The primary worker environmental awareness training will occur before construction activities begin and as-needed thereafter. The worker environmental awareness training will include the following topics:

    - Information on the potential special-status species and the habitats that may be found within or adjacent to the project site, including (but not limited to) American badger, burrowing owl, Crotch's bumble bee, and SJKF.

    - Impact avoidance and reporting requirements of federal and state laws pertaining to potential special-status species. Workers will be instructed to notify the site supervisor and/or lead or qualified biologist right away if any of these species are present on-site.

    - Identification of measures implemented to conserve the special-status species and habitats within or adjacent to the project site will occur.

    - A fact sheet conveying this information shall be distributed to all personnel who may enter the project site.

- Control on Noxious Weeds: Noxious weed control is important to the success of site stabilization and vegetation management overall and aids in the protection and conservation of native plant species, as well as improving wildlife habitat. To control noxious weed populations during routine operations, the Applicant shall complete the following:

    - Operational personnel will monitor the site for noxious weeds and be trained on identifying common, highly invasive species that are known to occur in the project area.

    - Weed control measures will be flexible and adaptive depending on the invasive plants and intensity of the weed infestation. Measures will include a combination of mechanical, manual, and chemical controls.

  - To avoid and minimize impacts, herbicides will be applied according to best management practices (e.g., favorable precipitation and wind conditions, when rain is not predicted for 24-48 hours, avoid native vegetation or other sensitive biological resources and active seasons where practicable), and as outlined in the Hazardous Materials Business Plan and Vegetation and Soil Management Plan.

  - Performance and success shall be based upon the maintained digital records, including photographs and written summaries, that document compliance and include details about water year and subsequent herbicide application timing.

- To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth will 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. All holes and trenches, whether covered or not, will be inspected by workers for trapped wildlife at the start and end of each workday. Before such holes or trenches are filled, they will be thoroughly inspected by workers for trapped animals. If trapped animals are observed, escape ramps or structures will be installed immediately to allow escape. If a common or non-listed special-status species is found trapped, all work in the vicinity of the animal will cease immediately. If the animal is not injured, then the lead biologist or other qualified biologist will directly supervise the provision of escape structures and/or trench modification to allow the trapped animal to escape safely. Work will not resume in the vicinity of the animal, and it will be allowed to leave the work area and project site on its own. If a listed animal or species of special concern is injured, then the lead biologist will immediately contact USFWS and/or CDFW to identify an individual with the appropriate permit or authorization to handle listed species and to determine who will bring the animal to a pre-identified wildlife rehabilitation or veterinary facility for care.

- 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 will 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 will not be moved until the lead or another qualified biologist has been consulted. If the animal is a special-status species, then work will immediately halt in the vicinity, and the animal will be allowed to move from the structure and the work area of its own accord. The lead biologist or qualified biologist will direct work stoppages near the animal to allow it to freely move out of the pipe and away from the work area. Special-status species will not be handled or captured by anyone without the appropriate permit or authorization. If the animal is not a special-status species, work will halt until the animal has been captured and relocated by the lead biologist or another qualified biologist.

- Drivers/operators of vehicles and equipment parked at worksites will inspect the ground beneath the vehicle or equipment for the presence of wildlife prior to moving the vehicle/equipment. If an animal is present, the lead biologist or another qualified biologist will be notified and the animal will be left to move on its own.

- Project vehicles and equipment will use existing routes of travel. Cross-country vehicle and equipment use beyond the demarcated project disturbance areas will be prohibited.
- A speed limit of 20 miles per hour will be enforced within all construction areas.
- A long-term trash abatement program will be established for construction, operation and maintenance, and decommissioning. The plan will be submitted to the County prior to construction. Personal trash and food items will be placed in a central, closed container and removed from worksites daily to reduce the attraction of wildlife, such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
- Workers will be prohibited from bringing pets and firearms to the project site and from feeding wildlife in the vicinity.
- Intentional killing or collection of any wildlife species will be prohibited.

MM BIO-3: Preconstruction Surveys and Protective Measures for Special-Status Species

A qualified biologist will conduct preconstruction surveys for special-status species prior to construction and decommissioning activities. No special-status species surveys would be required during operation and maintenance activities. Preconstruction surveys do not need to be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur prior to disturbance of any particular portion of the project site. The biologist will record observations of all special-status species and establish no-disturbance buffers as appropriate. Species-specific and general details are as follows.

- **American Badger:** A qualified biologist will conduct a preconstruction survey for American badger no more than 14 days prior to the beginning of ground disturbance related to construction and decommissioning activities, or any other project activity with a potential to impact American badger (such as staging, mowing, vegetation clearing). If no American badger dens are identified on the project site, no further mitigation is necessary. If American badger dens are located within a project work area and cannot be avoided, a qualified biologist will determine if the dens are occupied.

  If unoccupied, the dens will be collapsed under the supervision of the lead biologist. If occupied, the lead biologist will determine if it is a natal/pupping den or a solitary badger den.

  Natal/pupping dens will be avoided by establishment of a no-disturbance buffer around the den, as determined by the lead biologist and based on site-specific conditions, until the young are old enough to leave the den and survive on their own. CDFW must be contacted to determine the appropriate no-disturbance buffer distance.

  A 50-foot, no-disturbance buffer will be established around dens occupied by a solitary badger. For active solitary dens, an on-site passive relocation program will be implemented with prior concurrence from CDFW. This program will consist of excluding badgers from occupied burrows by installation of one-way doors at burrow entrances and monitoring of the burrow for one week to confirm usage has been discontinued.

After the qualified biologist determines that the badgers have stopped using active dens within the project site, the dens will be collapsed under the supervision of the lead biologist or another qualified biologist.

- **Crotch's Bumble Bee:** If, at the commencement of project construction, Crotch's bumble bee is still considered a CESA candidate species or has been listed as threatened or endangered under CESA, the project will implement the following measures to avoid, minimize, and offset project impacts to the species:

  A qualified biologist will conduct a preconstruction survey for Crotch's bumble bee and nests in project areas with suitable nesting habitat prior to initial ground-disturbing activities, such as staging, mowing, vegetation clearing. There will be multiple surveys during the nesting season. The surveys can be phased with project build-out. The purpose of the surveys will be to identify active nest colonies inside of permanent and temporary impact areas.

  If active Crotch's bumble bee nests are observed within the project site or within a 50-foot buffer surrounding the site, an appropriate no-disturbance buffer (as determined by a qualified biologist) will be established around the nest to reduce the risk of disturbance or accidental take. The buffer will provide at least 50 feet of clearance around active nest entrances. (Note: inaccessible areas outside of the project site can be surveyed using binoculars from the project edge or from public roads.)

  If establishment of a no-disturbance buffer is feasible, construction activities will not occur within the buffer until a qualified biologist determines that the colony is no longer active (i.e., no Crotch's bumble bees are seen flying in or out of the nest for three consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). Once the nest has been determined to be inactive, construction activities within the no-disturbance buffer(s) will be allowed to resume.

  If avoidance of a no-disturbance buffer is not feasible, the lead biologist will consult with CDFW regarding potential encroachment into the no-disturbance buffer with other measures implemented. Work would not begin in the no-disturbance buffer without CDFW approval.

  If avoidance of the nest is not feasible, the lead biologist will consult with the CDFW regarding the potential for project activities to result in take of the Crotch's bumble bee and will comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any incidental take permit issued for the project by CDFW.

- **San Joaquin Kit Fox:** A qualified biologist will conduct a preconstruction survey for SJKF to determine whether potential SJKF dens are present in or within 200 feet of the project site no fewer than 14 days and no more than 30 days prior to beginning of ground disturbance (such as staging, mowing, and vegetation clearing) related to construction and decommissioning activities, or any other project activity with the potential to impact SJKF. (Note: inaccessible areas outside of the project site can be surveyed using binoculars or spotting scopes from the project edge or from public roads). The surveys will be conducted in all areas of suitable habitat for SJKF. If potential dens are observed and avoidance of the dens is determined to be feasible, then a no-disturbance

zone of 100 feet will be established around an active den. If the den is natal/pupping den, USFWS must be contacted to determine the appropriate no-disturbance zone (USFWS 2011).

Exclusion zone establishment will follow the USFWS Standardized Recommendations for Protection of the Endangered SJKF Prior to or During Ground Disturbance (USFWS 2011) under "Exclusion Zones."

If active, non-natal/pupping dens are found within the project site by the qualified biologist, an on-site passive relocation program will be implemented with prior concurrence from USFWS. This program will consist of excluding SJKFs from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. This would be implemented only during non-breeding season for SJKF (September 1 to February 1). After the qualified biologist determines that the SJKFs have stopped using active dens within the project site, the dens will be excavated by hand with a shovel to prevent foxes from re-using them during construction.

- **Other Special-Status Species**: If other special-status species are detected during preconstruction surveys, the qualified biologist will implement appropriate no-disturbance buffers around the individual animal, burrow, den, or nest, as determined by the biologist and based on site-specific conditions. The buffer will provide at least 50 feet of clearance, or a distance recommended by the appropriate agency from the protected resource. The lead biologist will contact CDFW and/or USFWS to determine appropriate next steps, including identifying an individual with the appropriate permit or authorization to handle a listed species, if that becomes necessary. The applicant will comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any incidental take permit issued for the project by CDFW authorizing take of the species.

MM BIO-4: Nesting Bird Protection Measures

Nesting bird surveys would only be required for construction and decommissioning activities, not during operation and maintenance activities. If construction work is scheduled to take place outside of the bird nesting season (September 16 through January 31), no action would be required to protect nesting birds. To avoid impacts on nesting birds within or near the project site during the bird nesting season (February 1 through August 31, or through September 15 for Swainson's hawk), the following measures will be implemented:

- A qualified wildlife biologist will conduct preconstruction surveys for nesting birds no more than 14 days prior to the beginning of ground disturbance (such as staging and vegetation clearing) related to construction and decommissioning activities. Surveys may be phased as construction is phased so that each work area is surveyed no more than 14 days prior to the start of construction in that area.

- If active nests are found during preconstruction surveys (or during construction by a construction crew), a suitable no-disturbance buffer will be established around the nests until it is determined that all young have fledged or until the recognized nesting season has ended (i.e., generally

August 31 except Swainson's hawk which would be September 15). The size of any employed no-disturbance buffers will vary based on the species that is nesting (e.g., 200–300 feet for common raptors; 0.5 mile for Swainson's hawk; 50 feet for passerine species). For species that are not state or federally listed as threatened or endangered, encroachment into the no-disturbance buffer may occur at the discretion of a qualified biologist; however, for state and federally listed species, consultation with CDFW and/or USFWS will occur prior to encroachment into the no-disturbance buffers.

- If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Shrubs, trees, and other vegetation within the construction site determined to be unoccupied by nesting birds or that are outside the no-disturbance buffer for active nests can be removed. Vegetation removal will be scheduled for outside of the nesting season, as feasible.

MM BIO-5: Burrowing Owl Protection Measures:

A qualified biologist will conduct a preconstruction survey for burrowing owls within 330 feet of the project site in areas with suitable burrowing habitat to locate any occupied burrows (e.g., active breeding burrows or wintering burrows) no more than 14 days prior to the beginning of ground equipment staging or ground-disturbing activities. No burrowing owl surveys would be required during operation and maintenance activities. If, at the commencement of project construction, burrowing owl is present and listed as candidate, threatened, or endangered under CESA, then the lead biologist will consult with CDFW to determine if an incidental take permit is needed for the project, unless avoidance is feasible. To protect burrowing owls, the following conditions will be met prior to construction within each successive work area:

- Surveys will include the project site and areas within 330 feet of the project site. Inaccessible areas outside of the project site can be surveyed using binoculars or spotting scopes from the project edge or from public roads. The survey methodology will be consistent with the methods outlined in the CDFW (2012) Staff Report on Burrowing Owl Mitigation.

- If inactive (unoccupied) burrowing owl burrows are detected any time of the year, the burrows may be excavated with a shovel to prevent burrowing owls from re-using them during construction. The burrows 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, will be permitted within a no-disturbance buffer around the burrow. The size of any employed no-disturbance buffers will be 330 feet from the active burrow if during the breeding season (February 1 to August 31) and 165 feet from the active burrow if during the nonbreeding (winter) season, unless otherwise authorized by a qualified biologist as described below.

- Depending on the level of disturbance, a smaller buffer may be established by a qualified biologist based on the visibility and sensitivity responses of each individual burrowing owl.

- If burrow avoidance is infeasible during the nonbreeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juvenile burrowing owls are foraging independently and capable of independent survival, a qualified biologist will implement a passive relocation program in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation. Exclusion would involve installation of one-way doors at burrow entrances after the qualified biologist has determined that the burrow is not an active nest or that juvenile burrowing owls are not dependent on the burrow. After the authorized biologist has determined through monitoring that the burrows are unoccupied, the burrows may be excavated with a shovel to prevent burrowing owls from re-using them during construction.

MM BIO-6: Reduce Potential for Bird Collisions and Electrocutions with Power Lines

APLIC guidelines in accordance with *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012) and *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) will be incorporated into the powerline design to minimize the likelihood of bird collisions and electrocutions. Transmission lines and all electrical components will be designed, installed, and maintained in accordance with APLIC guidance to reduce the likelihood of large bird collisions and electrocutions. This measure would be implemented during construction and operation and maintenance activities.

MM BIO-7: Reduce Potential for Bird Collisions with Photovoltaic Array

At night, the panels will be positioned where they last tracked the sun or pre-positioned toward the east to capture sunrise (i.e., panels should be in a close to vertical position). This measure would be implemented during operation and maintenance activities.

MM BIO-8: Reduce Impacts on Nocturnal Wildlife from Lighting

Lighting will be designed to provide the minimum illumination needed to achieve safety and security. Lights should be off during the night, which will be the default setting. The lights will be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. This measure would be implemented during operation and maintenance activities.

Narrow spectrum bulbs will be used to limit the range of species affected by project lighting.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Riparian Habitat and Sensitive Natural Community

Impact BIO-2	**The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.**

Per Appendix F, there are no sensitive natural communities or riparian habitat present at the project site or the surrounding area. Therefore, no project-level impacts to sensitive natural communities or riparian habitat would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Federally Protected Wetlands

Impact BIO-3 **The project would not have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.**

The Aquatic Resources Survey Report determined that there are 34 manmade features present on the project site (Appendix G). These include two excavated earthen ditches, five concrete-lined ditches, four abandoned concrete impoundments, and 23 pipe culverts. All these features were dry, with no standing water observed during the site surveys. These features included multiple metal irrigation gates, all of which were no longer functional, and the connectivity between the aquatic features on the project site and features on adjacent land parcels have been severed. Therefore, with no continuous surface connectivity to a traditional navigable water and these features being ephemeral, these drainages would not fall under the jurisdiction of USACE. The Project received an Approved Jurisdictional Determination from the USACE, and they concurred that none of the aquatic features on the project site fall under their jurisdiction. These drainages would not fall under the jurisdiction of the RWQCB because they are human-excavated irrigation ditches located in uplands that do not replace or relocate a natural feature. In addition, because the ditches no longer carry water, lack riparian vegetation, or support fish and other aquatic life, there is no CDFW jurisdiction. Thus, no project-level impacts to state or federally protected waters of the U.S., including wetlands, would occur from the implementation of the project.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Wildlife Corridors and Nursery Sites

Impact BIO-4 **The project would not 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 wildlife nursery sites.**

The project site is part of an essential connectivity area for terrestrial wildlife, but covers less than one percent of the entire essential connectivity area, as identified in the California Essential Habitat Connectivity project (Spencer et al. 2010). Additionally, the project site and surrounding area are not likely to serve as a large-scale terrestrial wildlife corridor due to the extensive historical agricultural practices and developments that have constrained wildlife movement within the area. However, the area south of the Dos Amigos Pumping Plant provides a natural land crossing of the California Aqueduct that may be used by terrestrial wildlife. The siting of the project would preserve an approximately 0.25-mile-wide corridor suitable for wildlife movement immediately east of this aqueduct crossing and north of the project site (between the project site and the existing Vega Solar project). The project site is located within the Pacific Flyway, a significant avian migration route. Thus, there is potential for the presence of migratory bird species at the project site. There is also a potential to affect migratory birds due to bird species mistaking the PV arrays as water features. This impact was discussed above; and with the implementation of Mitigation Measures BIO-2, BIO-4, and BIO-7, impacts would be reduced to a less-than-significant level.

Project lighting could disorient the navigational abilities of other nocturnal wildlife species, such as bats and owls, or species that disperse at night. The project would have low-level lighting at the main project gate, the project substation, the BESS area, and the operations and maintenance area. Lighting would be designed to provide the minimum illumination needed to achieve safety and security. Nighttime lighting will typically not be needed. The lights would be downward facing, motion or manually activated, and shielded to focus illumination in the immediate area. The project design would minimize the effects of lighting on wildlife. Additionally, Mitigation Measure BIO-8 would be implemented to provide project lighting that would have a less-than-significant impact on wildlife.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-8: Reduce Impacts on Nocturnal Wildlife from Lighting

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Local Policies or Ordinances Protecting Biological Resources

Impact BIO-5 The project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The County has policies and ordinances protecting biological resources, as described in Section 4.11, Land Use and Planning. As discussed in that section, the implementation of the project would not conflict with local policies and ordinances designed to help provide protection of biological resources in the 2030 Merced County General Plan (Merced County 2013a).

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Habitat Conservation Plans and Natural Community Plans

Impact BIO-6 The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

The project site is located within the boundary of the PG&E San Joaquin Valley HCP, which includes all of Merced County. PG&E would construct the project's interconnection facilities, including installation of the gen-tie line and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation. The project would not have any impacts that would interfere with implementation of San Joaquin Valley HCP goals, objectives, or protection measures because the project's impact on special-status species would be less than significant, as described above. Therefore, there would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

4.4.3.4 PG&E Interconnection Infrastructure

As described in Section 4.0, Environmental Impact Analysis, PG&E would construct the project's interconnection facilities. Activities would include the installation of the gen-tie line and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities within the substation.

Construction and operation of the project interconnection facilities would not impact any sensitive vegetation communities, riparian, wetland, or aquatic resources. As the improvements would occur in previously disturbed areas that currently are used for electrical transmission infrastructure, the improvements would not have impacts on any special-status species or hamper wildlife movement corridors through the project site and surrounding area. PG&E would also implement standard measures and best management practices (BMPs) during construction and operation of projects in its service territory. Construction, operation and maintenance, and decommissioning of the PG&E interconnection infrastructure would result in a less-than-significant impact to biological resources.

4.4.3.5 Cumulative Impacts

Cumulative impacts to biological resources could occur as the result of multiple related projects having impacts on special-status species, nesting and migratory birds, and wildlife corridors within the San Joaquin Valley. The San Joaquin Valley represents the bioregion the project site occurs in and the geographic scope for the cumulative analysis. Cumulative impacts for a project would be significant if the incremental effects of the individual project are considerable when combined with the effects of past projects, other current projects, and probable future projects (referred to below as "cumulative projects").

There are a number of special-status species that could potentially occur within the project site. Implementation of the project, along with related projects, have the potential to impact common and special-status wildlife species, including Swainson's hawk, burrowing owl, northern harrier, loggerhead shrike, American badger, Crotch's bumble bee, San Joaquin coachwhip, and SJKF.

Development of cumulative projects could result in direct impacts to special-status plant and wildlife species; construction, operational, and decommissioning disturbances; and/or special-status habitat conversion. However, as described above, the project would have less-than-significant impacts with mitigation to special-status wildlife species, nesting and migratory birds, and wildlife corridors. Mitigation Measures BIO-1 through BIO-8 would implement measures such as preconstruction surveys, a lead biologist on-site during construction activities, and design features to reduce collision and electrocution. The project would have no impact to special-status plants, sensitive natural communities, state or federally protected wetlands and other waters, local policies or ordinances protecting biological resources, or the provisions of an adopted HCP or NCCP. As with the project, cumulative projects would also be required to avoid and/or mitigate impacts to special-status species and habitats in accordance with County, CDFW, and USFWS requirements. Thus, cumulative impacts would be less than significant.

When considered in combination with other existing and reasonably foreseeable projects, the project would have the potential to further reduce local wildlife movement. However, wildlife movement within the

project site is already limited due to historical agricultural practices and fragmented habitat in the surrounding area (e.g., active agriculture, California Aqueduct). Undeveloped lands west of I-5 and within existing linkage areas in the region would remain available to facilitate wildlife movement. The area south of the Dos Amigos Pumping Plant provides a natural land crossing of the California Aqueduct that may be used by terrestrial wildlife. The siting of the project would preserve an approximately 0.25-mile-wide corridor suitable for wildlife movement immediately east of this aqueduct crossing and north of the project site (between the project site and the existing Vega Solar project). Therefore, impacts concerning wildlife movement would be less than significant.

4.5 CULTURAL RESOURCES

This section describes impacts on cultural resources that would result from implementation of the Project. Included is a summary of applicable policies and regulations related to cultural resources and a review of existing conditions. This section is based on the Cultural Resources Evaluation Report prepared by Stantec in July 2023 (Appendix I). The Cultural Resources Evaluation Report identifies the locations of cultural resources in the vicinity of the Project site in the County. Disclosure of this information to the public may be in violation of both federal and state laws; therefore, the report will be kept confidential and will not be circulated within this Draft EIR. The County received no scoping comments pertaining to cultural resources (Appendix A).

4.5.1 Regulatory Setting

4.5.1.1 Federal

National Historic Preservation Act

The National Historic Preservation Act, as amended, established the National Register of Historic Places (NRHP), which contains an inventory of the nation's significant prehistoric and historic properties. Under 36 Code of Federal Regulations (CFR) 60, a property is recommended for possible inclusion on the NRHP if it is at least 50 years old, has integrity, and meets one of the following criteria:

- Is associated with significant events in history or broad patterns of events;
- Is associated with significant people in the past;
- Embodies the distinctive characteristics of an architectural type, period, or method of construction; or it is the work of a master or possesses high artistic value; or it represents a significant and distinguishable entity whose components may lack individual distinction; or
- Has yielded, or may yield, information important in history or prehistory.

Certain types of properties usually are excluded from consideration for listing on the NRHP, but they can be considered if they meet special requirements in addition to meeting the criteria listed above. Such properties include religious sites, relocated properties, graves and cemeteries, reconstructed properties, commemorative properties, and properties that have achieved significance within the past 50 years.

4.5.1.2 State

California Health and Safety Code and Public Resources Code

California's Health and Safety Code and Public Resources Code (PRC) include broad provisions for the protection of Native American cultural resources

Native American Historic Resource Protection Act

Section 5097-5097.993 established the Native American Historic Resource Protection Act. Its regulations govern archaeological finds of human remains and associated objects. Procedures are detailed under PRC Section 5097.98 through 5097.996 for actions to be taken whenever Native American remains are discovered.

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code states that any person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the PRC. Any person removing human remains without authority of law or written permission of the person or persons having the right to control the remains under PRC Section 7100 has committed a public offense that is punishable by imprisonment. PRC Chapter 1.7, Section 5097.5/5097.9 (Stats. 1965, c. 1136, p. 2792), Archaeological and Historical Sites, defines any unauthorized disturbance or removal of remains on public land as a misdemeanor.

California Native American Graves Protection and Repatriation Act

Sections 8010 through 8030 establish the California Native American Graves Protection and Repatriation Act of 2001 and state the legislative intent to do the following:

1. Provide a seamless and consistent state policy to ensure that all California Indian [*sic*] human remains and cultural items are treated with dignity and respect.

2. Apply the state's repatriation policy consistently with the federal Native American Graves Protection and Repatriation Act (25 U.S. Code [USC] Sec. 3001 et seq.), which was enacted in 1990 as subsequently amended, while considering the unique history of California toward California Indian tribes and the canon of construction regarding federal Indian law with respect to laws must be interpreted as the Indians would have understood them, be construed liberally in favor of the Indians, resolve all ambiguities in the law in favor of the Indians, and preserve tribal property rights and sovereignty unless a contrary intent is clearly stated.

3. Facilitate the implementation of the federal Native American Graves Protection and Repatriation Act with respect to publicly funded agencies and museums in California.

4. Encourage voluntary disclosure and return of Native American human remains and cultural items by a private institution or museum.

5. Provide a process whereby lineal descendants and culturally or geographically affiliated California Native American tribes that file repatriation claims for human remains and cultural items under the Native American Graves Protection and Repatriation Act (25 USC Sec. 3001 et seq.) or under this chapter with California state agencies and museums may request assistance from the commission in ensuring that state agencies and museums are responding to those claims in a timely manner and in facilitating the resolution of disputes regarding those claims.

6. Provide a process whereby California tribes that are not federally recognized may file claims with agencies and museums for repatriation of human remains and cultural items.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires public agencies to consider the impacts of their actions on both "historical resources" and "unique archaeological resources." Pursuant to California PRC Section 21084.1, a "project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment." Section 21083.2 requires agencies to determine whether a project would have impacts on unique archaeological resources.

Historical Resources

Historical resources are considered part of the environment and are subject to review under CEQA. Historical resources are defined by CEQA Guidelines (California Code of Regulations [CCR] Title 14, Chapter 3, 15064.5) as follows:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (CRHR) (PRC 5024.1, Title 14 CCR, Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in a historical resource survey meeting the requirements Section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be historically significant if the resource meets the criteria for listing on the CRHR.

Unique Archeological Resources

CEQA also requires lead agencies to consider whether projects will impact unique archaeological resources. PRC Section 21083.2(g), states that unique archaeological resource means 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:

- Contains information needed to answer important scientific research questions and that 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 prehistoric or historic event or person (PRC Section 21083.2).

California Register of Historic Resources

The California Register 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." Certain properties, including those listed in, or formally determined eligible for listing in, the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR (also referred to as the California Register). Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys or designated by local landmarks programs, may be nominated for inclusion in the California Register.

California PRC Section 5024.1(a) establishes the CRHR. PRC Section 5024.1(c-f) provides criteria for CRHR eligibility listing. These criteria are used by CEQA in defining a historic resource. Resources eligible for listing under the CRHR are those that meet at least one of the following criteria:

1. Are associated with events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California or the United States.

2. Are associated with the lives of persons important to the nation or to California's past.

3. Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values.

4. Have yielded, or may be likely to yield, information important in prehistory or history of the state or nation.

These criteria do not preclude a lead agency from determining that a resource may be a historical resource as defined in PRC Sections 5020.1(j) and 5024.1. Under PRC Section 5024.1, Title 14 California Code of Regulations [CCR], Section 4852(c), a cultural resource must retain integrity to be considered eligible for the California Register. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as farming, often lack integrity because they have been directly damaged or moved from their original location, among other changes.

California Historical Landmarks

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have Statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city or town council in whose jurisdiction it is located); be

recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the California Register.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

1. It is the first, last, only, or most significant of its type in the State or within a large geographic region (Northern, Central, or southern California);

2. It is associated with an individual or group having a profound influence on the history of California; or

3. It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California Points of Historical Interest (PHI) are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. PHI designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. No historical resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a PHI, a resource must meet at least one of the following criteria:

1. It is the first, last, only, or most significant of its type within the local geographic region (city or county);

2. It is associated with an individual or group having a profound influence on the history of the local area; or

3. It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

Native American Heritage Commission

PRC Section 5097.91 established the Native American Heritage Commission (NAHC), the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. PRC Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a County coroner.

4.5.1.3 Local

2030 Merced County General Plan

The 2030 Merced County General Plan outlines several policies intended for the protection of cultural resources countywide, including the following, which apply to the Project:

Recreation and Cultural Resources Element

- **Goal RCR-2:** Preserve and protect the cultural, archeological, and historic resources of the County in order to maintain its unique character.
- **Policy RCR-2.1: Archeological Site and Artifact Protection (Regulation and Development Review [RDR]).** Require development projects that impact archeological sites and artifacts to avoid disturbance or damage to these sites.
- **Policy RCR-2.2: Historical Area Preservation (RDR).** Support the preservation of historical structures and area, particularly those listed on the NRHP and the California Register of Historic Places.
- **Policy RCR-2.5: Human Remains Discovery (RDR)**. Require that, in the event of the discovery of human remains on any Project construction site, all work in the vicinity of the find will cease and the County coroner and NAHC will be notified.
- **Policy RCR-2.9:** Historical and Cultural Resources Investigation, Assessment, and Mitigation Guidelines. Establish and adopt mandatory guidelines for use during the environmental review processes for private and public projects to identify and protect historical, cultural, archaeological, and paleontological resources, and unique geological features.

4.5.2 Environmental Setting

The following discussion is modified from the Cultural Resources Evaluation Report prepared for the Project in 2023 by Stantec, unless otherwise referenced. Given the potential sensitive information regarding cultural resource locations and past surveys, the Cultural Resources Evaluation Report shall remain confidential and will not be circulated within this Draft EIR.

4.5.2.1 Project Setting

The Project is located in the San Joaquin Valley within California's Great Central Valley Geomorphic Province. This region is characterized by intensively farmed areas with long, hot, dry summers and mild winters (CGS 2002; Griffith et al. 2016). The Project site is on Older Quaternary (Pleistocene) alluvium, with marine deposits consisting of older alluvium, lake, playa, and terrace deposits (Jennings et al. 2010), though a 2004 analysis suggests an Early to Middle Holocene age for deposits within the Project site (Rosenthal et al. 2004).

Soils within the Project site consist of Woo series, Deldota series, and Paver series. Woo clays are well drained alluvial soils with 0 to 2 percent slopes derived from sedimentary rock parent material and are

typically found on alluvial fans adjacent to the valley (UCD CASRL 2003a). Deldota clays consist of somewhat poorly drained residuum with 0 to 2 percent slopes formed from weathered sedimentary rock parent material and are typically found on fan skirts and low alluvial fans adjacent to valley basin rims (UCD CASRL 2003b). Paver series soils are well drained alluvium with 0 to 5 percent slopes derived from sedimentary rock parent material and are typically found on inset fans and alluvial fans adjacent to fan remnants and terraces on the west side of the San Joaquin Valley (UCD CASRL 2002).

4.5.2.2 Prehistoric Setting

Archaeologists have developed individual cultural chronological sequences tailored to the archaeology and material culture of each subregion of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. Human history was initially divided in central California into three periods: the Paleoindian period, the Archaic period, and the Emergent period. This scheme used sociopolitical complexity, trade networks, population, and the introduction and variations of artifact types to differentiate between cultural units. New radiocarbon dates are used by Rosenthal et al. (2007), who have divided human history in central California into the five periods described below.

- Paleoindian Period (13500 to 10500 years before present [BP]). This period represents the transition from the Pleistocene to the Holocene geologic epoch. Many Pleistocene landforms are long eroded and sites lost. However, a distinctive projectile point type, basally thinned with a central flute, is well dated to this time period. These concave-base points have been found in several locations within the San Joaquin Valley and one within the Sacramento Valley.

- Lower Archaic Period (10500 to 7500 BP). During the middle Holocene, a period of climate change resulted in a cycle of widespread fan and floodplain deposition, presumably deeply burying and destroying many archaeological sites that would date to this time period. However, the limited evidence available suggests that regional trade networks had been established by this point, as shell beads from California are found in the western and central Great Basin. One Lower Archaic archaeological site has been identified in the Central Valley, which includes a small group of stone artifact groupings in close association with each other and a small amount of animal remains that include fish, waterfowl, mussels, and a few fragments of deer and elk bone.

- Middle Archaic Period (7500 to 2500 BP). Many sites from the Middle Archaic have been located in buried contexts, especially in the foothills of central California. Deposits associated with early Middle Archaic sites include artifact in groupings with close association of flaked and ground stone tools used for resource procurement and processing; few beads or ornaments have been found. The subsistence base of prehistoric groups begins to expand and diversify during the Middle Archaic period with a developing acorn economy, as evidenced by the advent of the mortar and pestle, and by the growing importance of fishing as shown by the appearance of gorge hooks, composite bone hooks, and spears.

- Upper Archaic Period (2500 to 850 BP). Upper Archaic sites are characterized by a higher degree of sedentism, a highly developed bone tool industry, numerous mortars and pestles that further imply a greater reliance on acorns, and tightly flexed burials with few to no associated artifacts or

preference toward orientation. When present, associated burial artifacts typically include Olivella saddle and saucer beads and Haliotis pendants. Additionally, a proliferation of specialized tool technologies developed, including bone whistles and other ornaments The first rich black midden soils (deposits containing shells, animal bones, and other refuse that indicate longer-term human settlement) are recorded from this period.

- Emergent Period (850 BP to the historic era). Development of large, central villages with resident political leaders and specialized activity sites started to form. Artifacts associated with this period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments. The Emergent period is thought to be associated with a new level of sedentism, status ascription, and regional trade as indicated by the presence of finished artifacts and food remains that could not be obtained locally.

4.5.2.3 Ethnographic Setting

Merced County has traditionally been home to speakers of Northern Valley Yokuts. Population estimates for the Central Valley prior to European arrival in the Americas hovered around 100,000 people (Rosenthal et al. 2007), with anywhere from 11,000 to 30,000 of these being Northern Valley Yokuts-speakers (Wallace 1978).

Ethnographically, Yokuts groups are known for dense settlements and complex sociopolitical organization, even compared with other Indigenous Californian groups (Bettinger 2015). In terms of subsistence, the San Joaquin River and its many tributaries were the lifeblood of Yokuts survival. Salmon were among the most important fish, as were white sturgeon and river perch. Waterfowl, such as geese and ducks, were also a key a resource. Wild plant foods like acorns were very important, as were tule roots and a variety of seeds. Notably, tule reed boats were used along the slow-moving waterways of the San Joaquin Valley, both for fishing and transportation. Tribes or villages could have as many as 300 people, with each tribe having a headman. Settlements were often perched on top of low mounds, on or near the banks of large watercourses. Many Yokuts groups practiced a fission-fusion settlement pattern, as did many native Californian groups. This pattern is characterized by tribal members gathering communally in the winter, at their principal villages, and then dispersing, in small family groups, into the surrounding landscape in spring to forage among new growth (Wallace 1978).

4.5.2.4 Historic Setting

Gabriel Moraga led the first Spanish expedition in the Project vicinity as early as 1805, followed by the expeditions of Padre Felipe Arroyo de la Cuesta. The name “Los Baños,” derived from “El Arroyo de Los Baños del Padre Arroyo” and later shortened to Los Baños Creek originates from these early Spanish expeditions and is a reference to the pools of water feeding the creeks that flowed into the San Joaquin Valley (City of Los Banos 2021). Initial expeditions into the San Joaquin Valley were exploratory in nature but were soon followed by more intense campaigns to convert and relocate Native Americans to permanently established missions. Missions quickly came to dominate the social, political, and economic lives of both Spanish and Native Americans across much of California during the Spanish Period. Missionization from around 1769 to 1821, in combination with the spread of European diseases, virtually ended the traditional lifeways of many Native American groups in California (Castillo 1978).

The Mexican Period (circa [ca.] AD 1821 to 1848) in California is an outgrowth of the Mexican Revolution. Accompanying changes in social and political views directly impacted the mission system when the missions were secularized in 1833. The Mexican government divided former mission lands among the Californios as ranchos, large private land grants. The ranchos facilitated the growth of a semi-aristocratic group that used local Native American populations as forced labor. Subsequently, this period was marked by growing antagonism between Native Americans and Euro-Americans, and continued declines in Native American populations (Castillo 1978).

The American period (ca. 1848 to present) in California history begins with the end of the Mexican-American War and the signing of the Treaty of Guadalupe Hidalgo in 1848. The rancho system also remained largely intact until 1862 to 1864, when many landowners were forced to sell or subdivide their holdings due to the complexities of proving land grant ownership in the American courts. With subdivision and the invention of cheap barbed wire, open ranges were fenced, and local economies shifted from cattle ranching to dairy farming and agriculture based on new crops, such as wheat (Castillo 1978).

The gold rush that began early in the American Period became the catalyst for major settlement growth and economic development in the region. As miners migrated toward the gold fields, many stopped to settle in the San Joaquin Valley, and the population increased steadily. The Central Pacific Railroad established lines though the San Joaquin Valley in 1872, as early Euro-American settler Henry Miller helped establish the agricultural industry in the area. In 1873, Gus Kreyenhagen opened a trading post near Los Baños Creek (City of Los Banos 2021). He named the store Los Banos, and other businesses soon followed. The settlement became the town of Los Banos (Kyle 2002).

Development of Irrigation in Merced County

Farming quickly became an important industry in the San Joaquin Valley. The large San Joaquin River delta provided fertile soils for crop cultivation. Beginning in 1852, farmers began construction of small irrigation canals between the Merced River and the surrounding land. Merced County was incorporated in 1855, and by 1870 private irrigation efforts on the San Joaquin River had resulted in a noticeably low flow. Desperate for farmable land, farmers reclaimed land covered by water and reduced the San Joaquin River delta and floodplain. The result was a greater need for reliable irrigation options, as flooding and salt water from the delta threatened farms (Stene 1994).

Organized irrigation in Merced County began in the mid-nineteenth century with the Robla Canal Company. In 1873, the young company was purchased by the Farmers Canal Company, which was subsequently purchased by railroad magnate C.H. Huffman and successful wheat farmer Charles F. Crocker. Their company, the Merced Canal and Irrigation Company, was later renamed the Crocker-Huffman Land and Water Company. Between 1870 and the beginning of the twentieth century, the company constructed several miles of irrigation canals around the city of Merced. Almost 50,000 acres were being irrigated by 1919, with most water coming from Bear Creek and the Merced River (Merced County Courthouse Museum 2023; Merced Irrigation District 2023).

In 1914, Crocker-Huffman announced intent to sell, due to low profit margins. Over the following five years the Merced County Farm Bureau and local residents advocated for and investigated the potential effectiveness of an irrigation district. Despite some pushback from farmers concerned by the potential

increase in taxes, the Merced Irrigation District (MID) was legally formed on December 8, 1919. In 1922 the MID purchased the existing Crocker-Huffman irrigation system, and four years later water flowed through the system to farms (Merced Irrigation District 2023).

The onset of the Great Depression pressured local farmers, and financially threatened the irrigation districts. Those that continued operation were further pressed during World War II. Improvement projects were delayed despite the need for reliable water to help grow food for the war. The end of the war brought U.S. soldiers home, and the economy boomed. Intermittent water shortages, necessary water system improvements, and an increased need for water led many irrigation districts to undergo changes in the late 1940s and into the 1950s (Merced County Fair 2023; Merced Irrigation District 2023).

To reduce reliance on the San Joaquin River for water, the Bureau of Reclamation devised the Delta Division Project. The project, among other purposes, transported water from the Sacramento River to the San Joaquin Valley via the Delta-Mendota Canal (United States Bureau of Reclamation 2023). The project was authorized in 1935, and the Delta-Mendota Canal was completed in 1952 (Stene 1994).

As California's population continued to increase, greater amounts of water were needed in the San Joaquin Valley. In 1960, voters approved a bond that allowed the California State Water Project (SWP) to construct an aqueduct that would carry water from the Sacramento-San Joaquin Delta into the valley. The concrete structure was formally named the Edmund G. Brown California Aqueduct. Known generally as the California Aqueduct, the structure is approximately 444 miles long, and traverses the Tehachapis into southern California after providing water to the San Joaquin Valley. The California Aqueduct and the Delta-Mendota Canal were connected in 2012, increasing operational flexibility (Water Education Foundation 2023).

4.5.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts to cultural resources. When an impact is determined to be significant, mitigation measures were identified to reduce or avoid that impact.

4.5.3.1 Methodology

The following impact analysis is based on the Cultural Resources Evaluation Report prepared for the Project by Stantec in July 2023. The results of the cultural resources survey are described in the following paragraphs.

Cultural Resources Records Search and Archival Research

Stantec requested a search within a 0.5-mile radius of the Project site from the Central California Information Center (CCaIC) on September 3, 2021. The records search included a review of the California Historic Resources Information System (CHRIS) which includes records of previous surveys, studies, and cultural resource sites. Additionally, Stantec reviewed records in the Historic Property Data File for Merced County, which contains information and locations of resources of recognized historical significance, including those evaluated for listing in the NRHP, the CRHR, the California Inventory of Historic Resources, California Historic Landmarks, and California Points of Historical Interest. The purpose of the records search was to: (1) determine if known cultural resources have been recorded

within or adjacent to the Project site; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and evaluation of cultural resources.

The results of the records search indicate that four cultural resource studies have been previously completed within a 0.5-mile radius of the Project site, and three cultural resources have been previously recorded within 0.5 mile of the Project site (CHRIS 2021). As shown in Table 4.5-1, the previously recorded resources include a segment of the California aqueduct and a pumping plant associated with the aqueduct, as well as a prehistoric era-flake scatter. All of the previously identified resources are outside the Project site, although the Aqueduct segment is approximately 100 feet from the Project boundary. None of the resources will be impacted by Project activities.

Table 4.5-1. Cultural Resources in or Within 0.5- Mile of the Study Area

Primary No.	Site Type	Location	NRHP Eligibility
P-24-000035	Two basalt flakes	Outside of Project site	N/A
P-24-001931	A segment of the California aqueduct	Outside of Project site	Eligible (2S2)
P-24-002192	An industrial pumping plant structure associated with the California Aqueduct	Outside of Project site	Eligible (3D)

Sources: Hess et al. 1992; Rogers 2017; Cleveland 2019

Cultural Resources Field Survey

Stantec conducted a pedestrian archaeological survey of the Project site from April 25 to April 27, 2023 and July 12, 2024. During the field survey no intact cultural deposits, either historic or precontact, were encountered. However, several ditches and ranch roads were observed during pedestrian survey. Review of available historic aerial photographs suggests that the ranch roads and several ditch alignments observed during the pedestrian survey shifted over time. Of the ditches observed during the pedestrian survey, two retained their historic alignment and were recorded on Department of Parks and Recreation 523 forms. However, it appears that both ditches have maintained continued use through the modern period, and no artifacts or features were found in association with the ditches. In addition to their continued use, the ditches appear modernized and have been regularly maintained. Updates include corrugated steel and polyvinyl chloride piping, concrete wells, and concrete ditches for irrigation. The observed ditches do not extend beyond the Project site. As a result of their continued use and modernization, these ditches do not qualify under any NRHP/CRHR criteria. They are recommended not eligible for the CRHR and do not qualify as historical or unique archaeological resources. As such, there are no historical or unique archaeological resources (under CEQA) in the Study Area, and no further analysis is warranted. Additionally, no architectural resources were identified during the survey.

Native American Outreach

Stantec completed a request for information from the Native American Heritage Commission. In a letter response dated May 20, 2023, the NAHC did not identify any sacred sites within the Project site and recommended contacting the tribes on the list provided for more information on potential sites and tribal cultural resources within the vicinity (NAHC 2023). The County completed Assembly Bill (AB) 52 Native

American consultations and received no comments from local Native American representatives pertaining to identification, documentation, and mitigation of potential impacts to tribal cultural resources. One tribe responded to the County's AB 52 notification, Table Mountain Rancheria, who declined to consult (Table Mountain Rancheria 2023). Additional information is provided in Section 4.15, Tribal Cultural Resources, of this Draft EIR.

4.5.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines' Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to cultural resources are significant.

Would the Project:

- Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
- Disturb any human remains, including those interred outside of formal cemeteries?

4.5.3.3 Project Impacts

This section discusses potential impacts to cultural resources associated with the Project and provides mitigation measures where necessary.

Historic Resource

Impact CUL-1 The Project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.

There are no known historical resources within or adjacent to the Project area. A segment of the California Aqueduct is located approximately 100 feet from the Project site, but Project activities would not impact or affect the resource. Two irrigation ditches within the Project site retained their historical alignments, but have been modernized and continually used; therefore, these ditches were not eligible for CRHR and are not historical resources under CEQA (Appendix I).

Based on soils and geologic context of the Project site, there is a low potential for unknown subsurface resources. Despite the low potential for a historical resource to be present at the Project site, the inadvertent discovery of an unknown subsurface archaeological resource that could qualify as a historical resource cannot be entirely discounted. Therefore, Mitigation Measure CUL-1, which involves retaining a qualified archaeologist to coordinate cultural mitigation; and Mitigation Measure CUL-2, a protocol for inadvertent discovery of a cultural resource, would be implemented for the Project. The implementation of Mitigation Measures CUL-1 and CUL-2 would reduce potentially significant impacts to a less-than-significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-1: Retain a Qualified Archaeologist and Training: The Applicant/contractor shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology, to carry out all Mitigation Measures related to archaeological and historical resources prior. All personnel entering the Project site shall attend a Cultural Resources Awareness Training provided by the qualified archaeologist before beginning work onsite. The primary Cultural Resources Awareness Training shall occur before construction activities begin, and as-needed thereafter. The training shall include an overview of potential cultural resources that could be encountered during ground-disturbing activities. This will facilitate worker recognition, avoidance, and subsequent immediate notification of the qualified archaeologist for further evaluation and action, as appropriate. The training will also cover penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. If construction is phased, additional trainings shall be conducted for all new construction personnel. The training sessions shall focus on the recognition of the types of archaeological resources that could be encountered at the Project site and the procedures to be followed if they are found. Documentation shall be retained demonstrating that all construction personnel attended the training.

MM CUL-2: Inadvertent Discovery of Historic or Archaeological Resources: If prehistoric or historic-era cultural resources, including tribal resources, are encountered during the course of grading or construction, all ground-disturbing activities within 50 feet of the find shall cease. The qualified archaeologist shall evaluate the significance of the resources and recommend appropriate treatment measures. Per CEQA Guidelines Section 15126.4(b)(3)(A), Project redesign and preservation in place shall be the preferred means to avoid impacts to significant archaeological sites. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures in consultation with Merced County, which may include data recovery or other appropriate measures. Merced County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. If an artifact must be removed during project excavation or testing, curation may be an appropriate action. The qualified archaeologist shall prepare a report documenting evaluation and additional treatment of the resource (if needed). A copy of the report shall be provided to Merced County and to the CCaIC. Construction can recommence based on direction of the qualified archaeologist.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Archaeological Resource

Impact CUL-2 The Project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.

There are no known archaeological resources within the Project site or in the vicinity of the Project area that are at risk due to Project activities. Thus, there is no risk of impacting known archaeological resources.

As discussed above, the inadvertent discovery of an archaeological resource cannot be entirely discounted, in the same way an inadvertent discovery of a historical resource cannot be discounted (Impact CUL-1). Therefore, Mitigation Measures CUL-1 and CUL-2, would be implemented for the Project. The implementation of Mitigation Measures CUL-1 and CUL-2 would reduce potentially significant impacts to a less-than-significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measures CUL-1 and CUL-2 would be required.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Human Remains

Impact CUL-3 The Project would not disturb any human remains, including those interred outside of formal cemeteries.

No human remains are known to be located at or near the Project site. However, in the event that human remains are inadvertently discovered during project construction activities, the human remains could be damaged or disturbed. This impact is considered potentially significant but would be reduced to a less-than-significant level by implementing Mitigation Measure CUL-3, which outlines procedures for an inadvertent discovery of human remains during Project construction.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-3: **Inadvertent Discovery of Unmarked Burials.** If human remains are uncovered during Project construction, the Project operator shall immediately halt work within 50 feet of the find, contact the Merced County Coroner to evaluate the remains, and follow the procedures and protocols set forth in

CEQA Guidelines Section 15064.4 (e)(1). If the County Coroner determines that the remains are Native American in origin, the NAHC will be notified in accordance with Health and Safety Code Section 7050.5(c) and PRC 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per PRC Section 5097.98. The landowner shall ensure that the immediate vicinity where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred (as prescribed in PRC Section 5097.98) with the MLD regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et seq.) directing identification of the next-of-kin will apply.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

4.5.3.4 PG&E Interconnection Infrastructure

As described in Chapter 2.0, Project Description, PG&E would construct the Project's interconnection facilities. Activities would include the installation of the gen-tie line terminal equipment and fiber optic line terminal equipment, and installation of one circuit breaker at the Mercy Springs Substation. PG&E's improvements would require minimal ground disturbance and would occur within areas previously disturbed and occupied by existing electrical facilities within the substation. The Central California Information Center record search indicated there are no known cultural resources within the PG&E substation (CHRIS 2021). PG&E's standard best management practices and APMs include preconstruction cultural resources inventory and data recovery, if necessary, and minimization or avoidance of impacts to any potentially significant cultural resources that might be discovered through standard protocols. Impacts would be less than significant.

4.5.3.5 Cumulative Impacts

The geographic scope of the cumulative impact analysis for cultural resources is the greater San Joaquin Valley area. This geographic scope of analysis is appropriate because the archaeological and historical resources within this area are expected to be similar to those that occur on the Project site because of their proximity, and because similar environments, landforms, and geology within this vicinity would likely yield artifacts of similar sensitivity and quantity.

No identified cultural resources would be impacted by the Project. However, the Project and other related projects could disturb unknown subsurface human remains or historic or archaeological resources through excavation and ground disturbance during construction. These impacts, in combination with other cumulative projects in the area, have the potential to contribute to a cumulatively significant cultural resources impact due to the potential loss of historical resources, archaeological resources, and human remains unique to the region. However, potential impacts on unknown cultural resources associated with the Project would be appropriately mitigated through implementation of inadvertent discovery procedures as detailed in Mitigation Measures CUL-1 through CUL-3. Therefore, with the implementation of mitigation measures, and given that related projects would be subject to similar mitigation requirements, the total

impact of related projects on unknown cultural resources would be less-than-significant, and the contribution from the Project would not be cumulatively considerable.

4.6 ENERGY

This section provides the content and analysis required by PRC Section 21100(b)(3) and described in CEQA Guidelines Appendix F. PRC Section 21100(b) and CEQA Guidelines Section 15126.4 require that an EIR identify mitigation measures to minimize a project's significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. This section describes the impacts related to energy resources that would result from implementation of the Project. Where applicable, mitigation measures are included for significant impacts. The County received no scoping comments pertaining to energy (Appendix A).

4.6.1 Regulatory Setting

4.6.1.1 Federal

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (42 U.S. Code [USC] Section 8201 et seq.) serves as the underlying authority for federal energy management goals and requirements and is the foundation of most federal energy requirements. The National Energy Conservation Policy Act also established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards and for revising existing standards. The NHTSA and the United States Environmental Protection Agency (USEPA) are taking coordinated steps to enable the production of clean energy vehicles with improved fuel efficiency. The NHTSA sets the Corporate Average Fuel Economy (CAFE) levels, which are rapidly increasing over the next several years to improve energy security and reduce fuel consumption. The first phase of the CAFE standards (for model years 2017 to 2021) is projected to require a range from 40.3 to 41.0 miles per gallon in model year 2021 on an average industry fleetwide basis. The second phase of the CAFE program (for model years 2022 to 2025) is projected to require a range from 48.7 to 49.7 miles per gallon in model year 2025 on an average industry fleetwide basis. The second phase of standards has not been finalized due to the statutory requirement that the NHTSA set average fuel economy standards not more than five model years at a time.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA) aimed to increase United States energy security, increased CAFE standards for motor vehicles, and included provisions related to energy efficiency, such as renewable fuel standards (RFS), appliance and lighting efficiency standards, and building energy efficiency standards. The EISA required increasing levels of renewable fuels to replace petroleum. The USEPA is responsible for developing and implementing regulations to ensure transportation fuel sold into the United States contains a minimum volume of renewable fuel.

The RFS program regulations were developed in collaboration with refiners, renewable fuel products, and other stakeholders and were created under the Energy Policy Act of 2005. The RFS program established the first renewable fuel volume mandate in the U.S. As required under the EISA, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The RFS

program was expanded in several ways that laid the foundation for achieving significant reductions of greenhouse gas (GHG) emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the nation's renewable fuels sector. The updated program is referred to as RFS2 and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- EISA established new categories of renewable fuel and set separate volume requirements for each one; and
- EISA required by the USEPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternate energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Inflation Reduction Act of 2022

The Inflation Reduction Act (IRA) of 2022 will make the single largest investment in climate and energy in American history. The IRA enables the U.S. to tackle the climate crisis, advance environmental justice, and secure the U.S.'s position as a world leader in domestic clean energy manufacturing, and puts the U.S. on a pathway to achieving the Biden Administration's climate goals, including a net-zero economy by 2050.

Federal Vehicle Standards

The Energy Policy and Conservation Act of 1975 (EPCA) mandated that the NHTSA establish and implement a regulatory program for motor vehicle fuel economy, known as the CAFE program, to reduce national energy consumption. As codified in Chapter 329 of Title 49 of the USC, as amended by the EISA, the EPCA sets forth specific requirements concerning the establishment of average fuel economy standards for passenger cars and light trucks. The EISA, discussed above, amended the EPCA CAFE program requirements by providing the Department of Transportation (DOT) additional rulemaking authority and responsibilities.

Consistent with its statutory authority in rulemaking to establish CAFE standards for model year 2017 and beyond, the NHTSA developed two phases of standards. The first phase included final standards for model years 2017–2021. The second phase, covering model years 2022–2025, included standards that were not final due to the statutory requirement that the NHTSA set average fuel economy standards not more than five model years at a time. Rather, the NHTSA wrote that those standards were augural, meaning that they represented its best estimate, based on the information available at that time, of what levels of stringency might be maximally feasible in those model years. In 2012, the agencies jointly adopted more stringent Phase 2 standards for light-duty cars and trucks, which would cover model years

2017 through 2025. In August of 2016, the agencies adopted more stringent Phase 2 standards for medium- and heavy-duty vehicles, which would cover 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.

On March 31, 2020, the NHTSA and the USEPA released a new rule, the final Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, setting CAFE and carbon dioxide (CO_2) emissions standards for model years 2021 through 2026 passenger cars and light trucks. The rule rolls back the 2012 standards for model years 2021 through 2026 for passenger cars and light trucks, which had required an average fleetwide fuel economy equivalent of 54.5 miles per gallon in model year 2025 with a 5 percent annual increase to an average fuel economy of about 40 miles per gallon in model year 2025 with annual increases of 1.5 percent starting in 2021. As a part of issuing the new SAFE rule, the NHTSA issued a Final Environmental Impact Statement which found that the relaxed standards would result in increased petroleum consumption, which, in turn, would result in increases to GHG and criteria pollutant emissions known to contribute to adverse health impacts (NHTSA 2020). The estimated increases from the rollback of the 2012 standards are expected to result in more than a billion metric tons additional climate pollution through 2040 as determined by calculating the difference from the reduction of 2 billion metric tons the 2012 rule was expected to accomplish compared to the standards of the 2020 rule (NHTSA 2020). On January 20, 2021, an Executive Order was issued on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. In response to the Part One Rule, in December 2021, the DOT withdrew its portions of the SAFE rule. As a result, states are now allowed to issue their own GHG emissions standards and zero-emissions vehicle mandates. In addition, the Part Two Rule was adopted to revise the existing national GHG emission standards for passenger cars and light trucks through model year 2026. These standards are the strongest vehicle emissions standards ever established for the light-duty vehicle sector and will result in avoiding more than 3 billion tons of GHG emissions through 2050.

4.6.1.2 State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) is a state agency created by a constitutional amendment to regulate privately owned utilities providing telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services and in-state moving companies. The CPUC is responsible for ensuring that California utility customers have safe, reliable utility services at reasonable rates while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities and local distribution pipelines of natural gas.

California Energy Code

Compliance with the California Energy Code (Title 24, Part 6, of the California Code of Regulations [CCR], California's Energy Efficiency Standards) and Title 20, Public Utilities and Energy, standards must occur for all new buildings constructed in California. These efficiency standards apply to new construction of both residential and nonresidential (i.e., maintenance buildings and pump station buildings associated

with the program) buildings, and they regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit processes, and local government agencies may adopt and enforce energy standards for new buildings provided that these standards meet or exceed those provided in the Title 24 guidelines.

Warren-Alquist Energy Resources Conservation and Development Act

Initially passed in 1974 and amended since, the Warren-Alquist Energy Resources Conservation and Development Act (Warren-Alquist Act) created the California Energy Commission (CEC), California's primary energy and planning agency. The seven responsibilities of the CEC are forecasting future energy needs, promoting energy efficiency and conservation through setting standards, supporting energy-related research, developing renewable energy resources, advancing alternative and renewable transportation fuels and technologies, certifying thermal power plants 50 megawatts (MW) or larger, and planning for and directing state response to energy emergencies. The CEC regulates energy resources by encouraging and coordinating research into energy supply and demand problems to reduce the rate of growth of energy consumption. Additionally, the Warren-Alquist Act acknowledges the need for renewable energy resources and encourages the CEC to explore renewable energy options that would be in line with environmental and public safety goals (Warren-Alquist Act Public Resources Code [PRC] section 25000 et seq.).

California Integrated Energy Policy

Senate Bill (SB) 1389 requires the CEC to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (PRC Section 25301[a]). The CEC adopts an Integrated Energy Policy Report every two years and an update every other year (CEC 2022).

California Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS) was initially established in 2002 by SB 1078, with the initial requirement that 20 percent of electricity retail sales be served by renewable resources by 2017. The program was accelerated in 2006 under SB 107, which required that the 20 percent mandate be met by 2010. In April 2011, SB 2 was signed into law, requiring electricity retailers in the state to procure 33 percent of their energy sources from renewable energy sources by the end of 2020 (CPUC 2011). In addition, SB 350, passed in 2015, directs California utilities to further increase the amount of renewable energy delivered to customers to 50 percent by 2030. In 2018, SB 100 further increased California's RPS and required retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030; and that the California Air Resources Board (CARB) should plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

The CPUC implements and administers RPS compliance rules for California's retail sellers of electricity, which include large and small investor-owned utilities, publicly owned utilities, electric service providers,

and community choice aggregators. The CEC is responsible for the certification of electrical generation facilities as eligible renewable energy resources and adopting regulations for the enforcement of RPS procurement requirements of public-owned utilities.

California Assembly Bill 1493 (AB 1493, Pavley)

In response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (commonly referred to as CARB's Pavley regulations), enacted in 2002, requires CARB to set GHG emission standards for new passenger vehicles, light-duty trucks, and other vehicles manufactured in and after 2009 whose primary use is non-commercial personal transportation. Phase I of the legislation established standards for model years 2009–2016 and Phase II established standards for model years 2017–2025.

CARB's Advanced Clean Car Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012 and is closely associated with the Pavley regulations. The program requires a greater number of zero-emission vehicle models for years 2015 through 2025 to control smog, soot and GHG emissions. This program includes the Low-Emissions Vehicle (LEV) regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the Zero-Emissions Vehicle regulations (ZEV) to require manufactures to produce an increasing number of pure ZEV's (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles (PHEV) between 2018 and 2025.

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

In 2004, CARB adopted an Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling to reduce public exposure to diesel particulate matter emissions (Title 13 California Code of Regulations [CCR] Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles

In addition to limiting exhaust from idling trucks, in 2008, CARB approved the Truck and Bus regulation to reduce NO_X, PM_{10}, and $PM_{2.5}$ emissions from existing diesel vehicles operating in California (13 CCR Section 2025). The phased regulation aims to reduce emissions by requiring installation of diesel soot filters and encouraging the retirement, replacement, or retrofit of older engines with newer emission-controlled models. The phasing of this regulation has full implementation by 2023.

CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation, adopted by CARB on July 26,

2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 CCR Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

While the goals of these measures are primarily to reduce public health impacts from diesel emissions, compliance with the regulation has shown an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines.

California Environmental Quality Act

Under CEQA (PRC Section 21100(b)(3)), EIRs are required to include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. This analysis should include the proposed project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include project size, location, orientation, equipment use, and any renewable energy features that could be incorporated into the proposed project (CEQA Guidelines Section 15126.2(b)).

CEQA Guidelines Appendix F provides a list of energy-related topics to be analyzed in the EIR, and more specifically identifies the following topics for consideration in the evaluation of energy impacts in an EIR, to the extent the topics are applicable or relevant to the proposed project:

- The proposed project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the proposed project including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed;
- The effects of the proposed project on local and regional energy supplies and on requirements for additional capacity;
- The effects of the proposed project on peak and base period demands for electricity and other forms of energy;
- The degree to which the proposed project complies with existing energy standards;
- The effects of the proposed project on energy resources; and
- The proposed project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

In late 2018, the California Natural Resources Agency finalized updates to the 2018 CEQA Guidelines. Appendix G was amended to now include the analysis of energy. Previously included in Appendix F, the Appendix G Checklist now provides energy criteria for the analysis of wasteful energy consumption and conflicts with state or local energy efficiency plans. Appendix F did not describe or require significance thresholds for determining the significance of impacts related to energy. According to the updated Appendix G Checklist, Issue VI. Energy, a project would have a significant impact on energy and energy resources 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.

4.6.1.3 Local

2030 Merced County General Plan

The 2030 Merced County General Plan (2030 General Plan) is a legal document that serves as Merced County's blueprint for future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers Merced County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the County's future development.

The following policy related to energy resources from the 2030 General Plan is applicable to the Project (Merced County 2013):

- **Policy NR-2.9: Energy Conservation**. Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).

4.6.2 ENVIRONMENTAL SETTING

4.6.2.1 Electricity and Natural Gas

Pacific Gas and Electric (PG&E) is the utility company that provides electricity and natural gas supplies to the County. Upon buildout of the Project site, electricity would be provided by PG&E. In February 2018, PG&E announced that it had reached California's 2020 renewable energy goal three years ahead of schedule (PG&E 2018). In 2022, approximately 38 percent of PG&E's electricity came from renewable resources including solar, wind, geothermal, biomass and small hydroelectric sources. Additionally, approximately 95 percent of PG&E's total electric power mix was from GHG-free sources, which includes nuclear and large hydroelectric sources of energy (PG&E 2023).

The CEC tracks electricity and natural gas consumption across the state for residential and non-residential sources. In 2022, Merced County used a total of 3,185 gigawatt-hours (GWh) of electricity and 131 millions of therms of natural gas. Approximately 74 percent of the electricity use and 80 percent of the natural gas use in the County came from non-residential sources (CEC 2016a, CEC 2016b). The Project site is currently undeveloped and, as a result, does not generate a demand for energy resources.

4.6.2.2 Gasoline

In 2022, approximately 13.6 billion gallons of gasoline were sold within California. Approximately 97 percent of gasoline consumed in California is used by light-duty cars, pickup trucks, and sport utility vehicles (CEC 2024a).

4.6.2.3 Diesel

Heavy-duty trucks, delivery vehicles, trains, ships, boats, construction equipment, and other heavy-duty equipment typically consume diesel fuel since diesel fuel has approximately 12 percent more energy per gallon than gasoline. In 2022, approximately 3.6 billion gallons of diesel were sold within California (CEC 2024b).

4.6.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to energy. If an impact was determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.6.3.1 Methodology

Project energy demand during construction, operations, and decommissioning was determined based on the modeling that was conducted for the Project using CalEEMod and using vehicle and equipment emission factors from the CARB's EMFAC2021 (v1.0.2) and EMFAC OFFROAD2021 (v1.0.4).

Project construction was assumed to require three construction tasks that include civil work, facility construction, and testing and commissioning. Construction was modeled to begin in January 2025 and complete by December 2026. Project construction is expected to generate approximately 300 passenger car trips per day and 80 heavy-duty trips (vendor, hauling, and water deliveries) per day. In addition, the Project would require hauling truck trips to transport concrete to the site. It was assumed that a total of 390 trucks would haul concrete from a batch plant located within 20 miles of the Project site over the course of Project construction.

During operations, the Project would employ approximately 10 full-time employees and up to 10 part-time employees. To estimate emissions, it was conservatively assumed that the Project would generate 50 vehicle trips per day with a trip distance of 56 miles. CalEEMod default values were applied to estimate energy usage associated with area sources (i.e., landscaping, water use, wastewater use, solid waste disposal, etc.). The Project would also install a back-up diesel generator on the Project site. The proposed back-up generator would have a horsepower of 268 and was assumed to operate a maximum of 100 hours per year.

Decommissioning was assumed to take place 40 years after implementation of the Project. Decommissioning would take place over one year and would include a 10-week demolition phase followed by restabilization and revegetation of the site. Decommissioning was modeled using CalEEMod with default equipment assumptions, and the amount of worker, hauling, and vendor trip numbers and trip lengths were assumed to be the same as construction.

Please refer to the Air Quality and Greenhouse Gas Impact Assessment prepared for the Project for further detail regarding the CalEEMod modeling assumptions (see Appendix E). The Project's energy consumption and demand were evaluated in comparison to the CEQA thresholds of significance to determine whether the Project would result in a significant impact related to energy.

4.6.3.2 Thresholds of Significance

According to the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine if impacts to energy would be significant.

Would the project:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

4.6.3.3 Project Impacts

This section discusses potential impacts to energy associated with the Project and provides mitigation measures where necessary.

Energy Consumption

Impact EN-1 The Project would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation.

Construction Energy Demand

The analysis of energy usage during construction is limited to transportation fuels (i.e., petroleum). During construction of the Project, energy resources would be consumed in the form of diesel and gasoline fuel from the use of off-road equipment (i.e., tractors, excavators, cranes) and on-road vehicles (i.e., construction employee commutes, haul trucks). Construction was assumed to occur over approximately 24 months in the years 2025 and 2026.

Temporary electric power for as-necessary lighting and electronic equipment would be provided by portable generators and local distribution. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically powered hand tools and, possibly, construction trailers by managerial staff during the hours of construction activities. The electricity used for construction activities would be temporary and minimal; therefore, impacts would be less than significant.

Natural gas is not anticipated to be required during construction of the Project. Any minor amounts of natural gas that may be consumed as a result of project construction would be temporary and negligible, and would not have an adverse effect; therefore, impacts would be less than significant.

Off-Road Equipment

Table 4.6-1 provides estimates of the Project's construction fuel consumption from off-road construction equipment.

Table 4.6-1. Construction Off-Road Fuel Consumption

Project Component	Total Annual Fuel Consumption (gallons)	Fuel Type
Off-Road Construction Equipment	147,472	Diesel
Off-Road Pick-Up Trucks	24,843	Diesel
	7,101	Gasoline

Source: Appendix O

As shown above, construction activities associated with the Project were estimated to consume approximately 172,315 gallons of diesel fuel and 7,101 gallons of gasoline from the use of off-road equipment. Moreover, the Project applicant intends to use a "green fleet" for construction. The green fleet would include the use of lower emission engines for off-road equipment which would reduce the use of diesel fuel. The construction fuel consumption presented in Table 4.6-1 do not account for the diesel fuel reductions that would occur from the green fleet and, as such, Table 4.6-1 presents a conservative estimate of off-road construction diesel fuel.

On-Road Vehicles

On-road vehicles for construction workers, vendors, and haulers would require fuel for travel to and from the Project site during construction. Table 4.6-2 provides an estimate of the total on-road vehicle fuel usage during construction.

Table 4.6-2. Construction On-Road Fuel Consumption

Project Component	Average Fuel Economy (miles/gallon)	Total VMT	Total Fuel Consumption (gallons)
Worker Trips	26.94	10,550,400	391,666
Vendor Trips	7.54	1,406,720	186,597
Haul Trips	6.18	7,800	1,262
Water Delivery Trips	6.18	407,300	65,919
Total Construction On-Road Trips		**12,372,220**	**645,445**

Source: Appendix O.
Note:
Calculations use unrounded numbers; totals may not appear to sum exactly due to rounding.
Key:
VMT = vehicle miles traveled

As shown above, construction of the Project was estimated to consume 645,445 gallons of fuel from on-road vehicles.

Overall, construction activities associated with the Project would result in the consumption of petroleum-based fuels. However, there are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in other parts of the state. Although the consumption of fuels during construction and decommissioning would be irreversible, the Project would be required to comply with the CARB's Airborne Toxics Control Measure, which restricts heavy duty diesel vehicle idling time to 5 minutes and comply with applicable regulations directed at reducing emissions and increasing energy efficiency. Finally, the developer would be financially motivated to consume fuel efficiently in order to reduce construction costs. Therefore, it is

expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region. Impacts would be less than significant.

Operation Energy Demand

During operations of the Project, energy would be required to power the onsite buildings, any off-road equipment, and to fuel the vehicles traveling to and from the Project site.

Building Energy

The proposed operations and maintenance (O&M) building and warehouse would require energy for normal operations, such as building lighting and temperature controls. Over the course of a year, operational natural gas consumption would total 102,044 thousand British thermal units (kBTU), and operational electricity consumption would total 57,134 kilowatt-hours (kWh). Water pumps to transport water from the Delta-Mendota Canal to onsite water tanks would require additional electricity during pumping operations; however, the energy required to accommodate pumping water would be minimal. In 2020, PG&E provided approximately 879 billion kBTU (848,705 million cubic feet) of natural gas and 35,838 GWh of electricity (PG&E 2021). Thus, the Project's annual natural gas use would represent approximately 0.00001 percent of the annual natural gas use in PG&E's service area and the Project's annual electricity use would represent approximately 0.0001 percent of the total electricity consumption in PG&E's service area. Accordingly, the Project would consume a minimal amount of energy per year, especially considering the anticipated capacity of the Project. Assuming a module efficiency of 18.46 percent (U.S. Department of Energy 2021), the Project would generate approximately 27,187 MWh of carbon-free electricity each year over the Project's lifespan, which would more than offset the minimal amount of energy consumed to operate the Project. This electricity generation also would assist state investor-owned utilities in meeting their obligations under state RPS guidelines by providing a renewable energy alternative to the utilities' existing power mix. Therefore, total power generation would offset the Project's total energy consumption and would not result in the inefficient, wasteful, or unnecessary use of energy.

Off-Road Equipment

During Project operations, a 268-horsepower back-up diesel generator would be used onsite. The generator was assumed to operate a maximum of 100 hours per year. In addition, to account for the use of maintenance trucks operating on-site, three diesel-fueled off-highway trucks were assumed to operate for 2 hours each day. Based on the foregoing assumptions, the generator would require approximately 320 gallons of diesel fuel each year for routine maintenance and testing. For context, the average car in 2020 used 474 gallons of fuel per year (U.S. Department of Energy 2020), which exceeds the amount of fuel that would be used by the proposed generator. Other than for routine maintenance and testing, the generator would only operate during emergency situations, if any occur. The maintenance trucks would require approximately 15,620 gallons of diesel fuel per year, which would constitute less than 0.001 percent of the state's annual diesel fuel consumption. Therefore, the fuel consumption associated with operations of off-road equipment would not be considered inefficient, wasteful, or unnecessary.

Transportation Energy

The Project would employ approximately 10 full-time employees and up to 10 part-time employees for ongoing maintenance of the Project. Maintenance activities would include cleaning the PV panels, monitoring electricity generation, providing site security, and replacing or repairing equipment as needed. For this analysis, it was assumed that the site would generate up to 50 trips per day, assuming a trip generation rate of 2.5 trips per employee. In addition, a water truck is conservatively assumed to deliver potable indoor water to the site every day. Because the Project site is located in a rural area, it was assumed that facility staff would travel from an average distance of 56 miles. Table 4.6-3 provides an estimate of the daily and annual fuel consumed by vehicles traveling to and from the Project site. These estimates were derived using the same assumptions used in the operational air quality analysis for the Project. For further details relating to the assumptions used in the calculations, please refer to Appendix E.

Table 4.6-3. Long-Term Operational Vehicle Fuel Consumption

Trip Type	Vehicle Type	Percent of Vehicle Trips	Annual VMT	Average Fuel Economy (miles/gallon)	Total Annual Fuel Consumption (gallons)
Employee Commutes	Passenger Cars (LDA)	47.69	487,401	31.94	15,262
	Light Trucks and Medium-Duty Vehicles (LDT1, LDT2, MDV)	39.58	404,513	23.63	17,115
	Light-Heavy to Heavy-Heavy Diesel Trucks (LHD1, LHD2, MHDT, HHDT)	10.15	103,779	7.65	13,568
	Motorcycles (MCY)	1.98	20,247	42.42	477
	Other (OBUS, UBUS, SBUS, MH)	0.59	6,075	7.24	839
	Subtotal	*100*	*1,022,015*	--	*47,262*
Water Delivery Trips	Heavy-Heavy Duty Trucks	100	9,125	6.39	1,428
Total			**1,031,140**	**--**	**48,690**

Source: Appendix O.
Note: Calculations use unrounded numbers; totals may not appear to sum exactly due to rounding.
Key: VMT = vehicle miles traveled

As shown in Table 4.6-3, annual vehicular fuel consumption is estimated to be 47,262 gallons of a combination of gasoline and diesel fuel. To provide context, in 2021, California consumed approximately 33.31 million gallons of gasoline per day, or 12.158 billion gallons per year (EIA 2022). For context, if all of the on-road fuel was assumed to be gasoline, the Project's anticipated consumption of 48,690 gallons of fuel represents approximately 0.0004 percent of the state's demand for gasoline. Further, over the lifetime of the Project, the fuel efficiency of the vehicles being used by the employees and visitors is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Project site during operation would decrease over time.

Because there are no unusual project characteristics that would cause or require the use of operational equipment that would be less energy efficient compared with other similar projects, and because the Project would more than offset its energy demand and contribute a substantial source of renewable energy to California's energy supply, the Project would not result in inefficient, wasteful, or unnecessary energy use and impacts would be less than significant.

Decommissioning Energy Demand

When the Project ceases operation, the facilities would be decommissioned and dismantled, and the Project site restored to a condition suitable for agricultural use. Similar to construction, during decommissioning of the Project, energy resources would be consumed from the use of off-road equipment and on-road vehicles. Decommissioning was assumed to occur over approximately 12 months in the year 2065.

Off-Road Equipment

Table 4.6-4 provides estimates of the Project's decommissioning fuel consumption from off-road equipment.

Table 4.6-4. Decommissioning Off-Road Fuel Consumption

Project Component	Total Annual Fuel Consumption (gallons)	Fuel Type
Off-Road Decommissioning Equipment	26,636	Diesel
Off-Road Pick-Up Trucks	22,585	Diesel
	3,993	Gasoline

Source: Appendix O

As shown above, decommissioning of the Project was estimated to consume approximately 49,221 gallons of diesel fuel and 3,993 gallons of gasoline from the use of off-road equipment.

On-Road Vehicles

On-road vehicles for workers, vendors, and haulers would require fuel for travel to and from the site during decommissioning of the Project. Table 4.6-5 provides an estimate of the total on-road vehicle fuel usage during decommissioning.

Table 4.6-5. Decommissioning On-Road Fuel Consumption

Project Component	Average Fuel Economy (miles/gallon)	Total VMT	Total Fuel Consumption (gallons)
Worker Trips	34.99	4,384,800	125,320
Vendor Trips	8.03	584,640	72,819
Haul Trips	7.55	6,630	878
Water Delivery Trips	7.55	407,300	53,954
Total Decommissioning On-Road Trips		**5,383,370**	**252,970**

Source: Appendix O.
Note: Calculations use unrounded numbers; totals may not appear to sum exactly due to rounding.
Key: VMT = vehicle miles traveled

As shown above, decommissioning of the Project was estimated to consume 252,970 gallons of fuel from on-road vehicles.

Total off-road and on-road vehicular fuel consumption during decommissioning is estimated to be 306,184 gallons of a combination of gasoline and diesel fuel. If all of the on-road fuel was assumed to be gasoline, the Project's total anticipated consumption of fuel represents approximately 0.003 percent of the state's annual demand for gasoline (EIA 2022). Overall, there are no unusual Project characteristics that would necessitate the use of off-road equipment or on-road vehicles that would be less energy-efficient than at comparable sites in other parts of the state. Therefore, it is expected that fuel consumption associated with the decommissioning of the Project would not result in inefficient, wasteful, or unnecessary energy use compared with other similar projects. Impacts would be less than significant.

Conclusion

Based on the analysis above, the Project would consume energy resources during Project construction, operations, and decommissioning. However, the fuel consumption associated with the Project would not be inefficient, wasteful, or unnecessary, and a less-than-significant impact would occur.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

State or Local Renewable Energy Plan

Impact EN-2 The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The Project involves the construction, operation, and decommissioning of a solar facility that would produce a new renewable source of energy in the County. Project consistency with plans for energy efficiency are discussed for construction and operation below.

Construction

Construction equipment would comply with federal, state, and regional requirements where applicable. With respect to truck fleet operations, the USEPA and NHTSA have adopted fuel efficiency standards for medium- and heavy-duty trucks. As discussed above, the SAFE Rule established in 2020 would set an average fleetwide fuel economy equivalent of 40 miles per gallon in model year 2025. Truck fleets would incorporate these standards as they purchase newer model trucks and turn over their fleet. As such, these regulations would have an overall beneficial effect on reducing nationwide fuel consumption over

time as older trucks are replaced. Moreover, heavy-duty trucks would be required to comply with CARB's 5-minute idling limits that would reduce fuel consumption. Although these regulations are designed to reduce air quality emissions, they would also result in an increase in energy efficiency during construction.

Operation

California adopted the RPS in order to increase the amount of renewable energy supplied by utilities within the state. Implementation of the RPS would in turn reduce GHG emissions and further California's goal in meeting carbon neutrality by 2045. The Project would support California's RPS goal of procuring additional renewable resources in order to meet the state's RPS and carbon neutrality goals. Moreover, the Project is consistent with the goals laid out in CARB's 2022 Scoping Plan that include a measure to "generate clean electricity." As discussed in Section 4.8, Greenhouse Gas Emissions, the Project is reasonably expected to displace region-wide and statewide emissions of GHGs over the expected life of the Project. The reduction in GHG emissions is a direct result of increasing the share of renewable energy available to investor-owned utilities required to meet RPS.

Any onsite structures, including the substation control building, O&M office, and adjacent O&M warehouse, would be subject to Building Energy Efficiency Standards as required by the California Code of Regulations. The Building Energy Efficiency Standards are intended to save energy and increase electricity supply reliability. Pursuant to the California Green Building Standards Code (CALGreen) 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 HVAC; solar-reflective roofing materials; energy efficient indoor and outdoor lighting systems; incorporation of skylights; and other measures.

Therefore, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.6.3.4 PG&E Interconnection Infrastructure

PG&E would incorporate upgrades to the Mercy Springs Substation, 1,700 linear foot gen-tie line, and poles to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches. The construction equipment, workers, vehicle trips, and fuel required for upgrades to these facilities would be minimal compared to overall Project construction activities. The increase in fuel

use during construction would be minor compared to the rest of Project construction, and there is no indication that energy use would be any less efficient than other construction projects across the state. Moreover, operational energy use from occasional maintenance activities would be negligible. Therefore, activities associated with the PG&E interconnection infrastructure would result in a less-than-significant impact relating to energy.

4.6.3.5 Cumulative Impacts

Cumulative impacts occur when the incremental effects of a project are significant when combined with similar impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. The geographic scope of the cumulative impacts for energy is the PG&E service area.

The main contribution of energy consumption from the Project would be from construction equipment usage, haul truck trips, and employee trips during the construction phase and panel washing activities, maintenance trips, and employee trips during operation of the Project. The Project would, therefore, contribute to the increase in energy consumption in the transportation sector as well as the electricity and natural gas generation sectors. The consumption of energy resources during construction, however, would be minimal and temporary and would cease at the end of construction activities. These activities also would comply with applicable regulations designed to reduce emissions and increase energy efficiency.

Although the Project would result in a contribution to cumulative energy consumption within the PG&E service area, the Project would produce 75 MW of renewable energy in support of California's RPS and assist California's utilities in meeting their obligations under the CPUC's Energy Storage Framework by providing up to 75 MW of storage capacity. Additionally, the Project would more than offset its lifetime energy demands. As such, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The Project's location near the Mercy Springs Substation also facilitates energy efficiency by minimizing energy loss, which occurs through transmission via lengthy (over a mile) gen-tie lines.

Cumulative projects also would be subject to applicable federal and state regulations designed to reduce emissions and increase energy efficiency, including SJVAPCD's Rule 9510, which requires the use of cleaner construction equipment and results in greater fuel efficiency. Further, cumulative projects would in many cases be subject to environmental review under CEQA, which would require analysis and avoidance or minimization of impacts to energy resources through the development of alternatives, mitigation measures, and mitigation monitoring.

Many cumulative projects in the geographic area consist of utility-scale solar power generation facilities, such as the existing Vega Solar project located approximately 1,200 feet north of the Project site. The nature of these projects is such that, like the Project, they would be consistent with the strategies included in the CARB's Climate Change Scoping Plan. In order to meet the SB 32 GHG emissions reduction mandate, the Scoping Plan relies on achievement of the RPS target of 60 percent of California's energy coming from renewable sources by 2030 and 100 percent carbon-free sources by 2045. The Project and other similar projects are essential to achieving the RPS. Related renewable energy projects also would have similar minimal energy use that would be offset by renewable energy generation. Further, as solar

energy is a renewable resource, the Project would not affect the supply of solar energy elsewhere in the state. Rather, the Project, in addition to future solar projects in the state, would have a substantial beneficial effect in terms of reducing the reliance on fossil fuels and increasing reliance on renewable energy resources.

Accordingly, the Project would provide a new source of renewable energy and would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during Project construction, operations, or decommissioning. The Project would not contribute to cumulative energy consumption in California because operation of the Project would provide electric power with negligible operational energy consumption over the long term when compared to traditional fossil-fueled generation technologies. Thus, the Project would not have a cumulatively considerable impact on energy consumption, would not conflict with any renewable energy plans, and cumulative impacts would be less than significant.

4.7 GEOLOGY AND SOILS

This section describes the environmental and regulatory setting for geology and soil resources. Included is a review of existing conditions, a summary of applicable policies and regulations related to geology and soil resources, and an analysis of the environmental impacts of the Project. Where applicable, mitigation measures are included for potentially significant impacts. Merced County (County) received no scoping comments pertaining to geology and soil resources (Appendix A).

4.7.1 Regulatory Setting

4.7.1.1 Federal

Clean Water Act

The Clean Water Act (CWA) (33 U.S. Code [USC] 1344) primarily regulates waters of the United States. Further description of the CWA, including its application to biological and hydrological resources, is described in Section 4.4, Biological Resources, and Section 4.10, Hydrology and Water Quality. With respect to geology and soils, the CWA focuses on sediment control in two aspects. First, the United States Army Corps of Engineers administers Section 404, which regulates the discharge of fill into waters of the United States. Second, the CWA applies to stormwater discharges, where erosion control is an integral part of achieving permit compliance. For purposes of regulating non-point source storm water discharges, projects that disturb one or more acres may be required to obtain National Pollutant Discharge Elimination System (NPDES) coverage under the Construction General Permit. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which includes best management practices (BMPs) to regulate stormwater runoff, including measures to prevent soil erosion.

U.S. Uniform Building Code

The United States Uniform Building Code (UBC) provides site development and construction standards. The UBC is widely used throughout the U.S. and is generally adopted on a district-by-district or state-by-state basis. It has been modified for California conditions with more detailed and more stringent regulations.

4.7.1.2 State

Alquist-Priolo Earthquake Fault Zoning Act

In response to the severe fault rupture damage of structures by the 1971 San Fernando earthquake, the State of California enacted the Alquist-Priolo Earthquake Fault Zoning Act in 1972. This act required the State Geologist to delineate earthquake fault zones along known active faults that have a relatively high potential for ground rupture. Faults that are zoned under the Alquist-Priolo Act must meet the strict definition of being “sufficiently active” and “well-defined” for inclusion as a earthquake fault zones. The earthquake fault zones are revised periodically, and they extend 200 to 500 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified active fault

trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault, unless proven otherwise. Proposed construction in an earthquake fault zone is permitted only following the completion of a fault location report prepared by a California Registered Geologist.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). The California Building Standards Code establishes building requirements for construction and renovation. The most recent version of the California Building Standards Code by the California Building Standards Commission and took effect January 1, 2022 and it is based on the International Code Council's Building and Fire Codes. Included in the California Building Standards Code are the Electrical Code, Mechanical Code, Plumbing Code, Energy Code, and Fire Code. Finally, the California Building Standards Code regulates earthquake design requirements and grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate "zones of required investigation" (i.e., seismic hazard zones) where site investigations are required to determine the need for mitigation of potential liquefaction, earthquake-induced landslides, or ground displacements.

National Pollutant Discharge Elimination System Construction General Permit

Construction associated with the Project would disturb more than 1 acre of land surface potentially affecting the quality of stormwater discharges into waters of the US. Therefore, the Project would be subject to the National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, National Pollutant Discharge Elimination System No. CAS000002, Construction General Permit; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ and reissued 2022-0057-DWQ and effective September 1, 2023). The State Construction General Permit (CGP) regulates discharges of pollutants in stormwater associated with construction activity to waters of the US/State from construction sites that disturb 1 or more acres 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.

To obtain coverage under this General Permit, dischargers shall electronically file the Permit Registration Documents (PRDs), which includes a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP) prepared by a SWRCB certified QSD (Qualified SWPPP Developer), and other compliance related documents required by this General Permit and mail the appropriate permit fee to the State Water Board. Based on the SRWCB's Risk Determination Worksheet (Attachment D.1 of the State CGP) the Project would enroll for coverage as Risk Level 1 and be responsible for compliance with the general

requirements listed in Attachment D (i.e., minimum BMPs for good site management, non-stormwater management, preserving existing topsoil, erosion control, and sediment controls) and conducting weekly visual inspections and pre- during- and post-qualifying precipitation event inspections conducted by a SWRCB certified QSP (Qualified SWPPP Practitioner).

Public Resources Code Section 5097.5 and Section 30244

State requirements for paleontological resource management are included in Public Resources Code (PRC) Section 5097.5 and Section 30244. Neither of these two PRC sections apply to the Project as Section 5097.5 is only applicable to projects on public land and Section 30244 is part of the Coastal Act. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to archaeological or paleontological resources.

California Environmental Quality Act

Appendix G of the State CEQA Guidelines (California Code of Regulations Title 14, Chapter 3) provides an Environmental Checklist of questions intended to guide analysis pertaining to project level impacts to geology and soils and paleontological resources. For purposes of the Environmental Checklist, CEQA does not define “a unique paleontological resource or site.” However, the Society of Vertebrate Paleontology (SVP) has defined a “significant paleontological resource” in the context of environmental review. The SVP defines a Significant Paleontological Resource as:

Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. 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) [page 11] (SVP 2010).

4.7.1.3 Local

County of Merced General Plan

The following lists goals and policies from the 2030 General Plan pertaining to geology and soils that are applicable to the Project:

Geologic and Seismic Hazards

- **Goal HS-1:** Minimize the loss of life, injury, and property damage of County residents due to seismic and geologic hazards.
    - **Policy HS-1.4: Ensure Earthquake Resistant Design Regulation and Development Review (RDR)** Require earthquake resistant design for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy

buildings, bridges, freeway overpasses, and dams that are subject to County permitting requirements.

- **Policy HS-1.9: Unstable Soils (RDR)** Require and enforce all standards contained in the International Building Code related to construction on unstable soils.

Soil and Mineral Resources

- **Goal NR-3:** Facilitate orderly development and extraction of mineral resources while preserving open space, natural resources, and soil resources and avoiding or mitigating significant adverse impacts.
  - **Policy NR-3.1: Soil Protection (RDR/SO)** Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
  - **Policy NR-3.2: Soil Erosion and Contamination (RDR)** Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.

Health and Safety Element

- **Policy HS-1.7: Hillside Development** Discourage construction and grading on slopes in excess of 30 percent.
- **Policy HS-1.8: Grading Standards** Require that the provisions of the International Building Code (IBC) be used to regulate projects subject to hazards from slope instability.

Cultural, Archeological, and Historical Resources

- **Goal RCR-2:** Protect and preserve the cultural, archeological, and historic resources of the County in order to maintain its unique character.
  - **Policy RCR-2.9: Historical and Cultural Resources Investigation, Assessment, and Mitigation Guidelines** Establish and adopt mandatory guidelines for use during the environmental review processes for private and public projects to identify and protect historical, cultural, archaeological, and paleontological resources, and unique geological features.

The implementation program for Policy RCR-2.9 (RCR-B) states that, at a minimum, the guidelines shall include resource survey guidelines covering personnel qualifications, research and field techniques, investigation and documentation, data collection and recordation, and resource preservation, avoidance, minimization, and mitigation strategies (Merced County 2013a). The guidelines shall specify broad categories of acceptable mitigation consistent with PRC Section 21083.2 and State CEQA Guidelines Section 15126.4(b), as they may be amended for any identified adverse effects to historic and cultural resources, paleontological resources, or unique geological features (Merced County 2013a).

4.7.2 Environmental Setting

4.7.2.1 Regional and Site Geology

The Project site is within the Great Valley geomorphic province. The Great Valley is an alluvial plain in the central portion of California, extending 400 miles roughly south-southeast to north-northwest and 50 miles wide. The Great Valley is bounded to the west by the Coast Ranges and to the east by the Sierra Nevada (CGS 2002). The fault lines within the Sierra Nevada and the Coast Ranges developed a structural trough that is the San Joaquin Valley (Hotchkiss and Balding 1971). Drainage within Great Valley varies from the Sacramento Valley which drains into the Sacramento River, and the San Joaquin Valley which drains into the San Joaquin River (CGS 2002).

The topography of the Project site is relatively flat with a gentle northeast slope. The Project site is located at the western edge of the San Joaquin Valley and at the base of the Diablo Range of the Coast Ranges. The Diablo Range is approximately 3,000 feet in elevation and primarily made of Mesozoic sedimentary rocks formed in marine environments. The Project site contains active alluvial deposition of sediments from the Diablo Range. The Diablo Range contains small drainage channels that transport continental deposits, marine deposits, non-marine deposits, and primarily alluvial sediments into the San Joaquin Valley. In the western portions of the San Joaquin Valley, alluvial fans developed at the base of the steep slopes that were built up from the Diablo Range (Hotchkiss and Balding 1971). The Project is located at the base of an alluvial fan.

Surface Soils

The soils underlying the proposed Project components reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. Potential hazards from soils include erosion, shrink-swell (expansive soils), corrosion, and compressibility. Soil mapping by the NRCS was reviewed for information about unsuitable characteristics of surface and near-surface subsurface soil materials.

The Project site is primarily underlain by clays that have weathered from the marine deposits of the Diablo Range, which have high salinity (Appendix D). The Project site, contains three soil map units designated by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS): Deldota clay (Map Unit Symbol 167), Paver clay loam (Map Unit Symbol 230), and Woo clay (Map Unit Symbol 280) (see Figure 4.2-2 in Section 4.2 Agriculture and Forestry Resources and Table 4.7-1) (USDA-NRCS 2018). The Mercy Springs Substation site consists entirely of Deldota clay (Map Unit Symbol 167). These soils have moderate shrink-swell potential and are expected to have moderate expansiveness. The Project soil types identified range in drainage class from somewhat poorly drained to well drained (Table 4.7-1).

Potential soil erosion hazards vary depending on the use, textures, and existing conditions of the soils. The properties of soil that influence erosion by rainfall and runoff also affect the infiltration capacity of a soil, as well as the resistance of a soil to detachment and entrainment by raindrop impact or flowing water or wind (USDA-NRCS 2004). Soils on steeper slopes are typically more susceptible to erosion due to the effects of increased surface flow (runoff) on slopes where there is little time for water to infiltrate before

runoff occurs (USDA-ARS 2008); however, slope is not a constraint across the Project site. Soils containing high percentages of fine sands and silt and that are low in density are generally the most erodible, but as the clay and organic matter content of soils increases, the potential for erosion decreases. Clays act as a binder to soil particles, thus reducing the potential for erosion (USDA-NRCS 2002). Erosion potential, as mapped by the NRCS, of the soils underlying the Project site varies from medium to high (Table 4.7-1).

Table 4.7-1. Soil Map Units within the Project Site

Map Unit Symbol	Map Unit Name	Acres	Landform	Parent Material	Major Component Attributes							
					Drainage Class	Depth to Restrictive Feature	Runoff Class	Capacity to Transmit Water	Wind Erodibility Group[1]	Hydrologic Soil Group[2]	Hydric Soil?	Land Capability Class (Irrigated)[3]
167	Deldota clay, partially drained	223.54	terraces	Residuum weathered from sedimentary rock	somewhat poorly drained	>80 inches	High	Moderately low to moderately high	4	C/D	No	2w
230	Paver clay loam, 2–5% slopes	161.99	alluvial fans	Alluvium derived from sedimentary rock	well drained	>80 inches	Medium	Very low to moderately low	4	C	No	2e
280	Woo clay, 0–2% slopes	264.37	alluvial fans	Alluvium derived from sedimentary rock	well drained	>80 inches	High	Moderately low to moderately high	4	C	No	2s

Source: USDA-NRCS 2024; USDA-NRCS 2007. NE-T.G. Notice 585 - Section I, Subsection D-3, Wind Erosion. May 2007
Notes:
[1] "wind erodibility groups" with values ranging from 1 (least erodible) to 8 (most erodible) (USDA-NRCS 2007).
[2] A, B, C, or D, indicates the amount of runoff to be expected from the soil when saturated. Group C and Group D have slow and very slow infiltration rates (USDA 2017).
[3] Capability classes and subclasses show the suitability for irrigation. Class 2 have moderate limitations that restrict choice of crops; subclass "w" indicates water in or on the soil interferes with plant growth or cultivation, subclass "e" indicates erosion potential unless close-growing plant cover is maintained, subclass "s" indicates soil is limited because it is shallow, droughty, or stony (USDA-NRCS 2004).

4.7.2.2 Geologic Hazards

Faulting and Seismicity

Merced County is located near various fault zones including the San Andreas Fault at approximately 15 miles to the west of the Project site, the Bear Mountain Fault Zone at approximately 79 miles to the east of the Project site, and the Hayward, Greenville, and Calaveras Faults farther to the northwest (Merced County 2012). In the western quarter of Merced County within the Coast Range mountains is the Ortigalita-Tesla Fault, which has not been seismically active for approximately 10,000 years since the Holocene epoch. The last known record of major seismic events on the San Andreas Fault in Los Banos was the 1906 earthquake (Encyclopedia Brittanica 2023). The probability of experiencing an earthquake of a magnitude 6.7 or higher, essentially on the Hayward, San Andreas, and Calaveras Faults is approximately 16 percent during the next 30 years (Merced County 2012; Merced County 2013b). Central Valley regions are relatively distant from active faults; earthquakes in the Central Valley are generally infrequent and experience low levels of shaking (U.S. Bureau of Reclamation [Reclamation] 2019). The Project is not crossed by any known active faults and does not lie within a designated Alquist-Priolo Earthquake Fault Zone.

Ground Shaking

Ground shaking is the vibration of the ground from an active earthquake. Ground shaking is directly related to the proximity of a fault line, intensity of seismic waves, strike-slip occurrences, and magnitude. It is produced by the responses of geological material to seismic energy. Generally speaking, the greater the earthquake magnitude and the closer the fault rupture to a site, the greater the intensity of ground shaking. Ground shaking can be potentially detrimental to life and could cause building structures or facilities to collapse depending on the intensity.

The intensity and potential for occurrences of ground shaking are determined by examining the history of earthquakes in California, slip rates on fault zones, and understanding seismic wave influences on local geological material. A common measure of ground motion during an earthquake is the Peak Ground Acceleration (PGA). Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills). The primary tool that seismologists use to describe ground shaking hazard is a Probabilistic Seismic Hazard Assessment (PSHA). The PSHA maps depict levels of ground motion that have a 2 percent probability of being exceeded in 50 years. Use of the PSHA allows future efforts to withstand ground motions and enhance California's building codes, highways, schools, fire stations, police stations, and other various institutions (CGS 2016).

Another method of monitoring ground shaking is the Modified Mercalli Intensity (MMI) Scale. The MMI Scale provides qualitative assessment and assigns an intensity value based on the observed effects of ground shaking produced by an earthquake. The MMI values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, and the type of geologic material. The MMI Scale uses a 12-point scale that is based on the intensity of local effects experienced by structures, geologic material, and humans. The intensity ranges from I (earthquake not felt) to XII (total damage).

Significant structural damage typically does not occur until an event reaches an MMI value of IV (Merced County 2013b).

Liquefaction and Lateral Spreading

Liquefaction is a process by which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction is restricted to certain geological and hydrological environments, primarily recently deposited sand and silt areas with either high groundwater levels or saturated soils. Seismic waves pass through saturated granular layers, distorting the granular structure and causing the particles to collapse. Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation-bearing capacity and cause the structure to settle or tip.

Lateral spreading is lateral ground movement, with some vertical component. In effect, the soil rides on top of the liquefied layer. Lateral spreading does not typically occur on relatively flat sites with slopes less than 2 percent under certain circumstances, but it can cause ground cracking and settlement. It may also produce a lurching movement of the ground surface toward an open face (e.g., a graded slope, stream bank, canal face, gully, or other similar feature) when the soil liquefies. According to the Seismic Hazards Mapping Act, the Liquefaction Zones map determined that the Project and the County are not within a liquefaction zone (California State Geoportal 2022). The lateral spreading potential at the Project site is low, given the flat topography of the area.

Settlement

Earthquake-induced settlement of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume as the soil grains tend to rearrange into a denser state. This decrease in volume and consolidation of soil can result in the settlement of overlying structural improvements. The clay-like nature of the soils within the Project vicinity coupled with the variation in density among geologic units indicate that there is a low potential for earthquake-induced soil settlement to occur at the Project site.

Landslides

Landslides, also known as slope failure, are caused by many phenomena that involve the long-term geologic cycle of uplift, downslope displacement, and movement of material. They are triggered by either static (i.e., gravity) or dynamic (i.e., earthquake) forces. Merced County does not currently have inventory maps of landslides because the County is located on a gentle slope and relatively flat land (Merced County 2012). There are no mapped landslides on or around the site and the topography of the Project site is relatively flat with a gentle northeast slope. There is no potential for landslide hazards to occur at the Project site.

Subsidence

Land subsidence is the gradual settling or sudden sinking of the earth’s surface due to subsurface movement of earth materials. The development of irrigation practices in the San Joaquin Valley requires the use of groundwater pumping resources, however, the elevation of groundwater began to decrease in

the 1920s. Groundwater pumping in the San Joaquin Valley became susceptible to land subsidence. This phenomenon led local government agencies and a Federal-State interagency committee to monitor groundwater overdraft. In 1954, the local agencies and Federal-State interagency committee began to develop accurate models of aquifer system compaction and use Interferometric Synthetic Aperture Radar (InSAR) analyses to capture data on groundwater levels in relation to subsidence. InSAR monitoring led to the introduction of surface water into the San Joaquin Valley. Surface water allows the groundwater levels a chance to recharge, which can reduce the rate of land subsidence. Although some groundwater elevations recovered, the region remains susceptible to substantial subsidence. The land subsidence rates are approximately 1 foot per year (ft/yr) (U.S. Geological Survey [USGS] 2022).

Soil expansiveness, or shrink-swell potential, usually occurs within soils containing a high percentage of expansive clay minerals. These soils, when subjected to an increase in water content, are prone to expansion. Many of the soils on the western side of the San Joaquin Valley are derived primarily from the marine rocks that form the western boundary of the valley. The NRCS has designated the soils on the Project site as Woo clay (0 to 2 percent slopes), Deldota Clay, and Paver clay loam (2 to 5 percent slopes). These soils have moderate shrink-swell potential resulting in cracking when dry and expansion when wet. The Agricultural Land Conversion Study (Appendix D) found the soil on the Project site to consist primarily of silty clay without significant gravel, cobbles or boulders. Clayey soils are expected to be subject to a high expansion potential.

4.7.2.3 Erosion

Erosion is a natural process whereby soil and highly weathered rock materials are worn away and transported by wind or water. Soil erosion can become more problematic when human intervention causes rapid soil loss and the development of erosional features (such as incised channels, rills, and gullies) that undermine roads, buildings, or utilities. Natural rates of erosion can vary depending on slope, soil type, and vegetative cover. Regional erosion rates are also dependent on tectonics and changes in elevation.

The Soil Erodibility Factor (K Factor) is used to determine the susceptibility of soil or surface sediments to erosion and the ability to transport the sediment (USDA-NRCS 2018). Fine-textured soils that contain high amounts of clay are rated between 0.05 to 0.15, which are rated as “low” susceptibility to erosion because the particles are resistant to detachment. Fine-textured soils with moderate clay contents and medium-textured soils are rated between 0.25 to 0.45, which are rated “moderate” to "high” susceptibility of erosion. Medium-textured soils have moderate susceptibility to erosion because of particle detachment and water runoff at moderate rates. Coarse-textured soils, such as sandy soils, are rated between 0.05 to 0.2, which are rated as “low” susceptibility of erosion. Coarse-textured soils have low susceptibility to erosion because of high infiltration resulting in low runoff (SWRCB 2017). According to the NRCS, the Project soils are considered to have K factors between 0.32 and 0.37. Even at these moderate to high K factors the Project’s soils are located on flat land with no major slopes and are considered to have relatively low to moderate potential for wind and water erosion.

4.7.2.4 Paleontological Resources

Fossils are any evidence of ancient life. This includes the remains of the body of an organism, such as bones, skin impressions, shell, or leaves, as well as traces of an organism's activity, such as footprints or burrows; these are known as trace fossils. In addition to the fossils themselves, geologic context is an important component of the scientific value of a fossil. This includes the stratigraphic placement of the fossil as well as the lithology of the rock to assess paleoecologic setting, depositional environment, and taphonomy. Fossils may be protected by federal, State, and local regulations as nonrenewable natural resources when they have scientific importance and can thus be considered as paleontological resources.

The Society of Vertebrate Paleontology (SVP) has developed a definition of what constitutes a significant paleontological resource:

> *Identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. 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).*

The SVP (2010) *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP Procedures) includes an assessment of geologic units that are ranked for their potential to preserve paleontological resources. The possible rankings are high, low, no, or undetermined potential for containing significant paleontological resources (SVP 2010). High-potential units are those from which fossils with significance have been recovered or are suitable for paleontological resource preservation based on their age or rock type (SVP 2010). Low potential units are those from which fossils are rarely recovered or are of a type or age that makes fossil preservation unlikely (SVP 2010). The SVP methodology was used to assess environmental impacts as described in Section 4.7.3, Environmental Impacts, below.

Stantec conducted a paleontological resources assessment of the Project site that consisted of an analysis of existing data with a records search from the Natural History Museum of Los Angeles County (LACM), a review of the online database of the University of California Museum of Paleontology, geologic mapping, and the scientific literature. These data were used to assign the paleontological potential rankings to the geologic units likely to be disturbed by the Project. Following this assessment, Project plans were reviewed to evaluate the potential for Project activities to impact paleontological resources, based on the paleontological potential rank of the geologic units in the Project site.

Geologic mapping for the Project site indicates that the surface consists of alluvial sediments. These sediments consist of varying proportions of unconsolidated gravel, sand, silt, and clay (Dibblee and Minch 2007). Alluvial sediments represent terrestrial deposition of water-transported sediments from the surrounding highlands. These sediments are relatively young at the surface, dating from the Holocene to recent times (Appendix J). The alluvial sediments at the Project site are too young at the surface to preserve fossils, so the records search did not identify any paleontological resources on the surface of the Project vicinity, as mentioned above.

4.7.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to geology and soils. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.7.3.1 Methodology

The evaluation of potential impacts on geology and soils was based on a review of applicable policies and plans pertaining to the Project site, which includes the 2030 Merced County General Plan, USGS earthquake seismic hazard maps, and USGS land subsidence maps, as well as a review of the relevant scientific literature, environmental reporting, and the most recent geologic mapping. The evaluation of soil characteristics and properties was based on the NRCS Web Soil Survey, the Agricultural Land Conversion Study (provided in Appendix D of this Draft Environmental Impact Report [EIR]), and the Paleontological Resources Assessment prepared for the Project (provided in Appendix J of this Draft EIR). Analyses assume that existing federal, state, regional and local regulatory standards for the determination of significant adverse conditions related to structural safety are appropriate.

4.7.3.2 Thresholds of Significance

According to the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to geology and soils are significant.

Would the Project:

- 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?
    - Strong seismic ground shaking?
    - Seismic-related ground failure, including liquefaction?
    - Landslides?
- Result in substantial soil erosion or the loss of topsoil?
- Be located on expansive soil, as defined in Table 18-1-B of the UBC (1994), creating substantial direct or indirect risks to life or property?
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

- 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse?
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

4.7.3.3 Project Impacts

This section discusses potential impacts to geology and soils associated with the Project and provides mitigation measures where necessary.

Known Earthquake Fault, Groundshaking, Liquefaction, Landslides

Impact GEO-1 The Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

i. Rupture of a known earthquake fault

Construction and Decommissioning

Construction and decommissioning activities would not increase the likelihood of fault rupture. The likelihood of a seismic event occurring during construction would be relatively low, with minimal risk of injury or property damage because construction would be phased over a number of years and workers would not be onsite for periods in excess of standard work hours and would not permanently reside within the construction area. The level of potential risk of loss, injury, or death from fault rupture during Project construction and decommissioning would be less than significant.

Operation

The Central Valley regions are relatively distant from active faults that are generally infrequent and experience low levels of shaking (Reclamation 2019). The Project site is not crossed by any known active faults or within a designated Alquist-Priolo Earthquake Fault Zone, as discussed above. Therefore, the Project site would not subject to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map. Further, while the Project would include O&M buildings and other associated infrastructure, new infrastructure would be subject to applicable state and local building code requirements. These requirements would ensure that Project structures comply with minimum standards related to structural strength and general stability. Given the absence of any known active faults in the Project site and required compliance with current California Building Code standards the level of potential impact during operation would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

ii. Strong Seismic Ground Shaking

Construction and Decommissioning

Construction and decommissioning activities would not increase the likelihood of seismic ground shaking. The likelihood of a seismic event occurring during construction and decommissioning activities would be relatively low, with minimal risk of injury or property damage because construction would be phased over a number of years and workers would not be onsite for periods in excess of standard work hours and would not permanently reside within the construction area. The level of the risk of loss, injury, or death related to seismic ground shaking during Proposed Project construction would be less than significant.

Operation

The Merced County General Plan Background Report has published a map of maximum expectable earthquake intensities for the County and surrounding counties, which correlates to statewide severity zones. In contrast to seismic zones used for building code compliance, these “intensity zones” identify the severity of damage expected should an earthquake occur and are based on locations of population relative to known faults. Correspondingly, agriculture and other open space uses are less susceptible to damage than residential or commercial uses in known seismic hazard areas (Merced County 2013a).

The Project site currently supports no structures, and the Project proposes no residential uses. The Project site may be subject to strong earthquake-related ground shaking at some point during the operational period of the Project based on proximity to active or potentially active earthquake faults (e.g., San Andreas, Ortigalita-Tesla, Bear Mountain, Hayward, Greenville, and Calaveras Faults) to the west, east, and northwest of the Project site. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, the duration of shaking, and the nature of the geologic materials on which new flood risk reduction features would be constructed. The primary and secondary effects of ground shaking could damage structural foundations and place people at risk of injury or death. However, Project structural designs would be consistent with the California Building Code, which requires engineers to design structures to withstand adequate earthquake loads. A geotechnical report is required by Merced County prior to issuance of a building permit to ensure that buildings and structures are properly designed to withstand design-level seismic events, including ground shaking. Increased risk of harm or property damage from ground shaking would be considered potentially significant. Implementation of Mitigation Measure GEO-1 would be necessary to avoid and minimize potential risk and would require the Applicant to prepare and submit a design-level geotechnical report and implement all design recommendations, including but not limited to engineering the foundations, piers, and supporting structures to withstand potential impacts from seismic hazards, including ground shaking, and conform with state and county development standards. The potential impact would be reduced to a level of less-than-significant after mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Geotechnical Analysis and Report. Prior to issuance of a grading or building permit, the Applicant shall submit detailed, design-level geotechnical report prepared by a registered engineer to identify foundation, structural, and other development design standards to be implemented to the Merced County Building and Safety Department. This geotechnical report shall identify specific engineering methods to address any seismic shaking, potential liquefaction hazards, and unstable soils issues. The geotechnical report shall have performance standards that shall include a fault map, which shows location of fault traces and potential for surface rupture and ground shaking potential, the maximum considered earthquake and associated ground acceleration for design, moderate to high shrink swell potential, and erosion potential, among others. Final Project designs shall be consistent with applicable federal, State, and local seismic standards, and the Applicant shall incorporate the recommendations from the geotechnical report into the final design of the Project. Building plans and design drawings shall be subject to review and approval by the Merced County Building Department for consistency with the recommendations of the geotechnical report and building codes prior to issuance of a building permit.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

---

iii. Seismic-related ground failure, including liquefaction

Construction and Decommissioning

Construction and decommissioning activities do not increase the likelihood of seismic-related ground failure. The likelihood of a seismic event occurring during construction and decommissioning activities would be relatively low, with minimal risk of injury or property damage because construction would be phased over several years and workers would not be onsite for periods in excess of standard work hours and would not permanently reside within the construction area. The level of potential impact from seismic-related ground failure, including liquefaction, during construction would be less than significant.

Operation

Based on Project site topography, physical properties of soil map units (Table 4.7-1) and an anticipated depth to groundwater of greater than 80-inches, the potential for liquefaction, dynamic compaction, or seismically induced settling would be low. Additionally, proposed infrastructure would be subject to applicable state and local building code requirements. These requirements would ensure that Project structures comply with minimum standards related to soil characteristics. The Project would not expose people or structures to substantial adverse impacts from seismic-related ground failure and liquefaction, and the level of potential impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

iv. Landslides

Construction and Decommissioning

Construction and decommissioning activities do not increase the likelihood of seismic-induced landslides. The likelihood of a seismic event occurring during construction and decommissioning would be relatively low, with minimal risk of injury or property damage because construction would be phased over several years and workers would not be onsite for periods in excess of standard work hours and would not permanently reside within the construction area. With the Project, the level of potential risk of loss, injury, or death related to seismic-related related to seismic-induced landslides during construction would be less than significant.

Operation

The topography of the Project site is relatively flat with a gentle slope to the northeast and there are no mapped landslides within or in proximity to the Project site. The nature of Project operations would not alter slope stability and would present no impact to the potential risk of loss, injury, or death related to seismic-induced landslides during operations.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Soil Erosion or Topsoil Loss

Impact GEO-2 The Project would not result in substantial soil erosion or the loss of topsoil.

Construction and Decommissioning

Project site soil map units are depicted in Figure 4.2-2, and soil characteristics are detailed in Table 4.7-1. The grading activities associated with construction would be selective but dispersed across the 650-acre Project site and occur over the 24-month construction period. Decommissioning activities would include: the demolition and removal of above-ground structures; removal of the generation tie-line (gen-tie line); excavation and removal of below-ground cabling to a depth of 24 inches; decommissioning of access roads; removal of concrete pads, foundations, posts and piles; scarification of compacted areas, and regrading of a relatively small portion of the Project site to reflect pre-Project conditions.

The soils within the Project site are moderately susceptible to erosion. The topography of the Project site is generally uniform and relatively flat. During construction, some vegetative cover would be removed, generally increasing the erosion potential. Given the limited areal extent of the Project site and similarities in existing land uses (primarily agriculture), the surface runoff would be similar for the pre- and post-Project conditions.

With the temporary removal of vegetative cover and subsequent ground disturbance, Project site soils would be temporarily exposed to water erosion hazards during Project construction and decommissioning periods. NRCS (2010) designates “wind erodibility groups” with values ranging from 1 (least erodible) to 8 (most erodible). Project site soils are mapped as having low susceptibility to wind erosion (Table 4.7-1). The Project would be required, through permit conditions, to comply with applicable SJVAPCD rules and regulations; construction and decommissioning activities would comply with Regulation VIII, Fugitive Dust Prohibitions and the BMPs disclosed within Rule 8021.

The temporary exposure of surface soils would increase the susceptibility to erosion by surface runoff. Increased erosion of soil during construction and decommissioning could result in transport of sediment away from disturbance areas and although distance to receiving waters is extensive, wind erosion, sedimentation and water quality degradation could occur if appropriate and effective construction BMPs are not installed and maintained.

The State CGP presents a specific process for construction projects to comply with the provisions of the CWA that relate to the control of pollutant discharges from “nonpoint” sources. The CGP provides for compliance with the regulations through submittal of an NOI, which includes the development and implementation of a project specific SWPPP. The SWPPP would be prepared according to current Federal, State, and local regulations to control stormwater pollution during and after construction through the development and implementation of Project-specific erosion and sediment control measures, as specified by the State CGP.

The contract specifications for Project construction would include the requirement that the construction contractor file for an NOI to comply with the State CGP. Prior to the initiation of ground disturbing activities, the Applicant’s contractor would prepare a site-specific SWPPP for submittal to the Applicant for

review and approval. The requirements for a SWPPP include the following documentation of the methods for implementing controls on the potential for discharge of pollutants (including sediment) that could result in degradation of water quality in receiving bodies:

- Implementation schedule;
- Specified availability of the SWPPP at the Project Area;
- Provisions for amending the SWPPP;
- Identification (including mapping) of all potential pollutant sources and drainage patterns;
- Specification of BMPs for each source (including but not limited to areas of past releases of pollutants, storage areas for soil, waste, vehicles, construction staging areas);
- Inventory of all materials used and activities performed during construction;
- Site-specific erosion control measures (including identification of all areas of disturbance, BMPs for temporary and permanent erosion control, and an implementation schedule for BMPs);
- Methods for stabilization of disturbed areas;
- Sediment control BMPs to prevent a net increase in sediment loading;
- Management BMPs for control of non-stormwater discharges;
- Post-construction BMPs;
- Procedures for maintenance, inspection, and repair of all BMPs;
- Training requirements for personnel responsible for SWPPP implementation; and
- Specific monitoring program and reporting requirements (including stormwater sampling and analysis).

The Project SWPPP would include specific BMPs to minimize the loss of topsoil and/or reduction of topsoil viability as a growing medium. These BMPs would include but not be limited to:

- Procedures for the identification of and segregation of topsoil compared to other soils;
- Management strategy to minimize the area of topsoil disturbance and to reuse excavated topsoil as soon after excavation as possible;
- Identification of topsoil stockpile areas; and
- Topsoil stockpile management provisions to ensure that stockpiled soils are not subject to erosion by wind or water.

The standard provisions of the State CGP include the duties to comply, mitigate, and provide information related to implementation of the SWPPP. Implementation of Mitigation Measure BIO-2 throughout construction and decommissioning would manage soil cover.

Implementation of Mitigation Measure GEO-1 pre-construction would characterize soils and inform development of temporary construction BMPs and permanent post-construction BMPs to reestablish pre-project vegetative cover and soil conditions. With implementation of the recommended mitigation measures, coupled with compliance with the State CGP and County regulatory requirements, would reduce the potential for accelerated erosion and sedimentation during construction and decommissioning to a level of less than significant with mitigation.

Operation

Operational activities on the Project site would involve the contract maintenance of solar panels, periodic vegetation management and equipment repairs. Site remediation would consist of tillage of areas of compacted soils, placement of topsoil removed and stored during construction and decommissioning, and revegetation through seeding with a local dryland range grass mixture. Operation and maintenance of the Project site would not require ongoing ground disturbance, so significant soil erosion would not be triggered or accelerated during long-term operations.

Water applied for panel washing would be applied at a controlled rate of application that would maximize infiltration into the ground and minimize potential for erosion and soil loss. The panels would provide for a type of “canopy cover” across much of the Project site and would function to reduce potential for entrainment of soil particles. The need for managed stormwater and drainage facilities is not anticipated, as existing drainage patterns across the site would be preserved to the extent feasible and maintained through implementation of vegetation management for soil cover as described in mitigation measures BIO-2, which would be informed by geotechnical investigations required by Mitigation Measure GEO-1 (developed during final Project design and commenced during Project construction and decommissioning). Potential impacts of erosion or loss of topsoil over the operational period would be reduced to a level of less than significant with mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Geotechnical Analysis and Report

MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Expansive Soil

Impact GEO-3 The Project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

Construction and Decommissioning

The NRCS has designated the three soil map units on the Project site as having moderate shrink-swell potential. Project site soils consist primarily of silty clay without significant gravel, cobbles or boulders. Soils with high clay content are expected to be subject to a high expansion potential. Mitigation Measure GEO-1 would require a design-level geotechnical report to ensure that foundations are properly designed to address expansive soils. The implementation of Mitigation Measure GEO-1 would reduce and minimize potential impacts to a level of less than significant requiring the applicant to prepare and submit a design-level geotechnical report and implement all design recommendations, including but not limited to engineering the foundations, piers, supporting structures to withstand potential impacts from expansive soils, and other development standards. Therefore, impacts related to expansive soils would be less than significant through compliance with standard building code requirements and incorporation of geotechnical recommendations into the final Project design.

Operation

Expansive soils would not be encountered during routine operational activities following completion of Mitigation Measure GEO-1 during design, construction and decommissioning phases. Implementation of this mitigation measure would avoid the potential to construct structures on expansive soils and the level of potential impact over long-term operations would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Geotechnical Analysis and Report

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Septic Tanks or Alternative Wastewater Disposal Systems

Impact GEO-4 The Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

Construction and Decommissioning

During construction, sanitary waste would be managed using portable toilets located at a reasonably accessible onsite location. Sanitary waste would be contained in portable facilities, collected at least weekly, and disposed of at an offsite disposal or treatment facility. An onsite septic or sewage system would not be constructed to treat sanitary waste during construction.

The construction of the O&M building would include the installation of a septic system for waste discharge. Wastewater generated by the O&M building would be disposed of through an onsite private septic system which would consist of a septic tank and leach field. The Project site contains some soils in the northeast that are poorly drained and unsuitable for onsite septic systems and leach fields for wastewater disposal; however, the soils in the south and west are well drained and suitable for onsite septic systems or alternative wastewater disposal systems. The septic system would be constructed and installed in compliance with federal and State regulations and would comply with Merced County permit and design requirements. Therefore, the Project would not install a septic system on soils incapable of adequately supporting the use of septic tanks, and level of impact would be less than significant.

Operation

An onsite septic system with septic tank and leach field would be constructed to treat sanitary waste during operation. The septic system would be regularly maintained, pumped, and inspected by a qualified service provider. The service provider would identify if any repairs would be needed. As described, the septic system would be constructed and installed in adherence to federal and State regulations, and to Merced County permit and design requirements. Therefore, the Project would not install a septic system on soils incapable of adequately supporting the use of septic tanks, and level of impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Unstable Soils

Impact GEO-5	**The 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse.**

Construction and Decommissioning

As previously discussed, the Project would not be located within an identified landslide hazard area. Construction and decommissioning activities would not involve excavation to the extent of impacting a geologic unit or any underlying unstable soils. The action of grading and temporarily stockpiling spoils for future use would not result in mass loading that would result in increased compression of non-cohesive sediments and consolidation of cohesive sediments. Construction would not change existing surface topography or increase the potential for onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse of a geologic or soil unit. The potential to create unstable geologic or soil units during Project construction and decommissioning would be less than significant.

Operation

The Project would be in an area that exhibits little to no potential for liquefaction or lateral spreading to occur during an earthquake. The Project site is in an area of known land subsidence; however, no groundwater pumping onsite would occur as part of the Project. The Project would be designed in accordance with engineering design standards and structural improvement requirements to withstand the impacts of soil settlement and collapsible soils as part of the Geotechnical Analysis (Mitigation Measure GEO-1). Engineered compacted fill would likely be used during construction in accordance with building code requirements, which would reduce the potential for lateral spreading of soils from Project construction.

Project buildings would be designed in accordance with engineering design standards and structural improvement requirements addressing unstable soils. The chance of land subsidence depends on the severity of an earthquake, distance from fault zones, topography, subsoils, and groundwater conditions (Merced County 2013b, 2023). As discussed above, the site soils, low seismic activity, and gently sloping topography minimize the potential for the Project to experience land subsidence.

The Project would be required to comply with Merced County General Plan Policy HS-1.9, which enforces all standards in the International Building Code related to construction on unstable soils. With compliance with applicable building code requirements and the implementation of Mitigation Measure GEO-1, the Project would result in a less-than-significant impact resulting from unstable soils.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Geotechnical Analysis and Report

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Paleontological Resources

Impact GEO-6 The Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Construction and Decommissioning

The results of the paleontological resources assessment show that the Holocene-aged alluvium present at the surface of the Project area is too young to preserve fossils and has low paleontological potential, while older alluvium in the subsurface (mid-Holocene or older) has a documented history of fossil preservation in the region and has high paleontological potential, as ranked within the SVP Procedures and provided in Appendix J.

Most planned excavation activities do not exceed 4 feet below ground surface. At these depths, it is unlikely the high-potential units in the subsurface would be encountered. However, the gen-tie line will entail augering for pole diameters of 18 inches to 24 inches, to depths of 15 feet below ground surface. As high-potential units are anticipated at depths of greater than 5 feet bgs across the Project site, and most ground disturbance is limited to 4 feet bgs, such activities are unlikely to reach high potential units. Augering for the gen-tie poles may encounter high potential older alluvium in the subsurface. If this were to occur, and fossils encountered, their damage or destruction would constitute a direct adverse impact to paleontological resources.

Mitigation Measure GEO-2, which includes retaining a qualified paleontologist for the Project; Mitigation Measure GEO-3, which includes paleontological resources sensitivity training for construction workers; Mitigation Measure GEO-4, which provides a protocol for inadvertent discovery of a paleontological resource; and Mitigation Measure GEO-5, which describes monitoring protocol during gen-tie auguring, would be implemented to reduce this impact to a less-than-significant level.

Operation

Operational activities on the Project site would involve the contract maintenance of solar panels, periodic vegetation management and equipment repairs which would not involve excavation activities. Operational activities have low risk of posing an impact to paleontological resources and the impact would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-2: Retain a Qualified Paleontologist. A qualified paleontologist, defined as one meeting professional standards as defined by Murphey et al. (2019) shall be retained by the applicant prior to the issuance of grading permits to serve as the designated Project Paleontologist. The Project Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources,

attend the Project kick-off meeting and Project progress meetings on a regular basis, and report to the site if potential paleontological resources are encountered.

MM GEO-3: Paleontological Resources Awareness Training. The Project Paleontologist shall develop a paleontological resources Workers' Environmental Awareness Program training that communicates requirements and procedures for the inadvertent discovery of paleontological resources during construction, as well as the penalties for unauthorized collection or disturbance of paleontological resources, to be delivered by the Project Paleontologist or their designee to the construction crews prior to the onset of initial ground disturbance, and as-needed thereafter. Training materials in the form of handouts or a recording shall be provided by the Project Paleontologist for training additional staff. Documentation in the form of a sign-in sheet shall be collected to document the training and will be provided to Merced County for compliance purposes.

MM GEO-4: Inadvertent Discovery of Paleontological Resources. Should a potential paleontological resource be identified in the Project site, work shall halt in a safe radius around the find (50 feet, unless the Paleontologist determines a shorter distance is sufficient) until the Project Paleontologist can assess the find and, if significant, salvage the fossil for laboratory preparation and curation at an appropriate repository such as the Natural History Museum of Los Angeles County, along with a report documenting the conditions of discovery and all relevant data required by the repository. In addition to this treatment of the fossils identified, the Project Paleontologist may make recommendations for additional mitigation actions, such as paleontological resource monitoring, to commence at the site for the remainder of construction activities. If recommended, monitoring shall consist of a qualified paleontological monitor (see standards in Murphey et al. [2019]) observing construction activities into potentially fossiliferous sediments from a safe distance, collecting data on the lithology encountered, and stopping work should additional fossils be encountered, at which point the Paleontologist would treat the fossils as described above.

MM GEO-5: Paleontological Monitoring. Project activities that exceed the depth of younger alluvium and extend into older alluvium, estimated to occur at depths of 5 feet or greater, should be monitored by a paleontologist meeting professional standards as a Field Paleontologist as defined by Murphey et al. (2019) working under the supervision of the Project Paleontologist. The duration and extent of monitoring should be determined by the Project Paleontologist based upon final Project plans. Following completion of the monitoring program, the Project Paleontologist should oversee drafting of a Paleontological Resources Mitigation Report that documents completion of the monitoring and other paleontological mitigation activities. This report will be delivered to the Lead Agency and, should fossils have been collected, the repository.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

4.7.3.4 PG&E Interconnection Infrastructure

Pacific Gas & Electric (PG&E) would incorporate upgrades to Mercy Springs Substation to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches, which would occur within areas previously disturbed and occupied by existing electrical facilities. The

construction of the PG&E infrastructure would require minimal ground disturbance and would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, ground failure and liquefaction, or landslides. The PG&E improvements also would not result in substantial soil erosion or be located on unstable geological units or expansive soils, and no septic systems would be required. Most planned grading and excavation activities associated with gen-tie construction do not exceed 4 feet below ground surface. At these depths, it is unlikely the subsurface high-potential units for paleontological resources would be encountered. However, the gen-tie line would entail augering to install poles with diameters of 18 inches to 24 inches to depths of 15 feet below ground surface. As high-potential units are anticipated at depths of greater than 5 feet bgs across the Project site, augering for the gen-tie poles may encounter high potential older alluvium in the subsurface. If this were to occur, and fossils encountered, their damage or destruction would constitute a direct adverse impact to paleontological resources. PG&E would incorporate standard measures during construction for paleontological resources sensitivity training for construction workers, identifying protocols for inadvertent discovery of a paleontological resource; and establishing monitoring protocol during gen-tie auguring. Therefore, activities associated with the interconnection infrastructure would result in less-than-significant impacts relating to geology and soils.

4.7.3.5 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable projects to become significant. Cumulative projects are listed in Table 4.0-3. The list of cumulative projects in Section 4.0, Environmental Impacts Analysis, of this Draft EIR would be subject to relatively similar seismic hazards as that of the Project. However, the impacts of these related projects are not of a nature to cause cumulatively significant impacts from geologic impacts or on soils because such impacts are site-specific and would only have the potential to combine with impacts of the Project if they occurred in the same location as the Project. The closest related project to the Project site is the Vega Solar Project, located 1,200 feet to the north and 0.5 miles to the northwest of the Project site.

In general, seismic hazards are dependent on site-specific factors that can change over relatively short distances. The Project would have less-than-significant impacts with respect to earthquakes, landslides, soil erosion, unstable geologic location, and expansive soils. Although the entire region is a seismically active area, geologic and soil conditions vary widely within a short distance, making the cumulative context for potential impacts resulting from exposing people and structures to related risks one that is more localized or even site-specific. Similar to the Project, other projects in the area would be required to adhere to the same California and County Building Codes which would reduce the risk to people and property to less-than-significant levels. While future seismic events cannot be predicted, adherence to all federal, State, and local programs, requirements and policies pertaining to building safety and construction would limit the potential for injury or damage to a less-than-significant level. Therefore, the Project, combined with past, present, and other foreseeable development in the area, would not result in a cumulatively significant impact by exposing people or structures to risk related to geologic hazards, soils, and/or seismic conditions. Therefore, the Project would result in less-than-significant cumulative impacts related to geology and soils.

Regarding soil erosion, ground disturbance and temporary vegetation removal could lead to accelerated erosion rates of Project site soils. However, the Project would comply with the conditions of the State CGP and would implement a SWPPP during construction and Mitigation Measure BIO-2 (i.e., vegetation and soil condition management) throughout construction, decommissioning and operations to reduce risk of erosion and sedimentation. Mitigation Measure GEO-2 would ensure that earthwork related to construction and decommissioning activities would not create unstable soil conditions.

Project site operations include the addition of impervious surfaces at the Project site. The Project site would be designed to control stormwater runoff and minimize erosion, with the addition of impervious surfaces and PV modules; see Section 4.10, Hydrology and Water Quality, for further discussion. Other individual projects also would be required to comply with applicable codes, standards, and permitting requirements (e.g., preparation of a SWPPP) to mitigate erosion impacts. Thus, since the Project and nearby projects would have to comply with federal and State regulations that are designed to minimize impacts to projects on a wide geographic scale, this Project in combination with the other cumulative projects would not result in a cumulatively significant impact. Therefore, the Project would not have a cumulatively significant impact on geology and soils.

The geographic scope for cumulative effects to paleontological resources includes the Project site and a 0.5-mile radius. Given similarities in geologic formations, this area is expected to contain similar types of paleontological resources. Cumulative impacts to paleontological resources in the study area could occur if other related projects, in conjunction with the Project, had or would have impacts on paleontological resources that, when considered together, would be significant. Development of the Project, in combination with other projects in the area, has the potential to contribute to a cumulatively significant paleontological resources impact due to the potential loss of paleontological resources unique to the region. However, mitigation measures are included in this EIR to reduce potentially significant project impacts to paleontological resources during construction of the Project. Although project construction has the potential to disturb paleontological resources, with the implementation of Mitigation Measures GEO-2 through GEO-5, the Project would not result in significant impacts to paleontological resources. Given this minimal impact and the requirement for similar mitigation for other projects in the region, cumulative impacts to paleontological resources would be less than significant.

4.8 GREENHOUSE GAS EMISSIONS

This section describes the impacts related to GHG emissions that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations related to GHG emissions, and analysis of possible environmental impacts of the Project. Where applicable, mitigation measures are included to reduce any significant impacts to the maximum extent feasible. The County received a scoping comment letter from the San Joaquin Valley Air Pollution Control District (SJVAPCD) pertaining to project-related emissions (Appendix A). These comments are incorporated accordingly into the EIR and Air Quality and Greenhouse Gas Impact Assessment prepared for the Project (Appendix E).

4.8.1 Regulatory Setting

There are considerable regulatory actions regarding GHGs and climate change at the federal, state, regional, and local level. The following includes the key federal, state, regional, and local regulations applicable to the Project.

4.8.1.1 Federal

Clean Air Act

The principal air quality regulatory mechanism at the federal level is the federal Clean Air Act (CAA) and, in particular, the 1990 amendments to the CAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. The federal CAA does not specifically regulate GHG emissions; however, the U.S. Supreme Court has determined that GHGs are pollutants that can be regulated under the CAA. There are currently no federal regulations that set ambient air quality standards for GHGs.

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR® labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal CAA. USEPA adopted a Final Endangerment Finding for six defined GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6). The Endangerment Finding was required before USEPA could regulate GHG emissions under Section 202(a)(1) of the CAA. USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not themselves impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Regulations for Greenhouse Gas Emissions from Vehicles

The National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards and for revising existing standards. NHTSA and the USEPA are taking coordinated steps to enable the production of clean energy vehicles with improved fuel efficiency. NHTSA sets the Corporate Average Fuel Economy (CAFE) levels, which are rapidly increasing over the next several years to improve energy security and reduce fuel consumption. In March 2022, the NHTSA finalized CAFE standards for model years 2024 to 2026. The standards require an industry-wide fleet average of approximately 49 miles per gallon for passenger cars and light trucks by model year 2026 (NHTSA 2022).

40 Code of Federal Regulations (CFR) Part 98. Mandatory Reporting of Greenhouse Gases Rule

This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) emissions per year (USEPA 2013). Additionally, reporting of emissions is required for owners of SF_6- and PFC-insulated equipment, when the total nameplate capacity of these insulating gases is above 17,280 pounds. The Project would not be expected to trigger GHG reporting according to the rule; however, GHG emissions of the Project are quantified in this Draft EIR.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

USEPA mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO_2e emissions exceed 75,000 tons per year (USEPA 2010). The Project would not be expected to trigger PSD permitting as required by this regulation; however, GHG emissions of the Project are quantified in this Draft EIR.

Fuel Efficiency Standards for Construction Equipment

The federal government sets fuel efficiency standards for non-road diesel engines that are used in construction equipment. The regulations, contained in 40 Code of Federal Regulations (CFR) Parts 1039, 1065, and 1068, include multiple tiers of emission standards, with the highest tiers requiring the most efficient engine function. Most recently, the USEPA adopted a comprehensive national program to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest reductions. To meet the Tier 4 emission standards, engine manufacturers will produce new engines with advanced control technologies (USEPA 2023a).

4.8.1.2 State

As described below, California has enacted various executive orders and regulations to address climate change.

Executive Order S-3-05

Executive Order S-3-05 was established by June 2006; the order establishes statewide emission reduction targets through the year 2050, as follows:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Order does not include any specific requirements that pertain to the Project; however, future actions taken by the state to implement these goals may affect the Project depending on the specific implementation measures that are developed. 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.

Assembly Bill 32 and Senate Bill 32

AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. GHGs, as defined under AB 32, include CO_2, methane (CH_4), nitrous oxide (N_2O) hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride (NF_3), has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

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

CARB approved the 1990 GHG emissions level of 427 million metric tons of CO_2 equivalent ($MMTCO_2e$) on December 6, 2007 (CARB 2008). Therefore, to meet the state's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. In order to set a framework for the state to meet this target, CARB was tasked with creating a Scoping Plan, as described further below. California announced in July 2018 that the state emitted 427 $MMTCO_2e$ in 2016 and achieved AB 32 goals (CARB 2018a).

Senate Bill (SB) 32 was signed into law on September 8, 2016. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030."

Cap-and-Trade Program

CARB administers the state's Cap-and-Trade Program, which covers GHG sources that emit more than 25,000 $MTCO_2e$ per year, such as refineries, power plants, and industrial facilities. This market-based approach to reducing GHG emissions provides economic incentives for achieving GHG emission reductions.

2022 Climate Change Scoping Plan

The 2022 Climate Change Scoping Plan (2022 Scoping Plan) was approved in December 2022 and assesses progress toward achieving the SB 32 2030 target and laying out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and other sources; and it is designed to meet the state's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

Assembly Bill 1279: The California Climate Crisis

On September 16, 2022, AB 1279, also known as the California Climate Crisis Act, codified the carbon neutrality goal established by Executive Order (EO) B-55-18. AB 1279, which establishes the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative GHG emissions thereafter. AB 1279 aims to reduce statewide anthropogenic GHG emissions by at least 85 percent below 1990 levels by 2045. The bill requires CARB to provide an updated Scoping Plan that identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO_2 removal and carbon capture, utilization, and storage technologies to complement AB 1279's emissions reduction requirements.

Senate Bill 375: The Sustainable Communities and Climate Protection Act of 2008

SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions; (2) aligns planning for transportation and housing; and (3) creates specified incentives for the implementation of the strategies.

CARB prepared a proposed update to the SB 375 greenhouse gas emission reduction targets in 2018 which set updated GHG reduction targets for metropolitan planning organizations for 2020 and 2035. Pursuant to SB 375, the Central Valley/San Joaquin reduction targets for per capita vehicular emissions were 6–13 percent by 2020 and 13–16 percent by 2035.

Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations and fuel efficiency standards that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the

regulation was delayed by lawsuits filed by automakers and by USEPA's denial of an implementation waiver. The USEPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The fuel efficiency standards were phased in during the 2009 through 2016 vehicle model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction.

The second phase of the implementation for AB 1493 was incorporated into *Amendments to the Low-Emission Vehicle Program*, referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Cars Program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for vehicle model years 2017 through 2025. The regulation would reduce GHGs from new cars by 34 percent from 2016 levels by 2025 by reducing pollutants from gasoline and diesel-powered cars and delivering increasing numbers of zero-emission technologies, such as full battery electric cars, plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulation also provides adequate fueling infrastructure for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

Senate Bill 1368: Emission Performance Standards

Enacted in 2006, SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant.

Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas or combined cycle plants. Accordingly, the law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by or under long-term contract to publicly owned utilities of 1,100 pounds of CO_2 per megawatt-hour (MWh).

Senate Bill 1078: Renewable Electricity Standards

SB 1078 (September 12, 2002) required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, EO S-14-08 was signed, which established a renewable portfolio standard (RPS) target for California that required all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. EO S-21-09 directed CARB to adopt a regulation by July 31, 2010, that required the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard; and in 2011, the State Legislature adopted a higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

SB 350 (October 7, 2015) reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies toward a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

Senate Bill 100: California Renewables Portfolio Standard Program

SB 100 (September 10, 2018) revised the RPS goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill X7-7: The Water Conservation Act of 2009 and Senate Bill 606: Water Conservation and Drought Planning of 2018

SB X7-7 directs urban retail water suppliers to set individual 2020 per capita water use targets and to begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost two million acre-feet of urban water use in 2020. SB 606, Water Conservation and Drought Planning, was passed and built upon SB X7-7 to set numerical standards for outdoor residential water uses and commercial, industrial, and institutional landscape water use. The numerical standards recommended under SB 606 result in lower aggregate statewide urban water use than the SB X7-7's 2020 target reduction. Reductions in water consumption reduce the amount of energy and emissions associated with conveying, treating, and distributing the water; emissions from wastewater treatment are also reduced.

Executive Order B-30-15: Greenhouse Gas Emissions Target for 2030

EO B-30-15 (April 29, 2015) established a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments of the United Nations' Climate Change Conference in Paris in late 2015. The EO sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 so that California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. The EO also directs CARB to update the climate change scoping plan to express the 2030 target in terms of $MMTCO_2e$, update the state's climate adaptation plan every three years, and continue the state's climate change research program. As with EO S-3-05, this EO is not legally enforceable against local governments and the private sector. However, SB 32 includes a 2030 mandate matching the requirements of this EO.

Executive Order S-01-07: Low Carbon Fuel Standard

EO S-01-07 was signed on January 18, 2007. The EO mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the EO established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in an implementation plan for the State Alternative Fuels Plan adopted by the California Energy Commission on December 24, 2007, and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009.

The LCFS was subject to legal challenge in 2011. Ultimately, CARB was required to bring a new LCFS regulation for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS and new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law approved the regulation on November 16, 2015. The regulation was last amended in 2018. The 2018 amendments strengthen the carbon intensive fuel reduction targets beyond 2020 to support SB 32. Other major changes to the 2018 amendments include expanding the fuel types and eligible activities to participate in the LCFS (CARB 2018b).

Executive Order S-13-08: Climate Adaptation Strategy

EO S-13-08 states that, "Climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in this EO, the 2009 California Climate Adaptation Strategy was adopted, which is the "[…] first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-48-18: Zero-Emission Vehicles

EO B-48-18 (January 2018) required all state entities to work with the private sector to have at least five million zero-emission vehicles (ZEVs) on the road by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle (EV) charging stations by 2025. It specifies that 10,000 of the EV charging stations should be direct current fast chargers. This order also requires all state entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. The Governor's Office of Business and Economic Development released the Electric Vehicle Charging Stating Permitting Guidebook and the updated Hydrogen Station Permitting Guidebook in 2019 and 2020, respectively. All state entities are required to participate in updating the 2016 Zero-Emissions

Vehicle Action Plan to help expand private investment in ZEV infrastructure, with a focus on serving low-income and disadvantaged communities. Additionally, all state entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses through the LCFS program and recommend how to provide affordability and accessibility for all drivers.

Executive Order B-55-18: California's 100 Percent Clean Energy Policy

EO B-55-18 (September 10, 2018) established a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO directs CARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.

Executive Order N-79-20

EO N-79-20 (September 23, 2020) sets the following goals for the state: 100 percent of in-state sales of new passenger cars and trucks shall be zero-emission by 2035; 100 percent of medium and heavy duty vehicles in the state shall be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks; and 100 percent of off-road vehicles and equipment in the state shall be zero-emission by 2035, where feasible.

California Green Building Code

The California Green Building Code (CALGreen) (California Code of Regulations, title 24, part 11) is a state-mandated building code aimed at improving public health, safety, and general welfare through mandating efficient design and construction of buildings within the state. An updated CALGreen standards is published every three years by order of the California legislature.

4.8.1.3 Regional

San Joaquin Valley Air Pollution Control District

In August 2008, SJVAPCD's governing board adopted the Climate Change Action Plan (CCAP). 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 governing board adopted Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA, and the District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency. SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climate change. SJVAPCD found the effects of project-specific emissions to be cumulative and, without mitigation, their incremental contribution to global climate change could be considered cumulatively considerable. SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

2022 Regional Transportation Plan/Sustainable Communities Strategy

In August 2022, the Merced County Association of Governments (MCAG) adopted the 2022 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS), which is a long range planning document that provides the framework for investments in roads, freeways, public transit, bikeways and other ways people move around Merced County for the next 25 years (MCAG 2022). Each metropolitan planning organization is required to prepare an SCS pursuant to SB 375. The primary goal of each SCS is to reduce regional VMT and, as a result, reduce GHG emissions associated with mobile sources.

4.8.1.4 Local

2030 Merced County General Plan

The 2030 General Plan (Merced County 2013) is a legal document that serves as the County's blueprint for all future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers the County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the County's future development.

There are several policies in the General Plan that seek to reduce GHG emissions, including promoting alternative energy sources, among others. The policies that are relevant to the Project include:

- **Policy NR-2.1: Renewable Energy Use.** Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.
- **Policy NR-2.2: Clean Alternative Energy Requirement.** Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).
- **Policy NR-2.4: Solar Power.** Encourage on-site solar power use in residential, commercial, and industrial buildings, and solar power facilities in rural locations that do not harm long-term agricultural productivity and habitat values.
- **Policy NR-2.9: Energy Conservation.** Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).

Merced County Climate Action Plan (In Development)

A Climate Action Plan (CAP) is a long-range plan that outlines specific strategies to reduce GHG emissions in accordance with statewide targets. In the long term, the CAP will achieve multiple community goals such as lowering energy costs, reducing air pollution, supporting local economic development, and improving public health and quality of life. The County began developing a CAP in 2018; however, no CAP has been adopted.

4.8.2 Environmental Setting

To fully understand global climate change, it is important to recognize the naturally occurring "greenhouse effect" and to define the GHGs that contribute to this phenomenon. Various gases in the earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth's surface

temperature. Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, the radiation that would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

4.8.2.1 Greenhouse Gases

Among the prominent GHGs contributing to the greenhouse effect are CO_2, CH_4, N_2O, HFCs, PFCs, NF_3, SF_6, and black carbon.

Carbon Dioxide

CO_2 is a colorless, odorless gas that is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels, such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses, such as mineral production, metal production, and the use of petroleum-based products, can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere (USEPA 2021).

Methane

CH_4 is a colorless and odorless. CH_4 is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH_4 is emitted from a variety of human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (e.g., enteric fermentation in livestock and manure management), biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. CH_4 is also naturally produced. Major natural sources of CH_4 includes melting permafrost, water sources (including the ocean and freshwater bodies), and soils. Other sources of CH_4 includes termites and wildfires. The atmospheric lifetime of CH_4 is approximately 12 years (USEPA 2021).

Nitrous Oxide

N_2O is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production[1], and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years (USEPA 2021).

[1] Adipic acids are used to produce items such as fabrics, plastics, and pharmaceuticals.

Hydrofluorocarbons

HFCs are manufactured chemicals, many of which have been developed as alternatives to O_3-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22, or Freon 22, used in air conditioning applications. The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years. For example, HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric lifetime of 14 years (USEPA 2021).

Perfluorocarbons

PFCs are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F_{14}). Natural geological emissions have been responsible for the PFCs that have accumulated in the atmosphere in the past; however, the largest current source is aluminum production, which releases CF_4 and C_2F_6 as byproducts. The estimated atmospheric lifetimes for CF_4 and C_2F_6 are 50,000 and 10,000 years, respectively (USEPA 2021).

Nitrogen Trifluoride

NF_3 is an inorganic, colorless, odorless, toxic, nonflammable gas. It is used as an etchant in microelectronics and for cleaning plasma-enhanced chemical vapor deposition chambers in the production of liquid crystal displays and silicon-based thin film solar cells. In 2009, NF_3 was listed by California as a potential GHG to be listed and regulated under AB 32.

Sulfur Hexafluoride

SF_6 is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80 percent of all SF_6 produced worldwide. Leaks of SF_6 occur from aging equipment and during equipment maintenance and servicing. The use of SF_6 in electric power systems has decreased dramatically in recent years; for example, according to the USEPA, an old circuit breaker can contain up to 2,000 pounds of SF_6 while modern breakers usually contain less than 100 pounds. Best practices to reduce the potential for SF_6 leaks include: training staff to handle SF_6 properly; implement leak detection and repair strategies; and decommissioning equipment appropriately. SF_6 has an atmospheric lifetime of approximately 3,200 years (USEPA 2022).

Black Carbon

Black carbon is the most light-absorbing component of PM emitted from burning fuels (e.g., coal, diesel, and biomass). Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow and by affecting cloud formation. Black carbon is considered short-lived, and it can vary spatially. Consequently, it is very difficult to quantify associated global warming potentials. The main sources of black carbon in California are wildfires, off-road vehicles (e.g., locomotives, marine

vessels, tractors, excavators, dozers), on-road vehicles, fireplaces, agricultural waste burning, and prescribed burning of forest or wildlands. California has been an international leader in reducing emissions of black carbon with programs that target reducing PM from diesel engines and burning activities (CARB 2013).

4.8.2.2 Global Warming Potential

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime of the gas molecule in the atmosphere. Often, estimates of GHG emissions are presented in carbon dioxide equivalent (CO_2e) which evaluates each gas by its global warming potential (GWP).

Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. Based on a 100-year time horizon, CH_4 traps over 25 times more heat per molecule than CO_2; and N_2O absorbs roughly 298 times more heat per molecule than CO_2. For example, one metric ton of CH_4 would equate to 25 $MTCO_2e$. Additional GHGs with high GWP include NF_3, SF_6, PFCs, and black carbon.

4.8.2.3 Global Greenhouse Gas Emissions

On a global scale, GHG emissions are predominantly associated with activities related to energy production from fossil fuel sources; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. Worldwide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions.

United States of America

In 2021, net GHG emissions in the U.S. totaled 5,586 $MMTCO_2e$. Within the U.S., the largest contributor to GHG emissions was the transportation sector (28 percent). The next largest contributors are from electricity production (25 percent) and industry (23 percent), followed by the commercial and residential sector (13 percent) and the agricultural sector (10 percent). Transportation emissions primarily come from burning fossil fuels for cars, trucks, ships, trains, and planes. Over 90 percent of the fuel used for transportation is petroleum-based, which includes primarily gasoline and diesel. The bulk of emissions generated from energy production come from burning fossil fuels, mostly coal and natural gas. Industry emissions are also primarily generated from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling of waste. Similar to industry sector emissions, commercial and residential uses arise primarily from fossil fuels for transportation and heat, the use of certain products that contain GHGs, and the handling of waste. Agricultural emissions come from livestock such as cows, agricultural soil, and rice production. The land use and forestry sector, areas with plant-life or soil that can store carbon, within the U.S. serves as a carbon sink. Carbon sinks absorb CO_2 from the atmosphere. These land areas that have capacity to serve as carbon sinks within the U.S. absorbed approximately 12 percent of the country's 2020 GHG emissions (USEPA 2023b). The U.S. is the second-largest producer of GHG emissions in the world, generating approximately 15 percent of global GHGs (USEPA 2023c).

California

In 2020, net GHG emissions within California totaled 369.2 $MMTCO_2e$. Similar to national emissions, in California, the transportation sector is the largest contributor. Transportation emissions account for approximately 38 percent of statewide GHG emissions. The majority of transportation emissions are derived from passenger vehicles and heavy-duty trucks. Emissions associated with industrial uses are the second largest contributor at roughly 23 percent. Industrial emissions are driven by fuel combustion from sources that include refineries, oil and gas extraction, cement plants, and the portion of cogeneration emissions attribution to thermal energy output. Electricity generation (in-state and imports) totaled roughly 16 percent. Emissions from the electricity generation sector have declined over the years due to the increase in renewable generation that continues to replace fossil fuel power (CARB 2023).

4.8.2.4 Effects of Global Climate Change

There are uncertainties as to exactly what the climate changes will be in various areas of Earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet, e.g., sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of those effects on the economy.

Within California, climate changes would likely alter the ecological characteristics of many ecosystems throughout the state. Such alterations would likely include increases in surface temperatures and changes in the form, timing, and intensity of precipitation. For instance, historical records are depicting an increasing trend toward earlier snowmelt in the Sierra Nevada. This snowpack is a principal supply of water for the state, providing roughly 50 percent of the state's annual runoff. If this trend continues, some areas of the state may experience an increased danger of floods during the winter months and possible exhaustion of the snowpack during spring and summer months. An earlier snowmelt would also impact the state's energy resources. An early exhaustion of the Sierra snowpack may force electricity producers to switch to more costly or non-renewable forms of electricity generation during spring and summer months. A changing climate may also impact agricultural crop yields, coastal structures, and biodiversity. As a result, resultant changes in climate will likely have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry.

4.8.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts to GHG emissions. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.8.3.1 Methodology

GHG emission estimates were provided in the Air Quality and Greenhouse Gas Impact Assessment prepared for the Project by Stantec (Appendix E). CalEEMod version 2022.1.1.25 was used to estimate

GHG emissions associated with the Project. The emission estimates and analysis therein were used as the basis for analysis in the preparation of this Draft EIR.

For modeling construction and decommissioning of the Project, site-specific phase timing, equipment types, and vehicle trips use were developed in consultation with the Applicant and the County. For modeling Project operations, motor vehicle trips assumed that the Project would employ 10 full-time employees and up to 10 part-time employees. The vehicle fleet mix was based on the default fleet mix for the County for the operational year. Operational emissions from area sources were primarily based on CalEEMod default values for the land use type. CalEEMod was also used to model emissions associated with operational use of the emergency diesel generator. To calculate the displaced GHG emissions, off-model calculations were performed using PG&E's latest GHG efficiency metric in 2019. The solar panels were assumed to generate electricity approximately 5.38 hours per day, with an efficiency of 18.46 percent (Turbine Generator 2022).

After the Project's operational life, the Project would be decommissioned to return the site to previous conditions. For the analysis, decommissioning is assumed to take place 40 years after implementation of the Project. Decommissioning would take place over one year and would include a 10-week demolition task followed by re-stabilization and re-vegetation of the site. The amount of worker, hauling, and vendor trip numbers and trip lengths per day were assumed to be the same as construction.

For further information regarding the assumptions used in the emission modeling, refer to the Air Quality and Greenhouse Gas Impact Assessment prepared for the Project (Appendix E).

4.8.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts related to GHG emissions are significant.

Would the project:

- Generate GHG emissions either directly or indirectly that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

SJVAPCD's *Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* presents a tiered approach to analyzing project significance with respect to GHG emissions. Project GHG emissions are considered less than significant if they can meet any of the following conditions, evaluated in the order presented:

1. Project is exempt from CEQA requirements;
2. Project complies with an approved GHG emission reduction plan or GHG mitigation program;
3. Project implements Best Performance Standards; or

4. Project demonstrates that specific GHG emissions would be reduced or mitigated by at least 29 percent compared to business-as-usual (BAU), including GHG emission reductions achieved since the 2002–2004 baseline period.

On November 20, 2015, the California Supreme Court issued its decision on the *Center for Biological Diversity v. California Department of Fish and Wildlife* on the Newhall Ranch project case. The Court determined that there is no substantial evidence to link a specific project's achievement of CARB's scoping plan's statewide average reduction below BAU to the conclusion that the project's reduction would meet AB 32's 2020 goals. Furthermore, since the release of SJVAPCD's guidance, SB 32 has been issued which requires the state to further reduce GHG emissions beyond the goals laid out in AB 32. As a result, the 29 percent reduction in emissions as compared to a BAU standard are outdated and were not used for this analysis.

SJVAPCD does not have a numerical threshold for which a project can determine significance. However, according to CARB, achieving a no-net increase in GHG emissions is an appropriate overall objective for new development projects (CARB 2022); and other air districts have set no-net increase thresholds (San Luis Obispo County Air Pollution Control District 2021). Therefore, projects that have net zero GHG emissions or a net reduction in GHG emissions are considered to be less than significant as these projects help the state in reaching its overall climate change goals. The no-net increase approach is used to determine whether the Project would generate GHG emissions that have a significant impact on the environment.

In addition, the Project will be required to comply with applicable state, regional, and local GHG reduction plans, including CARB's 2022 Scoping Plan, MCAG's 2022 RTP/SCS, and the County's 2030 General Plan. To determine whether the Project would conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing GHG emissions, the Project was evaluated for consistency with the applicable state, regional, and local GHG reduction plans.

4.8.3.3 Project Impacts

This section discusses potential impacts related to GHG emissions associated with the Project and provides mitigation measures if necessary.

Generation of Greenhouse Gases

Impact GHG-1 The Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction and Decommissioning Emissions Inventory

Construction GHGs would be emitted temporarily by off-road construction equipment, vehicle travel by workers, and material deliveries to the Project site. After the lifetime of the Project, the site would be decommissioned. Decommissioning would be similar to construction of the site; however, decommissioning would use the latest available technology, which would be more efficient than those available during construction. The estimated construction and decommissioning GHG emissions are

shown in Table 4.8-1. Because construction GHG emissions are temporary, they are typically amortized over the life of a project and added to operational emissions. The Project is anticipated to have a lifetime of 40 years.

Table 4.8-1. Construction Greenhouse Gas Emissions

Construction Year	Greenhouse Gas Emissions Per Year ($MTCO_2e/yr$)
Construction—2025[1]	4,129.41
Construction—2026[1]	4,709.41
Decommissioning—2065	2,967.77
Total	**11,806.58**
Amortized over 40 years	295.16

Sources: Appendix E.
Note:
[1] Construction emissions include CalEEMod emissions and on-site pickup truck emissions.
$MTCO_2e$/year = metric tons of carbon dioxide equivalent per year.

Operational Emissions Inventory

Long-term (operational) emissions occur over the life of the Project. Operational activities of the Project would generate GHG emissions primarily from operation of maintenance equipment on-site and employee vehicle trips to and from the site. Emissions from the emergency backup generator were also estimated, as the generator would need to be intermittently run for maintenance and testing purposes. GHG emissions would be displaced as power is generated at the proposed solar plant instead of at fossil fuel burning power plants in the region. The net operational GHG emissions associated with the Project are shown in Table 4.8-2. As demonstrated in the table, implementation of the Project would result in a net reduction of GHG emissions.

Table 4.8-2. Operational Greenhouse Gas Emissions

Source	GHG Emissions Per Year ($MTCO_2e/yr$)
Mobile	419.74
Area	0.07
Energy	10.77
Water	0.18
Waste	1.69
Refrigerants	0.09
Off-Road Equipment	166.10
Stationary Sources	10.24
Total Operational Emissions	*608.88*
Amortized Construction and Decommissioning Emissions	295.16
Subtotal	*904.04*
Displaced Emissions	-2,520.27
Total	**-1,616.23**

Sources: Appendix E.
$MTCO_2e$/year = metric tons of carbon dioxide equivalent per year.

As shown in Table 4.8-2, the Project would result in a net reduction of GHG emissions. The Project would contribute its fair share to help the state meet its GHG reduction targets in the energy sector by providing renewable energy and battery storage. However, high-voltage switchgear for the Project may have circuit breakers that contain SF_6 gas, which is a GHG with a high GWP. SF_6 is used as an insulator and arc suppressor in the circuit breakers. Under normal operating conditions the SF_6 gas would be contained in the equipment, and emissions to the atmosphere would only occur through a leak in the circuit breaker housing. Mitigation Measure GHG-1 would be implemented to ensure that all breakers purchased for the Project will have a manufacturers' guaranteed SF_6 leakage rate of 0.5 percent per year or less. Therefore, with implementation of mitigation, the Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GHG-1: Circuit Breakers. Prior to construction activities, the applicant will ensure that breakers used for the Project shall have a manufacturer-guaranteed sulfur hexafluoride (SF_6) leakage rate of 0.5 percent per year or less.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Conflict with an Applicable Plan, Policy, or Regulation

Impact GHG-2 The Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

A project would have a significant impact with respect to GHG emissions and global climate change if it would substantially conflict with applicable GHG reduction goals, plans, policies, and regulatory requirements as well as other federal, state, and local policies.

Consistency with State GHG Reduction Strategies

CARB's 2022 Scoping Plan (CARB 2022) sets a framework for California to meet the reduction targets of SB 32 and AB 1279. The 2022 Scoping Plan builds upon previous iterations of state scoping plans to achieve carbon neutrality and reduce anthropogenic GHG emissions by 85 percent of year 1990 levels no later than 2045, as directed by AB 1279. Table 4.8-3 evaluates Project consistency with the GHG reduction strategies identified in the 2022 Scoping Plan. As shown therein, the Project would be consistent with all applicable measures and, as a result, would support the overall carbon neutrality goal established by the 2022 Scoping Plan.

Table 4.8-3. Project Consistency with 2022 Scoping Plan Greenhouse Gas Reduction Strategies

Measure	Consistency Determination
Deploy ZEVs and reduce driving demand	**Consistent.** While the Project itself would not deploy ZEVs, the Project would provide an additional source of clean electricity and additional grid electricity to power the state's growing fleet of ZEVs.
Coordinate supply of liquid fossil fuels with declining CA fuel demand	**Not applicable.** This measure is aimed at petroleum refineries and fossil fuel extraction operations. However, the Project would not interfere with this goal. Moreover, the Project would further the state's goal of reducing fuel demand by providing an additional source of clean energy.
Generate clean electricity	**Consistent.** The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity.
Decarbonize buildings	**Consistent.** The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. Additionally, all buildings constructed on the site will be consistent with the most current CALGreen Standards in effect at the time of construction.
Decarbonize industrial energy supply	**Consistent.** The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. As such, the Project would provide an additional source of clean energy that would be available in the grid for industrial end users.
Reduce non-combustion emissions (Methane)	**Consistent.** The Project would not include any land uses that generate significant levels of methane, such as landfills or dairy farms.
Reduce non-combustion emissions (Hydrofluorocarbons [HFCs])	**Consistent.** The Project will comply with all SJVAPCD and state regulations governing HFCs.
Compensate for remaining emissions	**Not applicable.** This measure is aimed at the state government to reduce statewide emissions to meet AB 1279 goals. However, as demonstrated in Table 4.8-2, the Project would result in a net reduction of GHG emissions, which would support the statewide goal established by AB 1279.

Source: CARB 2022.

To help achieve the state's GHG reduction goals, SB 100 sets ambitious renewable energy targets. The Project involves the construction, operation and maintenance, and decommissioning of a solar facility that would produce a new renewable source of energy in the County. Therefore, the Project would directly support California's RPS goal under SB 100 of increasing the percentage of electricity procured from renewable sources to 60 percent by 2030 and a target of 100 percent from eligible renewable energy resources and zero-carbon resources by 2045.

The Project would be required to comply with state laws governing solid waste disposal and water use, including AB 939, the California Integrated Waste Management Act, and SB 606, Water Conservation and Drought Planning. Furthermore, the Project would not conflict with any state-wide regulations governing vehicle efficiency, including the Pavley Regulations established by AB 1493, the LCFS established by EO S-01-07, and the ZEV goals established by EOs B-48-18 and EO N-79-20.

Based on the discussion above, the Project would not conflict with any state plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Consistency with Regional GHG Reduction Strategies

The MCAG's 2022 RTP/SCS was prepared to comply with SB 375, which requires a reduction in GHG emissions from the transportation sector. None of the goals, objectives, or actions identified in the MCAG's 2022 RTP/SCS specifically relate to the Project. Action Item 4.1.5 calls for the support of vehicle electrification and electrification infrastructure; the Project would indirectly support this Action Item by providing additional electric resources to the County's grid. In addition, the Project would not affect local transportation or land use during operations and would not conflict with any policies identified in the RTP/SCS. Overall, by providing a new source of renewable energy, the Project would generally support the overarching goal of the RTP/SCS to reduce GHG emissions. Therefore, the Project would not conflict with the applicable regional plan adopted for the purpose of reducing GHG emissions.

Consistency with Local GHG Reduction Strategies

Table 4.8-4 evaluates Project consistency with the GHG reduction strategies identified in the 2030 Merced County General Plan. As shown below, the Project would be consistent with all applicable policies. Thus, the Project would not conflict with the local policies that were adopted for the purpose of reducing GHG emissions.

Table 4.8-4. Project Consistency with 2030 Merced County General Plan Greenhouse Gas Reduction Strategies

Measure	Consistency Determination
Policy NR-2.1: Renewable Energy Use. Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.	**Consistent.** The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. Therefore, the Project would directly increase the availability of renewable energy resources and help reduce County-wide dependency on petroleum.
Policy NR-2.2: Clean Alternative Energy Requirement. Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).	**Consistent.** The Project is a solar energy development project that would connect to PG&E infrastructure at the Mercy Spring Substation. Thus, the Project would directly support an electricity provider in providing clean alternative solar energy.
Policy NR-2.4: Solar Power. Encourage on-site solar power use in residential, commercial, and industrial buildings, and solar power facilities in rural locations that do not harm long-term agricultural productivity and habitat values.	**Consistent.** The Project would construct a solar power facility at a rural location and, thus, would directly support this policy. As discussed in Sections 4.2, Agriculture and Forestry Resources, and 4.4, Biological Resources, the Project would result in less than significant impacts to agricultural and biological resources.
Policy NR-2.9: Energy Conservation. Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).	**Consistent.** The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. Additionally, all structures constructed on the site will be consistent with the most current CALGreen Standards in effect at the time of construction, which would maximize energy conservation.

Source: Merced County 2013.

The Project proposes to construct a 75 MW solar power plant in a rural area of the County. The Project would result in a net reduction of GHG emissions and would be consistent with the state's goals of

reducing GHG emissions. Therefore, the Project would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs; and impacts would be considered less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.8.3.4 PG&E Interconnection Infrastructure

As part of the Project's interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker, all of which would occur within areas previously disturbed and occupied by existing electrical facilities.

The construction equipment, workers, and vehicle trips required for upgrades to these facilities and maintenance would be minimal compared to the other Project construction and operational activities described above. Construction emissions would cease once the substation improvements were performed. Operational activities would include occasional maintenance at the Mercy Springs Substation, which would result in negligible emissions. As shown in Table 4.8-2, the Project would result in a net decrease of emissions. The GHG emissions generated from the construction and operation of the substation improvements would be minor and would not significantly change the emissions disclosed under Table 4.8-2. Further, as facilities used to transport renewable energy to the grid, the PG&E substation improvements would contribute to achieving the state's RPS goals and would not conflict with the state goals to reduce GHG emissions Therefore, activities associated with the PG&E interconnection infrastructure would also result in a less-than-significant impact relating to GHG emissions.

4.8.3.5 Cumulative Impacts

The geographic scope of GHG impacts is global as GHG emissions are inherently cumulative in nature. However, this analysis focuses on the state, the region, and the project's direct and indirect generation or offset of GHG emissions.

The adopted CEQA Guidelines provide regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and global climate change impacts. Under AB 1279, the state has a mandated goal of reducing anthropogenic GHG emissions by 80 percent below year 1990 levels and to reach carbon neutrality by 2045. In order to achieve this goal, CARB prepared the 2022 Scoping Plan (CARB 2022). However, no applicable quantitative thresholds have been set by CARB, SJVAPCD, or the County to determine the significance of a single project or cumulative levels.

However, as discussed above, projects that result in a net decrease in GHG emissions and found to be consistent with applicable GHG reduction plans are presumed to have less-than-significant GHG impacts.

As demonstrated in Table 4.8-2, most of the GHG emissions associated with the Project would be generated during construction. Minimal GHG emissions would also be generated during operations from maintenance worker commutes. However, the emissions would be completely offset by the avoided GHG emissions resulting from the Project's renewable electricity generation. Many cumulative projects in the geographic area consist of utility-scale solar power generation facilities, such as the Vega Solar project located north of the Project site. The nature of these projects is such that, like the Project, they would be consistent with the strategies of the state's GHG reduction goals. To meet the SB 32 GHG emissions reduction mandate, the 2022 Scoping Plan relies on achievement of the RPS target of 60 percent of California's energy coming from renewable sources by 2030 and 100 percent carbon-free sources by 2045. The Project and other similar projects are essential to achieving the RPS. Related renewable energy projects also would have similar minimal GHG emissions that would be offset by renewable energy generation.

Overall, the project would not contribute to cumulative GHG emissions in California because operation of the Project would provide electric power with negligible operational GHG emissions over the long term when compared to traditional fossil fuel generation technologies. Therefore, the cumulative impact would be less than significant, and the Project would not have a cumulatively considerable impact on GHG emissions.

4.9 HAZARDS AND HAZARDOUS MATERIALS

This section describes the regulatory and environmental setting for hazards and hazardous materials. It also describes potential impacts regarding hazards and hazardous materials that would result from implementation of the Project. Where applicable, mitigation measures are included for significant impacts. The County received no scoping comments pertaining to hazards and hazardous materials (Appendix A).

4.9.1 Regulatory Setting

4.9.1.1 Federal

United States Environmental Protection Agency

The United States Environmental Protection Agency (USEPA) was established in 1970 to consolidate a variety of federal research, monitoring, standard-setting, and enforcement activities in one agency to ensure environmental protection. The USEPA's mission is to protect human health and to safeguard the natural environment—air, water, and land—upon which life depends. USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress, is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and some tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, USEPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

The USEPA works together with other industries and various levels of government to provide energy conservation efforts and pollution prevention programs. The USEPA has a variety of programs regarding hazardous materials, including pesticide management, toxic release inventory, local right-to-know information, Brownfields (CalSite database), response to energy, oil spills, and hazardous waste (USEPA 2023a).

Merced County is covered by the USEPA Region 9, which serves jurisdiction to Arizona, California, Hawaii, Nevada, Pacific Islands, and 148 Tribes (EPA 2023a).

Federal Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act

The Federal Toxic Substances Control Act and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the USEPA to regulate and track the generation, transportation, treatment, storage, and disposal of hazardous and non-hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. RCRA also provided regulatory framework in December 1998 to prevent releases from underground storage tanks (USTs) through tank and leak detection and spill protection for new tanks.

Resource Conservation and Recovery Act of 1976

The RCRA grants authority to the USEPA to control hazardous waste from start to finish. This covers the production, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of non-hazardous solid waste. RCRA allows individual states to develop their own programs for the regulation of hazardous waste as long as they are at least as stringent as the RCRA. The State has developed the California Hazardous Waste Control Law (Health and Safety Code [HSC] sec. 25100 et. Seq. And 22 California Code of Regulations [CCR] sec. 66260.1 et seq.) and the USEPA has delegated authority for RCRA enforcement to the State. Primary authority for the Statewide administration and enforcement of California Hazardous Waste Control Law (HWCL) rests with California Environmental Protection Agency's (CalEPA) Department of Toxic Substances Control (DTSC). RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. The 1986 amendments to the RCRA enabled the USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law (42 U.S. Code [USC] 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for spilling of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also enables the revision of the National Contingency Plan (NCP). The NCP (Title 40, Code of Federal Regulations [CFR], Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List (NPL), which lists sites of known or threatened release of hazardous substances to assist the USEPA in determining which sites warrant further investigation. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Emergency Planning and Community Right-to-Know Act

The federal Emergency Planning and Community Right-To-Know Act (EPCRA) was enacted to inform communities and residents of chemical hazards in their area. Businesses are required to report the locations and quantities of chemicals stored on-site to both State and local agencies. EPCRA requires the USEPA to maintain and publish a digital database list of toxic chemical releases and other waste management activities reported by certain industry groups and federal facilities. This database, known as the Toxic Release Inventory, gives the community more power to hold companies accountable for their chemical management.

Clean Water Act/Spill Prevention, Control, and Countermeasure Rule

The Clean Water Act (CWA) (33 USC 1251 et seq., formerly the Federal Water Pollution Control Act of 1972) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the United States. As part of the CWA, USEPA oversees and enforces the Oil Pollution Prevention regulation contained in 40 CFR 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement Spill Prevention, Control, and Countermeasure (SPCC) plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons, or the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "Navigable Waters" of the United States.

Occupational Safety and Health Act of 1970

The agency responsible for ensuring worker safety in the handling and use of chemicals in the workplace is the Occupational Safety and Health Administration (OSHA). The federal regulations pertaining to worker safety are contained in Title 29 of the CFR, as authorized in the Occupational Safety and Health Act of 1970. The regulations provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling and material safety data sheets (MSDS), which inform onsite construction personnel as to the contents of the materials and in the event of accidental release and would provide the necessary remediation procedures. At sites known or suspected to have soil or groundwater contamination, construction workers must receive training in hazardous materials handling and a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

National Fire Protection Association 780, National Electrical Code

With respect to electrical hazards, a thorough knowledge of the National Electrical Code (NEC) is required to install any electrical power system, including photovoltaic (PV) systems. The NEC covers the installation of electrical conductors, equipment, and raceways; signaling and communications conductors; and equipment and optical fiber cables for public and private premises. Article 690 of the NEC specifically covers installation and operational requirements for solar PV systems.

United States Department of Transportation

The Hazardous Materials Transportation Act of 1974, as amended, is the basic statute regulating hazardous materials transportation in the United States. This law gives the United States Department of Transportation (DOT) and other agencies the authority to issue and enforce rules and regulations governing the safe transportation of hazardous materials. State agencies are authorized to designate highways for the transport of hazardous materials. Where highways have not been designated, hazardous materials must be transported on routes that do not go through or near heavily populated areas.

4.9.1.2 State

California Health and Safety Code

The CalEPA has established rules governing the use of hazardous materials and the management of hazardous wastes. California Health and Safety Code Sections 25531, et seq. incorporate the requirements of Superfund Amendments and Reauthorization Act and the Clean Air Act as they pertain to hazardous materials. Health and Safety Code Section 25534 directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop a Risk Management Plan (RMP). The RMP must be submitted to the appropriate local authorities, the designated local administering agency, and the USEPA for review and approval.

Title 8 Industrial Safety Regulations

California regulations pertaining to worker safety are codified in Title 8, Division 1, Chapter 3.2, Subchapter 2 of the California Code of Regulations [CCR]). The California Occupational Safety and Health Administration (Cal/OSHA) is the agency responsible for assuring worker safety from both physical and chemical hazards in the workplace.

Title 22 Hazardous Waste Regulations

The DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous materials waste. Title 22 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. These regulations also require hazardous materials users to prepare written plans, such as a hazardous materials business plan, that describe hazardous materials inventory information, storage and secondary containment facilities, emergency response and evacuation procedures, and employee hazardous materials training programs. Several agencies participate in enforcing hazardous materials management requirements, including DTSC, the Regional Water Quality Control Board (RWQCB), and the County.

Hazardous materials are grouped into the following four categories, based on their properties: toxic (causes adverse human health effects), ignitable (could burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). If improperly handled, hazardous materials and hazardous waste can result in public health hazards if released into the soil or groundwater or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer. The CCR Title 22, Sections 66261.20-24 contain technical descriptions of toxic characteristics that could cause soil or groundwater to be classified as hazardous waste.

California Fire Code

The California Fire Code (CFC), Chapter 12, where applicable, requires an energy storage management system that monitors and balances cell voltages, currents and temperatures. The system must transmit

an alarm signal if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage, are detected. The CFC also requires the use of appropriate fire detection and fire suppression systems, which will be incorporated into each of the Project's BESS enclosures per consultation with the applicable jurisdictional agency.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The California HSC, Division 20, Chapter 6.95, known as the Hazardous Materials Release Response Plans and Inventory Act or the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Businesses must submit this information to the County DEH. The DEH verifies the information and provides it to agencies responsible for protection of public health and safety and the environment. Business Plans are required to include emergency response plans and procedures in the event of a reportable release or threatened release of a hazardous material.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

California Environmental Protection Agency

Government Code Section 65962.5 requires the Cal EPA to develop a Hazardous Waste and Substances Site List (Cortese List). The Cortese List is a planning document used by the state, local agencies, and developers to comply with CEQA requirements to consider Government Code Section 65962.5 in evaluating proposed development projects. Government Code Section 65962.5 states that:

> *The list should contain all hazardous waste facilities subject to corrective action, all hazardous waste property or border zone property designations, all information received on hazardous waste disposals on public land, all hazardous substance release sites listed pursuance to Government Code Section 25356, and all sites that were included in the former Abandonment Site Assessment Program.*

The DTSC is responsible for a portion of the information on the list, and other local and state government agencies are required to provide additional information. CalEPA operates the California Air Resources Board (CARB), the Department of Pesticide Regulation, DTSC, Integrated Waste Management Board (IWMB), Office of Environmental Health Hazard Assessment (OEHHA), State Water Resources Control Board (SWRCB), Cal/OSHA, and State Regulatory Programs Division (SRPD). The function of each of these offices is discussed below:

Department of Pesticide Regulation

The Department of Pesticide Regulation regulates all aspects of pesticide sales and use to protect the public health and the environment for the purpose of evaluating and mitigating impacts of pesticide use, maintaining the safety of the pesticide workplace, ensuring product effectiveness, and encouraging the development and use of reduced risk pest control practices.

Department of Toxic Substances Control

DTSC's mission is to restore, protect, and enhance the environment, and to ensure public health, environmental quality, and economic vitality by regulating hazardous waste, conducting, and overseeing cleanups, and developing and promoting pollution prevention. DTSC protects residents from exposures to hazardous wastes. DTSC operates programs to:

- Deal with the aftermath of improper hazardous waste management by overseeing site cleanups.
- Prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly.
- Take enforcement actions against those who fail to manage hazardous wastes appropriately.
- Explore and promote means of preventing pollution and encourage reuse and recycling.
- Evaluate soil, water, and air samples taken at sites, and develop new analytical methods.

Integrated Waste Management Board

IWMB protects the public health and safety and the environment through waste prevention, waste diversion, and safe waste processing and disposal. IWMB is responsible for managing California's solid waste stream. IWMB is helping California divert its waste from landfills by:

- Developing waste reduction programs.
- Providing public education and outreach.
- Assisting local governments and businesses.
- Fostering market development for recyclable materials.
- Encouraging used oil recycling.
- Regulating waste management facilities.
- Cleaning up abandoned and illegal dump sites.

Office of Environmental Health Hazard Assessment

OEHHA is responsible for developing and providing risk managers in state and local government agencies with toxicological and medical information relevant to decisions involving public health. OEHHA

also works with federal agencies, the scientific community, industry, and the general public on issues of environmental, as well as public, health. Specific examples of OEHHA responsibilities that directly relate to Merced County include:

- Developing health-protective exposure standards for air, water, and land to recommend to regulatory agencies, including ambient air quality standards for the CARB and drinking water chemical contaminant standards for the Department of Health Services.
- Assessing health risks to the public from air pollution, pesticide, and other chemical contamination of food, seafood, drinking water, and consumer products.
- Providing guidance to local health departments, environmental departments, and other agencies with specific public health problems, including appropriate actions to take in emergencies that may involve chemicals.

State Water Resources Control Board

SWRCB preserves and enhances the quality of California's water resources and ensures their proper allocation and efficient use for the benefit of present and future generations. The SWRCB maintains the Leaking Underground Storage Tank Information System (LUTIS) Database, also known as GeoTracker, which contains information on registered leaking underground storage tanks (LUSTs) in the state.

California Occupational Safety and Health Agency

Cal/OSHA sets and enforces standards that insure safe and healthy working conditions for California's workers. The Division of Occupational Safety & Health is charged with the jurisdiction and supervision over workplaces in California that are not under federal jurisdiction. Cal/OSHA regulates issues involving unsafe workplace conditions, worker exposure to chemicals, illness due to workplace exposure, or improper training.

State Regulatory Programs Division

SRPD oversees the technical implementation of the state's Unified Program, a consolidation of six environmental programs at the local level, and conducts reviews of Unified Program agencies to ensure their programs are consistent statewide, conform to standards, and deliver quality environmental protection at the local level. SRPD also carries out the state's hazardous waste recycling and resource recovery program designed to facilitate recycling and reuse of hazardous waste. SRPD conducts a corrective action oversight program that assures any releases of hazardous constituents at generator facilities that conduct onsite treatment of hazardous waste are safely and effectively remediated and oversees the hazardous waste generator and onsite waste treatment surveillance and enforcement program carried out by local Unified Programs.

California Building Standards Code

The California Building Standards Code establishes building requirements for construction and renovation. The most recent version of the California Building Standards Code was adopted in 2007 by

the California Building Standards Commission and took effect January 1, 2008, and it is based on the International Code Council's Building and Fire Codes. Included in the California Building Standards Code are the Electrical Code, Mechanical Code, Plumbing Code, Energy Code, and Fire Code. The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls.

Central Valley Regional Water Quality Control Board

There are nine RWQCBs throughout the state. The Central Valley RWQCB has jurisdiction over the County of Merced, with offices in Stockton. Individual RWQCBs function as the lead agencies responsible for identifying, monitoring, and cleaning up LUSTs. Storage of hazardous materials in USTs is regulated by the SWRCB, which oversees the nine RWQCBs.

Photovoltaic Product Disposal and End-of-Life Regulation

Regulation of solar PV products' end-of-life disposal is based on the federal RCRA and on the HWCL. If solar panels are determined to be hazardous waste by the regulatory authority (Merced County), the requirements of RCRA and HWCL would regulate their handling, recycling, reuse, storage, treatment, and disposal. Decommissioned or defective solar panels are currently considered hazardous waste by regulators if they do not meet the USEPA's Toxicity Characteristic Leaching Procedure standards (this determination varies depending on the technology used). Cadmium telluride panels are expected to last up to 40 years, and proactive disposal procedures, including recycling can eliminate health and environmental risks on water streams and water contamination for municipalities.

Other State Regulations

The California Code of Regulations (CCR) contains additional requirements relevant to hazards and hazardous materials, including:

1. Title 8 CCR 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.

2. Title 14 CCR 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 specifies when and where the standards apply. It establishes minimum clearance requirements for flammable vegetation and materials surrounding structures.

3. Title 23 CCR, Chapter 16, Article 11, LUST Cleanup Sites, which regulate all UST sites that have had an unauthorized release (i.e., leak or spill) of a hazardous substance, usually fuel hydrocarbons, and are being (or have been) cleaned up.

4. Title 22 CCR 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 CCR 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.

4.9.1.3 Local

2030 Merced County General Plan

The 2030 Merced County General Plan (2030 General Plan) is a legal document that serves as Merced County's blueprint for future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers Merced County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the county's future development.

The 2030 General Plan contains the following goals and policies that are applicable to the Project (Merced County 2013a):

Health and Safety Element – Fire Hazards

Goal HS-3: Minimize the exposure of County residents and public and private property to the effects of urban and wildland fires.

Policy HS-3.6: Weed Abatement (Regulation and Development Review [RDR]) Encourage weed abatement programs throughout the County to promote fire safety.

Policy HS-3.9: Building Permit Review (RDR) Require all buildings and structures to be constructed to fire safety standards prescribed in the Building Code and the County Fire Prevention Ordinance. Where minimum fire flow water pressure is not available to satisfy Fire Department standards, alternate fire protection measures shall be identified and incorporated into the development.

Policy HS-3.10: Emergency Equipment Access – New Development (RDR) Require safe all weather access for fire and other emergency equipment as part of the subdivisions and building permit application review process.

Policy HS-3.13: Uniform Fire Code (RDR) Require the Uniform Fire Code to be used as a guide for project-level fire prevention and suppression activities, including site access, water supply, fire protection systems, and the use of fire resistant building materials.

Hazardous Materials and Waste

Goal HS-5: Protect Merced County residents, visitors, and property through providing for the safe use, storage, transport, and disposal of hazardous materials and wastes.

Policy HS-5.1: Compliance with Safety Standards (RDR) Require that hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, state, and federal safety standards.

Policy HS-5.2: Hazardous Material and Waste Transport (Inter-Governmental Coordination [IGC]) Coordinate with the California Highway Patrol to establish procedures for the movement of hazardous wastes and explosives within the County.

Policy HS-5.3: Incompatible Land Uses (RDR) Prohibit incompatible land uses near properties that produce or store hazardous waste.

Policy HS-5.4: Contamination Prevention (RDR) Require new development proposals to protect soils, surface water, and groundwater from hazardous materials contamination.

Policy HS-5.6: Hazardous Waste Residual Repositories (RDR/Infrastructure and Service Master Plans, Strategies, and Programs [MPSP]) Prohibit hazardous waste residual repositories (as defined by the Merced County Hazardous Waste Management Plan [HWMP]) to be located in significant wetland and threatened species habitats or adjacent to state and federal wildlife refuges or management areas.

Solid and Hazardous Waste

Goal PFS-4: Ensure the safe and efficient disposal and recycling of solid and hazardous waste generated in the County.

Policy PFS-4.2: Landfill Location (RDR) Require landfills to be located in areas that avoid health and safety risks and ensure that future adjacent land uses do not restrict landfill operations.

Policy PFS-4.3: Spill Site Development (RDR) Prohibit development on sites identified by federal, state, or local agencies as spill sites or hazardous waste areas unless approved cleanup occurs prior to development.

Merced County Hazardous Waste Management Plan

Merced County prepared a HWMP in 1989 in accordance with California Health and Safety Code Section 25135, et seq. The plan addresses waste reduction and onsite treatment, the siting of offsite hazardous waste facilities, transportation of hazardous wastes, cleanup of contaminated sites, and emergency response procedures. The Merced County Division of Environmental Health enforces the plan and maintains a list of known hazardous waste sites within the County that is updated continuously. The Merced City Fire Department also works with the County Division of Environmental Health to prevent the accidental release of hazardous substances by conducting inspections of hazardous materials facilities and enforcing use and storage requirements.

Merced County Fire Code

The Merced County Fire Department currently reviews development plans and building permits for compliance with the California Building Code and the Merced County Fire Code. The County Fire Code (Section 10.301(c)) requires developers to provide approved water supplies capable of delivering adequate fire flow for fire protection to all premises upon which buildings or portions of buildings are constructed. Water supply may consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of supplying the required fire flow. In setting the requirements for fire flow, the Fire

Chief may be guided by the standards published by the Insurance Services Office in its Guide for Determination of Required Fire Flow.

Merced County General Health and Safety Code

Health and Safety Code Section 9.08.070 of the Merced County Municipal Code requires special arrangements for the disposal of hazardous or toxic materials. Section 9.08.170 requires compliance with the National Environmental Policy Act (NEPA) of 1970 and other applicable federal or state laws regulating disposal of hazardous materials and protection of natural resources.

Merced County Division of Environmental Health

The Merced County Division of Environmental Health oversees a variety of health and safety-related programs and is a Local Oversight Program implementing agency under contract with the SWRCB. Merced County also provides regulatory oversight of soil contamination investigations and cleanups. In accordance with the State Health and Safety Code, Merced County requires preparation of a hazardous materials business plan for storage of more than 55 gallons, 200 cubic feet, or 500 pounds of hazardous materials on any site. Any quantity of hazardous waste generated on a site also requires a hazardous materials business plan. The contents of a hazardous materials business plan are presented in Health and Safety Code Section 25504 and include annual inventory of hazardous materials; emergency response plans and procedures; mitigation procedures; evacuation plans; and annual safety training for employees.

4.9.2 Environmental Setting

This section discusses the existing conditions related to hazards and hazardous materials in the Project area and describes the environmental setting for hazardous materials and waste, airports, electromagnetic fields (EMFs), and wildfire hazards. Residences and other sensitive receptors are also described as their proximate location to the Project site affects their exposure to the potential hazards described below. A description of the Project site relative to hazards and hazardous materials can also be found below.

As described in Chapter 2.0, Project Description, the Project includes the development of a solar facility and associated infrastructure with the capacity to generate approximately 75 megawatts (MW) alternating current (AC) of renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW AC. The Project site is located on all or portions of several contiguous parcels, totaling approximately 650 acres, plus an additional 1,700-foot-long generation-tie (gen-tie) line to deliver power to Pacific Gas and Electric's (PG&E's) existing Mercy Springs Substation (point of interconnection) in unincorporated Merced County.

4.9.2.1 Existing Setting

The Project site consists of fallow agricultural lands, and there has been no agricultural production on the Project site for over ten years. The nearest residential properties are located at 35001 Poleline Road, approximately 3,750 feet northwest of the Project site, and 24477 S. Woo Road, approximately 4,330 feet north of the Project site. .

Historical Property Use

As discussed in the Cultural Resources Evaluation Report, provided in Appendix I of this Draft EIR, historical aerial photographs, topographic maps, and General Land Office survey plat maps suggest that the Project site was not subject to any significant development prior to 1953. By 1953, an established agricultural field bisected by two ditches is depicted in historical aerials, and the Project site is bisected by multiple linear features, possibly roads or ditches. By 1967, the California Aqueduct is present along the southwest edge of the Project site. No other development occurs until the construction of I-5 south of the Project site between 1967 and 1971. By 1981, ranch roads, ditches, and agricultural fields follow their present-day alignments. Between 1981 and 1998, a structure is depicted in the southeastern most corner of the Project site. No other significant development is depicted within the Project site, which remains an agricultural parcel to the present day.

Electric and Magnetic Fields

EMFs occur both naturally and as a result of human activity across a broad electrical spectrum. Naturally occurring EMFs are caused by the weather and the Earth's geomagnetic field. The fields caused by human activity result from technological application of the electromagnetic spectrum for uses such as communications, appliances, and the generation, transmission, and local distribution of electricity. The electrical components associated with solar projects include solar panels, inverters, and BESS. These components may produce non-ionizing, low frequency EMFs during normal operation, as is typical of standard electrical devices (NCSU 2017).

California Public Utilities Commission (CPUC) has been unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences. At present, CPUC does not consider EMFs, in the context of CEQA, to be an environmental impact because there is no agreement among scientists that EMFs create a potential health risk and because CEQA does not define, and has not adopted standards for defining, any potential risk from EMFs (CPUC 2010). Therefore, EMFs are not addressed in this Draft EIR.

Records Review

The agency database search records review for the Project was obtained from the SWRCB GeoTracker and the NPL and is discussed further below.

State Water Resources Control Board GeoTracker

The SWRCB is responsible for a portion of the information for the Cortese List which provides additional information on Government Code Section 65962.5, as described above in the Regulatory Setting section. The SWRCB maintains the LUTIS Database, also known as GeoTracker, which contains information on registered LUSTs. LUTIS Sites contain information on registered LUSTs in the state and local regions. LUST Cleanup Sites includes all UST sites that have had an unauthorized release (i.e., leak or spill) of a hazardous substance, usually fuel hydrocarbons, and are being (or have been) cleaned up. In GeoTracker, LUST sites consist almost entirely of fuel-contaminated LUST sites (also known as "Leaking

Underground Fuel Tank", or "LUFT" sites) which are regulated pursuant to Title 23 of the California Code of Regulations, Chapter 16, Article 11 (SWRCB 2023).

The records search was performed using GeoTracker to consider known release sites within the general vicinity of the project site. The analysis reviewed release site records within approximately 1.5-mile of the Project site. Table 4.9-1 provides a summary of the nearby local site identified. One LUST Cleanup Site was identified approximately 1.15 miles (6,072 feet) to the northwest of the Project. The LUST Cleanup Site is the Dos Amigos Pumping Plant, which is located approximately 0.72 miles (3,792 feet) of the Project site and approximately 1.13 miles (5,944 feet) northwest of the Mercy Springs Substation (SWRCB 2023). In addition, the Project site is not located within a site that would be subject to Government Code Section 65962.5 (CalEPA 2024).

The case summary reported Merced County and the Central Valley RWQBC (Region 5F) discovered the LUST site on 02/09/1995. The LUST site contaminant identified was gasoline in the soil. The County and RWQBC resolved the issue by removing the contaminant, which was completed on 03/17/1995. The Cleanup Status is considered Completed – Case Closed, which defines a closure letter or other formal closure decision document has been issued for the site (SWRCB 2023). Based on the results of the GeoTracker search, the Project site does not contain any current or potential hazardous concerns.

Table 4.9-1. Listing of Nearby Local Site

Listed Facility Name/Address	Database Listing	Distance/Direction from Property	Site Type	Cleanup Oversight Agencies	Potential Media of Concern	Cleanup Status
Dos Amigos Pumping Plant – 25001 Pole Line Road Los Banos, CA 93635	SWRCB GeoTracker	1.15 miles (6,072 feet) northwest	LUST Cleanup Site	Merced County	Soil	Completed – Case Closed as of 03/17/1995

Source: SWRCB 2023

National Priorities List

The NPL lists sites of national priority of known releases or threatened releases of hazardous pollutants, material, or contaminants in the nation. The NPL is designed as an information and management tool to guide the USEPA of which sites warrant a further investigation. The NPL assesses the nature of environmental and human health risks. The NPL does not serve the purpose of judgment, nor does it require owners or operators to undertake any action, rather it serves the purpose of providing information to the public and identifying the sites that appear to warrant remedial actions (USEPA 2023b).

A records search was performed to identify if there were any NPL sites within the proximity of the Project site. Castle Air Force Base, located within Merced County, was listed on the NPL database on 07/22/1987. Castle Air Force Base consists of 2,777 acres of airfield operations, industrial areas, and housing for the base personnel (USEPA 1987). The Project site is approximately 52 miles southwest of Castle Air Force Base. Based on that distance, the site is not discussed further.

Wildfires and Fire Protection

Wildfires affect grassland, brush, or woodlands, and any structures on or near these fires. Such fires can result from either human-made or natural causes. The type and amount of fuel, topography, climate, and the availability of water for firefighting are the primary factors influencing the degree of fire risk. While wildfires cannot always be prevented, various measures can be implemented to reduce a particular project's susceptibility to these types of fires, including clearing brush around the land use to create a buffer area, which would separate a project from a fire's primary fuel sources. In rural locations, onsite vegetation management efforts, including mowing or grazing of brush and weeds, can also reduce a project's susceptibility to wildfire.

According to the Fire Hazard Severity Zone (FHSZ) Maps from the California Department of Forestry and Fire Protection (CAL FIRE – Madera, Mariposa, Merced Unit), the Project site is not within the Very High FHSZ. The Project is within an area known as "Local Responsibility Area". The Project site region is classified as an Unzoned FHSZ, and the closest classified zone is the Moderate FHSZ, the lowest possible rating, located 0.25 mile southwest of the Project site on the opposite side of I-5 (CAL FIRE 2023).

Airports and Schools

According to Google Maps, the closest airports are the Los Banos Municipal Airport, approximately 9.9 miles northwest of the Project site and the Dos Palos Airport, approximately 9.9 miles east of the Project site. The closest school is the Charleston Elementary School, approximately 4.3 miles north of the Project site. The Project site is not within proximity to an airport or school to pose any hazardous concern to these institutions.

4.9.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to hazards or hazardous materials. If an impact is determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.9.3.1 Methodology

The methodology for determining impacts relating to hazardous materials focuses on (1) the potentially significant impacts related to the routine transport, use, or disposal of hazardous materials and the release of hazardous materials into the environment; and (2) Project components that could result in environmental contamination.

The Project's effects are compared to the Thresholds of Significance (see below) related to hazards and hazardous materials to determine whether implementation of the Project would result in impacts on humans or the environment.

4.9.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines' Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to hazards and hazardous materials are significant.

Would the project:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?
- 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, would the project result in a safety hazard or excessive noise for people residing or working in the project area?
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

4.9.3.3 Project Impacts

This section discusses potential impacts to hazards and hazardous materials associated with the Project and provides mitigation measures where necessary.

Routine Use

Impact HAZ-1 The Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Construction

Construction of the Project would require the transport and use of materials necessary to construct the proposed PV, BESS, and other Project components. As discussed above, likely uses would include cleaning fluids, solvents, petroleum products, and herbicides. The use, storage, and disposal of

hazardous materials and wastes could result in potential adverse health and environmental impacts if these materials were used, stored, or disposed of improperly, causing accidents and spills. The Project would prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP would be submitted to the Stormwater Multiple Application and Report Tracking System (SMARTS) and the County for review. The SWPPP is required to comply with state and federal water quality regulations and would identify, implement, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges from the Project site during construction.

As mandated by federal and state regulations, the Applicant and its contractors would use all hazardous, potentially hazardous, and non-hazardous materials in accordance with the manufacturer's instructions and directions and would be properly disposed of by a licensed hazardous waste recycling or disposal firm. As mandated by OSHA, all hazardous materials stored on the Project site would be accompanied by material safety data sheets (MSDS), which would inform onsite construction personnel as to the contents of the materials and in the event of accidental release and would provide the necessary remediation procedures. Additionally, all components would be included as part of a comprehensive SPCC plan, in accordance with all applicable federal, State, and local regulations. Furthermore, batteries associated with the BESS would be pre-packaged in factory-tested shipping containers and secured on a flatbed truck trailer. The batteries would be transported to the pre-packaged battery unit to the Project site. All equipment would be tested and labeled to the proper transportation regulations, such as UN38.3. Therefore, with the mandatory compliance with applicable federal, state, and County regulations, impacts pertaining to the transport, use, handling, and disposal of hazardous waste would be less-than-significant during Project construction.

Operation

During operation, maintenance activities would typically include panel repairs, panel washing, and maintenance of transformers, inverters, and other electrical equipment as needed; maintenance of the oil/water separator system; and road and fence repairs. The transformers proposed to be located at the Project substation would use non-hazardous mineral oil for cooling purposes. Typical hazardous waste would include spent oil, hydraulic fluid, household batteries, and materials used in certain BESS battery technologies and PV panels. The batteries would be stored in metal-framed storage containers that house multiple battery modules mounted in racks. The storage containers would be insulated, air conditioned, and equipped with appropriate fire safety systems. The containers are sealed such that no fluid leaks can escape from the containers in normal conditions. Most energy storage systems, such as lithium ion, do not require secondary containment since all cells are hermetically sealed and are factory installed in modules and containers. However, energy storage systems using flow batteries may have hazardous liquid electrolyte that can leak through hoses and fittings. Therefore, if a flow battery is selected, secondary containment would be included in the project design. The batteries are designed to last the lifetime of the project; however, some batteries may be repaired or replaced as part of regular maintenance activities, if needed. The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction. At a minimum these safety systems would include a mix of thermal, smoke, and gas detectors along with explosion prevention per National Fire Protection Association (NFPA) standards 68 or 69. The BESS will undergo extensive testing and will be certified to UL9540, which is a safety standard for energy storage systems.

Cadmium Telluride (CdTe) is a semiconductor used in solar cells to convert solar energy into electricity. Cadmium-based solar PV cell production involves many of the same materials and hazards as those used in the microelectronics industry, with the highest toxicity levels found in production and disposal. During operation, the PV panels, batteries, and inverters are not expected to generate hazardous waste. Environmental risks of both crystalline silicon and thin film CdTe PV technologies have been evaluated by the International Energy Agency, using EPA fate and transport methods for potential emissions to air, water, and soil from non-routine events such as fire and field breakage. Based on comparisons with EPA health screening levels, crystalline silicon and thin film CdTe PV technologies do not present a health risk in the event of fire or breakage, with regards to their use of lead and cadmium compounds, respectively (IEA 2018 and 2019). Therefore, the potential use of a crystalline silicon or CdTe PV system would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during normal operations. At the end of the Project's life, the PV panels and remaining Project components would be resold, properly disposed of, or recycled. The main transformers in the substation would be equipped with spill containment areas. Any lead acid battery storage would be in accordance with OSHA requirements such as inclusion of ventilation, acid resistant materials, and spill response supplies. All components would be included as part of a comprehensive SPCC plan, in accordance with all applicable federal, State, and local regulations.

If required, the use of pesticides and herbicides on the Project site would comply with USEPA, California Department of Pesticide Regulation, and County regulations. A Vegetation and Soil Management Plan would be prepared and implemented, in accordance with Mitigation Measure BIO-2. The Plan would detail how pesticides and herbicides would be labeled, stored, and used onsite, and how records of their use would be monitored, as well as emergency information in the event of exposure. The Plan would use an adaptive management strategy to regularly evaluate the effectiveness of the control methods.

Herbicides, fuel, and other hazardous materials needed for the Project would be stored in appropriate containers in secure areas. Some hazardous materials would be stored appropriately in the O&M warehouse during operation. Onsite staff would be trained annually on safe handling, storage, and disposal of hazardous materials. Hazardous wastes generated during construction, operation, and decommissioning would be removed from the Project site by a licensed hazardous waste recycling or disposal firm.

Disposal of all hazardous materials would occur in accordance with applicable regulations and as described in the Project-specific Hazardous Materials Business Plan, which 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. The plan would also ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to maintenance workers and/or the public. These regulations are codified in Title 8, 22, and 26 of the CCR above, and their enabling legislation is contained in Chapter 6.95 of the California Health and Safety Code.

Therefore, with the mandatory compliance with applicable federal, state, and county regulations, impacts pertaining to the transport, use, handling, and disposal of hazardous waste would be less-than-significant during operation of the Project.

Decommissioning

Decommissioning of the Project would involve activities and the use of hazardous materials similar to those used during construction. To accommodate directing of construction materials to proper end-point destinations, contractors and workers would be trained on waste sorting, appropriate recycling storage areas, and measures to reduce landfill waste. At the end of the Project life, the PV panels would be evaluated to determine their value in a secondary market. If not resold or repurposed, they would be recycled. A national PV module recycling network has been established by the U.S. Solar Energy Industry Association (SEIA) for providing module collection and recycling services. Current CdTe PV modules pass federal leaching criteria for non-hazardous waste, due in part to the low solubility of CdTe, which means they would not pose a significant risk for cadmium leaching if they reached a landfill. Equipment such as drive controllers, inverters, transformers, and switchgear would either be reused or recycled. Poured concrete pads would be removed and recycled or reused as clean fill. The batteries comprising the BESS would be recycled or disposed of at a hazardous waste facility in accordance with applicable regulations for the disposal of hazardous materials.

Based on the information above, mandated federal and state regulations the Project would not create a significant hazard to the public or the environment through the routine transport or disposal of hazardous materials. The use of hazardous materials (i.e., herbicides), however, would be potentially significant. Implementation of MM BIO-2 would be necessary to reduce potential impacts from herbicide applications to a level of less-than-significant through vegetation management and soil remediation, respectively.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Accident Conditions

Impact HAZ-2 **The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving a hazardous materials release into the environment.**

Construction

Site workers, the public, and the environment could be inadvertently exposed to hazardous substances onsite during Project construction. Small quantities of hazardous substances would be used at the project site and would likely include cleaning fluids, solvents, petroleum products, and herbicides as described in Impact HAZ-1. Diesel exhaust particulates can elevate lung cancer rates in occupational settings including construction (NTP 2021a). Benzene can elevate the risk of Leukemia in occupational settings;

however, the risk of Leukemia typically poorly defined with minimal exposure (NTP 2021b). In addition, construction would involve the transport of solar PV panels and batteries to the Project site. As described above, hazardous materials contained in the PV panels would not be emitted as a result of breakage or fire in the event of an accident. The electrochemical materials comprising the batteries may also be considered hazardous. As described previously, the BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction. At a minimum these safety systems will include a mix of thermal, smoke, and gas detectors along with explosion prevention per National Fire Protection Association (NFPA) standards 68 or 69. The BESS would undergo extensive testing and would be certified to UL9540, which is a safety standard for energy storage systems. Transport of these materials would be in accordance with applicable regulations to minimize the risk of upset. The handling and disposal of these materials would be governed in accordance with regulations enforced by the Certified Unified Program Agency, Cal/OSHA, and DTSC. In addition, regulations under the CWA require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Section 4.7, Geology and Soils, for further discussion). As previously discussed under Impact HAZ-1, a SWPPP would be submitted to the SWRCB and the County for review and approval. Implementation of the SWPPP would ensure that BMPs are implemented to reduce or eliminate pollutants in stormwater discharges from the Project site during construction, thereby reducing any potential impacts associated with the accidental upset or release of hazardous materials to a less-than-significant level with mitigation. Examples of construction BMPs identified in SWPPPs may include using temporary mulching, seeding, or other stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as fiber rolls and silt fencing, to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Operation

The potential for exposure to hazardous materials during operation of the Project would include exposure to solar panel materials and potential fire and explosive risk of the batteries. The PV solar panels that would be installed on the Project site would be made from Cadmium telluride.

Cadmium telluride PV panels may include small amounts of solid materials that are considered hazardous. A Cadmium telluride PV module is composed of Cadmium telluride solar cells, metal contacts between the cells, an encapsulation layer that encloses the cells, a front glass plate, and a back-side foil or a second glass plate on the back side. Often the module is framed with aluminum and contains a contact box. The outer glass cover constitutes the largest share of the total mass of a finished crystalline PV module (approximately 65 percent), followed by the aluminum frame (approximately 20 percent), ethylene vinyl acetate encapsulant (approximately 7.5 percent), polyvinyl fluoride substrate (approximately 2.5 percent), and the junction box (1 percent). The solar cells themselves represent only about 4 percent of the mass of a finished module. Because such materials are in a solid and non-leachable state, broken microcrystalline PV panels would not be a source of pollution to surface water, stormwater, or groundwater.

During operation of the project, staff would be trained on procedures to identify broken panels and proper handling guidelines, which would minimize the potential for Cadmium leaching from damaged panels. In addition, broken panels would be sent to a facility licensed for the recycling of PV panels; if recycling is unavailable, the broken panels would be sent to a landfill licensed to receive broken PV panels. As described in Chapter 2.0, Project Description , a Hazardous Materials Business Plan would be prepared, which 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. In addition, the plan would ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to maintenance workers and/or the public.

The BESS would consist of battery racks housed in containers or a building located near the Project substation. Containers would be installed on concrete pads on the Project site. Space conditioning equipment would be located within the containers. In accordance with relevant safety standards, the containers would be equipped with appropriate fire safety systems. The battery cells would be factory housed in module casings and then placed in racks. Multiple racks are placed in a container (which is a fully enclosed structure), then placed on a concrete pad or other appropriate foundation design. The full-time staff for the Project would monitor the energy storage operations on a daily basis and would be able to determine if an upset condition occurs. During routine maintenance, the BESS would be inspected to determine if any leakage has occurred. Any potential leakage would be contained within the concrete pads and containers and would be reported and cleaned up in accordance with existing regulations. Additionally, in the unlikely event of thermal runaway, the Project's preventative measures and fire and safety systems are designed to limit the event to a single battery enclosure as well as reduce the duration and intensity of an event, if it occurs. The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction, as described in Impact HAZ-1.

The Project is also subject to the requirements of Chapter 12 of the CFC which requires that all BESS use an Energy Management System for monitoring and balancing cell voltages, currents and temperatures. The system must transmit an alarm signal if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage, are detected. The CFC also requires the use of appropriate fire detection and fire suppression systems, which will be incorporated into each of the Project's BESS enclosures per consultation with the applicable jurisdictional agency. Adherence to regular monitoring, visual inspections, and applicable standards during maintenance activities would result in a less-than-significant impacts from the BESS. In addition, a Fire Protection Plan will be prepared prior to issuance of construction permits, and the applicant will coordinate with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training as further described in Impact HAZ-7.

Decommissioning

Decommissioning of the Project would involve activities and the use of hazardous materials similar to those used during construction, as well as the transport and disposal of hazardous materials used at the Project site. Inadvertent releases of hazardous materials from accidental spills or leaks could occur. The Project would be required to comply with existing federal, state, and county laws and regulations pertaining to the use, transport, and disposal of hazardous and nonhazardous materials. PV panels would be evaluated to determine their value in a secondary market. If not resold or repurposed, they would be

recycled at a facility licensed for the recycling of PV panels. If recycling is unavailable, the broken panels would be sent to a landfill licensed to receive broken PV panels. The batteries comprising the BESS would be recycled or disposed of at a hazardous waste facility in accordance with applicable regulations for the disposal of hazardous materials. There are several companies located in and near Merced County that handle hazardous waste disposal and recycling of batteries. Adherence to existing regulations and application of mitigation measures described below would result in a less-than-significant impact.

Based on the above, the Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving a hazardous materials release into the environment and impacts would be less than significant after mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HAZ-1: Fire Protection Plan. The Applicant shall prepare a Fire Protection Plan for construction, operation, and decommissioning of the project prior to issuance of construction permits, and will coordinate with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training. The Fire Protection Plan shall be submitted to Merced County and shall include but not be limited to the following measures:

- Internal combustion engines, stationary and mobile, shall be equipped with spark arresters in good working order.
- All personnel shall be trained in fire safety practices relevant to their duties.
- All construction and maintenance personnel shall be trained and equipped to extinguish small fires.
- Work crews shall have fire-extinguishing equipment on hand, as well as emergency numbers and cell phones or other means of contacting the Fire Department.
- Security gates shall be approved by the Fire Department and shall include the installation of a key switch or padlock, whichever is most appropriate.
- Smoking shall be prohibited while operating equipment and shall be limited to paved or graveled areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents). Smoking shall be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the Project area.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Hazardous Emissions within One-Quarter Mile of a School

Impact HAZ-3 The Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Charleston Elementary, the school nearest to the Project site, is located approximately 4.3 miles north of the Project site. As such, the Project is not located within one-quarter mile of an existing or proposed school. Further, as described above, the Project would comply with applicable federal, state, and local regulations regarding hazardous materials. Therefore, no impacts associated with the emission of hazardous materials or substances within one-quarter mile of an existing or proposed school would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

List of Hazardous Materials Sites

Impact HAZ-4 The Project would not 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, would not create a significant hazard to the public or the environment.

As discussed above in Section 4.9.2, the Project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. One closed LUST Cleanup Site was identified within 1.5 miles of the Project site. Therefore, no impacts would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Airport Safety Hazards

Impact HAZ-5 The Project would not be 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, the project would not result in a safety hazard or excessive noise for people residing or working in the project area.

The Project site is not located within two miles of a public airport. The nearest public airports are the Los Banos Municipal Airport and Dos Palos Airport, which are both approximately 10 miles northwest and east of the Project site. Therefore, no impacts associated with aviation noise and safety hazard at the Project site would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Emergency Plans

Impact HAZ-6 The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The construction, operation, and decommissioning of the Project would not require the closure of public roads, and thus would not inhibit access by emergency vehicles. During construction and decommissioning of the Project, heavy construction vehicles could interfere with emergency response to the site or emergency evacuation procedures (e.g., by slowing vehicles traveling behind the truck). However, given that there are no businesses, few residences, and no emergency response stations in the immediate vicinity of the Project site, heavy construction traffic is not expected to interfere with or result in inadequate emergency access to the site or surrounding area.

The Project is in a rural area with multiple access roads allowing for adequate egress and ingress to the Project site in the event of an emergency. Access to the Project site would be from a new unpaved primary access road to be constructed on the west side of the Project. The primary access road would connect to the paved Poleline Road south of the Project. The main entrance gate would be in the western portion of the Project site, about 400 feet north of Poleline Road on the primary access road, and near the O&M area. A secondary access gate would be installed on the primary access road near the Project substation. If required by local first responders and emergency services authorities, lockboxes with keys would be placed next to each gate to allow access for emergency vehicles.

The County adopted the Hazard Mitigation Plan for the years 2021–2026. The Hazard Mitigation Plan provides the framework for hazard mitigation planning to better protect the people and property of the County from the effects of hazard events. The plan generally identified that there is a likely probability of future occurrences of wildfires. The plan indicates that the Project site is within a low fire threat area, but neighboring areas have a very high fire threat potential (Merced County 2021). The Project would not conflict with measures described in the County's Hazard Mitigation Plan. As described in Section 4.14, Transportation, Project-related traffic would not cause a significant increase in congestion and would not significantly affect the capacity of area roads. Furthermore, the Project would not require closures of public roads that could inhibit access by emergency vehicles. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan, and the impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Wildland Fires

Impact HAZ-7 The Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

The Project site is not located in a State Responsibility Area and is designated Unzoned for wildfire severity. Thus, the Project site is not identified as having a high fire risk. However, Moderate FHSZ areas are located in the general area surrounding the project (CAL FIRE 2023), particularly west of the California Aqueduct and I-5.

Project construction would involve the use of heavy equipment and other activities that have the potential to ignite fires. Solar panels are manufactured from fire-resistant materials, and the associated electrical equipment would be enclosed in fire-resistant material. All wiring would be in accordance with current electrical codes, including clear-area setbacks from utility poles. The BESS would be equipped with fire safety systems, smoke detectors, and emergency stops. These electrical systems and equipment consist of solar PV modules, underground DC collector system, electrical equipment pads with inverts and transformers, battery units, electrical equipment pads, and underground or above-ground AC collector system. These electrical systems and equipment would be in accordance with relevant safety standards through appropriate fire safety systems. The direct current (DC) collector system would be stored underground which will lower risk of fire compared to aboveground utilities. The BESS would undergo extensive testing and would be certified to UL9540 as described in Impact HAZ-1.

The perimeter road of the Project site would function as a fire buffer, accommodate Project O&M activities, and facilitate onsite circulation for emergency vehicles. The perimeter access would be constructed in conformance with the state and Merced County design requirements for fire safety. The roads providing access to the inverter equipment pads would be acceptable for CAL FIRE to access. The perimeter roads would be constructed to provide a fire buffer and facilitate onsite circulation for emergency vehicles. As discussed in Chapter 2.0, Project Description, one or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed on site near the O&M building with appropriate fire department connections to be used for fire suppression purposes.

Although not common, there is a potential for events causing fire onsite due to malfunctioning equipment or faulty electrical equipment that is capable of spontaneous ignition due to overheating. Overheating may be caused by electrical shorting, manufacturers' defect, poor design, or mechanical damage, among other causes. Additionally, the solar PV panels, BESS, Project substation, and associated electrical infrastructure, coupled with onsite vegetation and undergrowth, could result in a potential for fire hazards under hot, dry conditions. The Project would implement a Vegetation and Soil Management Plan that would include pest and weed control measures, as well as the management and removal of combustible vegetation on and around the Project site to minimize the Project site's susceptibility to wildfires.

In the event of a fire on the Project, anyone near the facility could be injured, including project employees or fire personnel responding at the Project site. As such, the Project would be required to implement Mitigation Measure HAZ-1 and prepare a fire protection plan. The Applicant would coordinate with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training. The intent of this training would be to familiarize both responders and Project staff with potential fire hazards and reduction processes associated with solar power and BESS. The fire protection plan would be submitted to the Merced County Fire District for approval prior to the start of construction.

The Project site is not adjacent to urbanized areas; however, there is a residence located approximately 4,330 feet away. While the proposed project is not anticipated to significantly increase the risk of wildfire, Mitigation Measure HAZ-1 would be implemented to ensure a fire protection plan for the construction, operation, and decommissioning of the Project. With mitigation, potential impacts from wildfire would be reduced to a less-than-significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HAZ-1: Fire Protection Plan

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

4.9.3.4 PG&E Interconnection Infrastructure

As noted in Chapter 2, Project Description, PG&E would incorporate upgrades to Mercy Springs Substation to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches, which would occur within areas previously disturbed and occupied by existing electrical facilities. The existing Mercy Springs Substation currently provides public safety protections (e.g., restricting public access, posting safety and "No Trespassing" signs). The installation of a new circuit breaker and additional switches would not change this condition. In addition, these activities would not result in the creation of significant hazards through routine transport, use, or disposal of hazardous materials or wastes, or foreseeable upset and accident conditions. In addition, the Mercy Springs Substation is not located on as site that would be subject to Government Code Section 65962.5. PG&E would comply with best management practices and all applicable state and federal laws and regulations during construction and operation, including those regulations that relate to hazardous materials. Therefore, activities associated with the PG&E interconnection infrastructure would also result in a less-than-significant impact relating to hazards and hazardous materials.

4.9.3.5 Cumulative Impacts

The geographic scope for considering project-related cumulative impacts related to hazards and hazardous materials is limited to a 0.25-mile buffer around the Project site. A 0.25-mile-radius area allows for a conservative cumulative analysis because, similar to other potential impacts, such as those related to geology and soils, risks related to hazards and hazardous materials are typically localized in nature. Cumulative impacts could occur if related projects would have the potential to cause an accidental release to the public or environment during transport, use, or disposal of hazardous materials, and any project that would potentially expose sensitive receptors to an accidental release of hazardous materials.

The only related project located in proximity to the Project site is the Vega Solar Project site, which is located 1,200 feet to the north. Construction of the Vega Solar Project is complete, and it is now operational. According to the Vega Solar Project EIR, known operation impacts include the handling and storage of small quantities of hazardous materials, and the potential for increased fire risk. All impacts were determined to be less than significant, so mitigation measures were not required (Merced County 2013b). As such, the Vega Solar Project would not contribute to cumulative impacts.

During both construction and operation, the Zeta Solar Project would transport and use small quantities of hazardous materials. Once operational, the project will have a BESS, components of which are considered hazardous materials. Potential risks during operation include exposure to solar panel materials, potential fire, and explosive risk of the batteries. Construction, operation, and decommissioning activities could result in a fire due to the increased presence of vehicles, equipment, and human activity, particularly during construction and decommissioning. The Project is not located within an area subject to wildland fire risk; regardless, the Project would implement fire protection and safety plans as outlined in MM HAZ-1. After mitigation, the Project would not contribute to cumulative impacts.

Potential hazards and hazardous materials impacts are generally considered specific to individual sites. Cumulative projects would be required to address any issues related to hazardous materials or wastes and incorporate mitigation specific to the unique physical characteristics of the individual site and project.

Additionally, the related cumulative projects are situated in a manner that a potentially hazardous event at one project site would be unlikely to affect another site, and each project would be required to comply with applicable laws and regulations addressing hazards and hazardous materials. Thus, the Project plus related cumulative projects would result in less-than-significant cumulative impacts to hazards and hazardous materials, and the Project would not have a cumulatively considerable impact on hazards and hazardous materials.

4.10 HYDROLOGY AND WATER QUALITY

This section describes the impacts on hydrology and water quality that would result from construction, decommissioning, and operation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations, and an analysis of the impacts of the Project on hydrology and water quality. Where applicable, mitigation measures are included for significant impacts. The County received one scoping comment letter pertaining to hydrology and water quality from the State Water Resources Control Board (SWRCB) regarding the proposed potable water supply (Appendix A). The comment letter has been incorporated into the Draft EIR. This analysis is based in part on the Water Supply Assessment (WSA) prepared for the Project in August 2024, as provided in Appendix N.

4.10.1 Regulatory Setting

4.10.1.1 Federal

Clean Water Act

The Clean Water Act (CWA) (33 U.S. Code [USC] Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the U.S. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain nonpoint source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Section 401 of the CWA regulates surface water quality, and a water quality certification is required for actions (including construction activities) that may entail impacts to waters of the United States. In California, NPDES permitting authority is delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCBs).

National Pollutant Discharge Elimination System Program

The NPDES program was established per 1972 amendments to the Federal Water Pollution Control Act to control discharges of pollutants from point sources (CWA Section 402). Year 1987 amendments to the CWA created a new section devoted to stormwater permitting (CWA Section 402[p]), with individual states designated for administration and enforcement of the provisions of the CWA and the NPDES permit program.

National Pollutant Discharge Elimination System Construction General Permit

The National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, National Pollutant Discharge Elimination System No. CAS000002, Construction General Permit; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ and reissued 2022-0057-DWQ and effective September 1, 2023)) regulates discharges of pollutants in stormwater associated with construction activity to waters of the US/State from construction sites that disturb 1 or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one 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. To obtain coverage under this General Permit, dischargers shall electronically file the Permit Registration Documents (PRDs), which includes a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP) prepared by a SWRCB certified QSD (Qualified SWPPP Developer), and other compliance related documents required by this General Permit and mail the appropriate permit fee to the State Water Board. The primary objective of the SWPPP is to identify, construct, implement, and maintain Best Management Practices (BMP) to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction activities. BMPs may include programs, technologies, processes, practices, and devices that control, prevent, remove, or reduce pollution. The SWPPP would also address BMPs developed specifically to reduce pollutants in storm water discharges following the completion of construction activities.

The BMPs are directed at implementing sediment and erosion controls, and other measures to control potential contaminants. Examples of construction BMPs identified in SWPPPs include using temporary mulching, seeding, or other stabilization measures to protect uncovered soils; storing materials and equipment to help ensure that spills or leaks cannot enter storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as fiber rolls and silt fencing, to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Based on the SRWCB's Risk Determination Worksheet (Attachment D.1 of the State CGP), the Project would enroll for coverage as Risk Level 1 and be responsible for compliance with the general requirements listed in Attachment D (i.e., minimum BMPs for good site management, non-stormwater management, preserving existing topsoil, erosion control, and sediment controls) and conducting weekly visual inspections and pre- during- and post-qualifying precipitation event inspections conducted by a SWRCB certified QSP (Qualified SWPPP Practitioner). Stormwater discharge and receiving water sample collection for pH and turbidity would not be required; however, non-visible sample collection may be required, if determined applicable.

4.10.1.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (Water Code Section 13000 et seq.) establishes the SWRCB and each RWQCB as the principal state agencies with primary responsibility to coordinate and control water quality in California. The SWRCB establishes statewide policy for water quality control and provides oversight of the RWQCBs' operations. The RWQCBs have jurisdiction over specific geographic areas that are defined by watersheds.

The County is under the jurisdiction of the Central Valley RWQCB. In addition to other regulatory responsibilities, RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the state could cause pollution or nuisance, including impacts to public health and the environment.

Basin Plan for the Central Valley Region

The Central Valley RWQCB is responsible for the protection of the beneficial uses of waters within the County. The Central Valley RWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and has adopted a water quality control plan for the Sacramento River and San Joaquin River Basin (Basin Plan) to implement plans, policies, and provisions for water quality management. The RWQCB published the most recent version of the Basin Plan in February 2019 (Central Valley RWQCB 2019).

In accordance with state policy for water quality control, RWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan identifies existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction (Central Valley RWQCB 2019).

The Basin Plan for the Central Valley Region covers the entire area included in the Sacramento River and San Joaquin River drainage basins. The Sacramento River and San Joaquin River Basins encompass about one fourth of the total area of the State, over 30 percent of the State's irrigable land, and roughly 51 percent of the State's water supply (Central Valley RWQCB 2019).

Waste Discharge Requirements

Actions that involve or are expected to involve discharge of waste may be subject to waste discharge requirements (WDR) under the Porter-Cologne Act. Chapter 4, Article 4 of the Porter-Cologne Act (Water Code Section 13260-13274) states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) will file a report of waste discharge with the applicable RWQCB. However, the Central Valley RWQCB has issued a waiver for certain types of discharges, as discussed below.

Sustainable Groundwater Management Act

In November 2009, the governor signed into law SBx7-6, which established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The groundwater level data entered into DWR's online CASGEM reporting system by monitoring entities beginning in January 2012 were used to establish groundwater basin prioritization as part of the enactment of the Sustainable Groundwater Management Act of 2014 (SGMA). Enactment of SGMA amended Water Code in an effort to provide a statewide system for the sustainable management of groundwater. For medium- and high-priority groundwater basins, SGMA requires the designation of a Groundwater Sustainability Agency (GSA) or GSAs responsible for SGMA compliance through the development and implementation of a Groundwater Sustainability Plan (GSP) for the basin. GSAs have broad groundwater management powers. For example, GSAs may require groundwater well registration, measurement of groundwater extractions, and filing of annual extractions reports.

The SGMA authorizes GSAs to regulate groundwater extractions by imposing well spacing requirements, limiting extractions, and establishing extraction allocations. The SGMA requires GSAs to adopt GSPs for critically over drafted and medium- and high-priority basins. GSPs must include minimum thresholds and

measurable objectives to achieve the goal of groundwater basin sustainability within 20 years of GSP implementation. The SGMA defines GSPs that achieve sustainable groundwater management by ensuring that the applicable basin is operated within the sustainable yield. Sustainable yield is defined as the maximum quantity of water that can be withdrawn over a period of years without causing an undesirable result. The GSP must include monitoring and management for the basin over a 50-year planning horizon, and plans must articulate measurable objectives to be achieved every 5 years.

Groundwater Sustainability Plan for the Northern and Central Delta-Mendota Regions

The Delta-Mendota Subbasin, within the San Joaquin Valley Groundwater Basin (SJVGB), has been designated by DWR as a critically overdrafted high-priority basin. Six GSPs were prepared by 23 GSAs[1] to sustainably manage the Delta-Mendota Subbasin under the SGMA. The Project site is located within the NCDMR GSP area (NCDMR 2022), which is managed by the Northern and Central Delta-Mendota Region GSP Group. Based on an "incomplete" determination of the GSPs by DWR on January 21, 2022, revised GSPs which addressed the identified deficiencies were submitted to DWR in June 2022 (SJREC GSP Group 2022, NCDMR 2022). On March 2, 2023, DWR deemed the revised GSPs as "inadequate" and identified deficiencies which would need to be addressed to be in compliance with the SGMA. Further, the determination letter also stated that primary jurisdiction of the Delta-Mendota Subbasin shifts to the SWRCB which may designate the basin "probationary." Probationary status would allow the SWRCB to impose an interim plan which achieves the goals of SGMA. An interim plan may include reduction in groundwater production, metering of production wells, and payment of pumping fees (California Water Boards 2022).

In July 2024, the Delta-Mendota Basin GSAs released an updated GSP for the Delta-Mendota Subbasin for public review. This updated Delta-Mendota Subbasin GSP consolidates the six GSPs for the basin into a single GSP with an integrated hydrological model; extends water budget projections to 2073; and integrates more recent data and addition of new projects. Furthermore, the updated Delta-Mendota Subbasin GSP provides management actions as well as details a pumping reduction plan that would significantly improve the long-term Delta-Mendota groundwater budget and change in storage conditions. The updated Delta-Mendota Subbasin GSP has not yet been adopted. The SWRCB will decide on the probationary status of the subbasin in early 2025 (Delta-Mendota Subbasin Coordination Committee 2024).

Merced Subbasin Groundwater Sustainability Plan

Merced Subbasin of the SJVGB has been designated by DWR as a critically overdrafted high-priority basin. The *Merced Groundwater Subbasin Groundwater Sustainability Plan* (MIUGSA 2022) was prepared by three GSAs to sustainably manage the Merced Subbasin. One GSP was submitted to DWR for the Merced Subbasin in November 2019. On January 28, 2022, DWR issued an "incomplete" determination letter to the GSP. Based on the comments and corrective actions presented in the "incomplete" determination letter, a revised Merced Subbasin GSP was submitted to DWR in July 2022. On August 4, 2023, DWR issued an "approved" determination letter.

[1] Note: A combined 23 GSAs were formed in the Delta-Mendota Subbasin and six GSPs were submitted to DWR. Groundwater management at the Project site is governed by the Northern and Central Delta-Mendota GSP Group.

North San Benito Groundwater Sustainability Plan

The North San Benito Subbasin of the Gilroy-Hollister Basin has been managed sustainably, given the availability of imported CVP water (SBCWD GSA 2021). Projections (simulated with a numerical groundwater flow model) of existing conditions, climate change, and reasonably anticipated growth indicate that the subbasin can continue to be sustainable, assuming reasonable availability of CVP water, with implementation of Projects and management actions to avoid undesirable results. The North San Benito Subbasin GSP (SBCWD GSA 2021) was approved by DWR on July 27, 2023 (DWR 2023c).

4.10.1.3 Local

Merced County General Plan

The following lists goals and policies from the Merced County General Plan pertaining to hydrology and water quality that are applicable to the Project.

Storm Drainage and Flood Control

- **Goal PFS-3**: Implement the management of stormwater in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.
    - **Policy PFS-3.2: Stormwater Facilities in New Development (Regulation and Development Review [RDR]/MPSP)** Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
    - **Policy PFS-3.4: Agency Coordination (Inter-Governmental Coordination [IGC])** Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.
    - **Policy PFS-3.5: Pre-Development Storm Flows (Infrastructure and Service Master Plans, Strategies, and Programs [MPSP])** Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.
    - **Policy PFS-3.6: Retention/Detention Facility (RDR/MPSP)** Encourage stormwater detention/retention. Project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.
- **Chapter 9.53 Regulation of Stormwater:** Ensure the health, safety, and general welfare of citizens, and protect and enhance the water quality of watercourses and water bodies.
    - **General Provisions:** Chapter 9.53 is pursuant to and consistent with the Federal Clean Water Act (33 U.S.C. Section 1251 et seq.) by reducing pollutants in storm water discharges

to the maximum extent practicable and by prohibiting non-stormwater discharges to the storm drain system. This chapter has been written to enact requirements stipulated in the "National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)" adopted by the State Water Resources Control Board. Chapter 9.53 creates regulations that govern management of construction projects, the layout and design of new projects, and inspection and monitoring of existing facilities which may cause or contribute pollution or illicit discharges to storm drainage systems under the jurisdiction of the County (Quality Code Publishing 2023).

- Ordinance 1923. Section 9.53.030: Regulations and Requirements to Reduce Runoff and Pollutants Associated with Runoff.

    1) BMPs, when required to be installed, shall conform to the California Stormwater Quality Association (CASQA) BMP Handbooks or equivalent.

    2) Construction Site Stormwater Runoff Control.

    3) Post Construction Stormwater Management.

    4) Source Control Measures. Operators of regulated projects with pollutant generating activities and sources shall implement permanent and/or operation source control measures, as applicable.

    5) Low Impact Development (LID) Design Standards.

    6) Hydromodification Management.

    7) Operation and Maintenance of Post-Construction Storm Water Management Measures.

Water Supply

- **Goal W-1:** Maintain a reliable water supply sufficient to meet the existing and future needs of the County.

    - **Policy W-1.1: Countywide Water Supply (MPSP/IGC)** Secure continued supplies of surface and groundwater to be available to serve existing and future uses by supporting water districts and agencies in groundwater management and water supply planning; requiring that new development have demonstrated long-term water supply; and assisting both urban and agricultural water districts in efforts to use water efficiently.

    - **Policy W-1.2: Demonstrating Sufficient Water Supply for New Development (RDR/MPSP/IGC)** Require all new development within the adopted service area of a water purveyor to demonstrate adequate quantity and quality of water will be available prior to issuing building permits.

- **Policy W-1.7: Water Sufficiency Requirement (RDR)** Require new developments to prepare a detailed source water sufficiency study and water supply assessment per Title 22 and SB 610, consistent with any Integrated Regional Water Management Plan or similar water management plan. This shall include studying the effect of new development on the water supply of existing users, with public input.
- **Goal W-2:** Protect the quality of surface and groundwater resources to meet the needs of all users.
- **Policy W-2.1: Water Resource Protection (RDR)** Make certain that land uses and development on or near water resources will not impair the quality or productive capacity of these water resources.
- **Policy W-2.3: Natural Drainage Channels (RDR/MPSP)** Encourage the use of natural channels for drainage and flood control to benefit water quality and other natural resource values.
- **Policy W-2.7: NPDES Enforcement (RDR)** Monitor and enforce provisions of the U.S. Environmental Protection Agency NPDES program to control nonpoint source water pollution.
- **Policy W-2.8: Water Contamination Protection (RDR/MPSP)** Coordinate with the SWRCB, Regional Water Quality Control Board, and other responsible agencies to ensure that sources of water contamination (including boron, salt, selenium and other trace element concentrations) do not enter agricultural or domestic water supplies, and will be reduced where water quality is already affected.

Waiver for Specific Types of Discharge

The Central Valley RWQCB has adopted a waiver of WDRs (Resolution R5-2018-0085, *Approving Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region*) to conditionally waive reports of waste discharge and WDRs for specific types of low-threat discharges to land. Construction dewatering and dredged material disposal to land are among the activities covered by this waiver, providing the subject activities meet the conditions specified within the waiver. Waivers serve much the same purpose as general permits (i.e., they are intended to describe a range of protective measures that could be applied to a broad category of activities). This waiver must be obtained from the Central Valley RWQCB for any actions that would potentially involve dewatering or long-term storage of excavated material on the land surface.

4.10.2 Environmental Setting

4.10.2.1 Surface Water

Merced County is located in the central portion of the San Joaquin River drainage basin. According to the Merced County General Plan EIR (2012), several major tributaries contribute to the San Joaquin River drainage basin flowing west from the Sierra Nevada Mountains. The San Joaquin River flows southeast to northwest. In addition, Merced County also includes federal and state water project canals that travel

adjacent to the San Joaquin River such as the California Aqueduct and the Delta-Mendota Canal. Approximately 10 to 12 inches of rainfall and 35 inches of snow melt per year contribute to surface flows within the valley. Surface water in Merced County is used for municipal, domestic, industrial, and agricultural sources (Merced County 2012).

Surface water quality within Merced County varies depending on the location. Agricultural, municipal, industrial, and other types of uses within the valley can deteriorate water quality as pesticides and other types of pollutants can runoff into surface water. As such, the United States Geological Survey (USGS) has found that high concentrations of pesticides, insecticides, and nitrates existed in the San Joaquin River drainage basin (Merced County 2012).

4.10.2.2 Groundwater

Merced County comprises four groundwater subbasins within the San Joaquin Valley Groundwater Basin (SJVGB): Merced Subbasin, Turlock Subbasin, Chowchilla, and the Delta-Mendota Subbasin. The Project site overlies the Delta-Mendota Subbasin; however, project water demand would be potentially sourced from groundwater produced from the Delta-Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin (Figure 4.10-1).

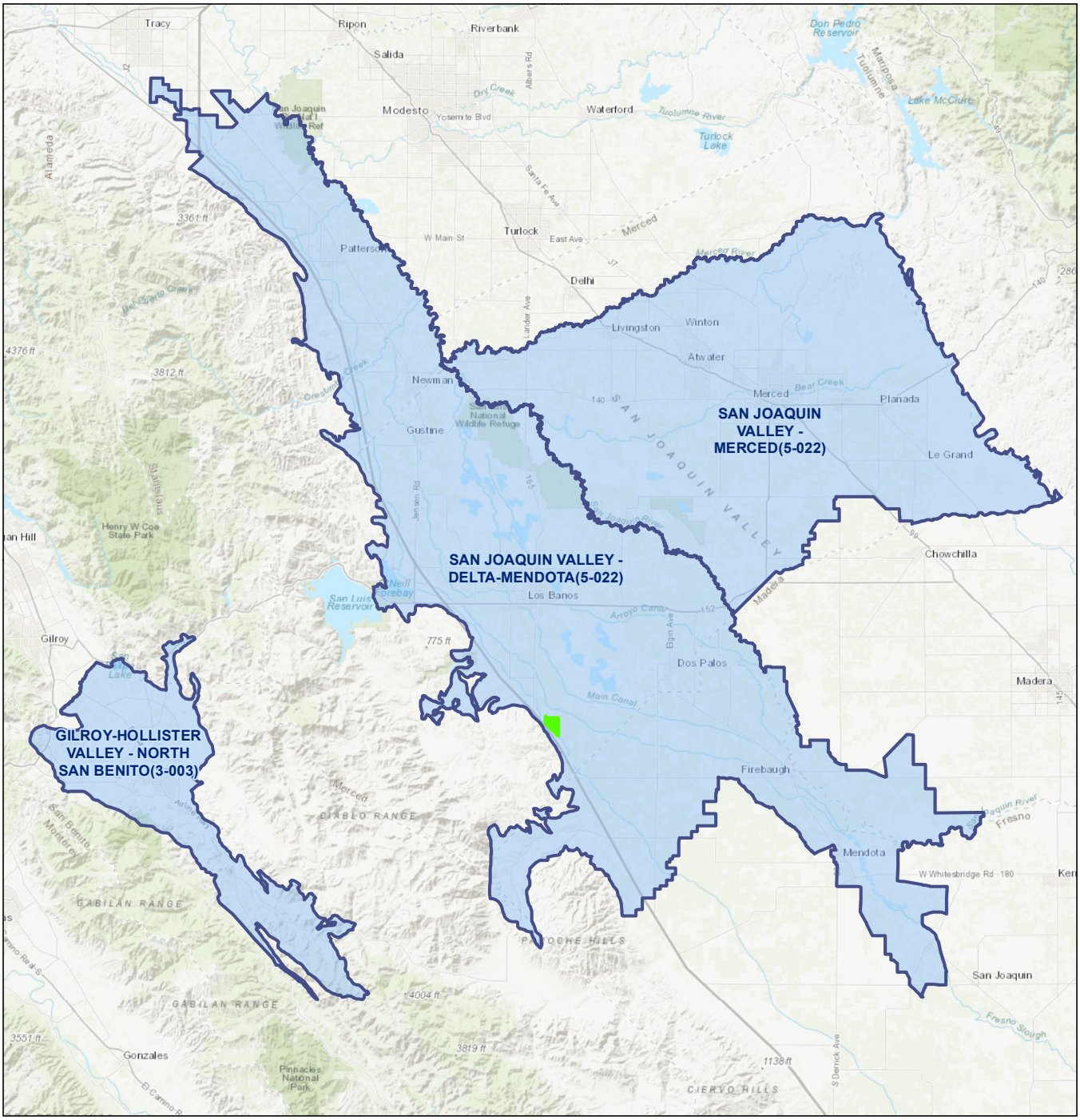
Delta-Mendota Subbasin

Geography and Climate

The Delta-Mendota Subbasin bound on the west by the Diablo Range, on the north by the San Joaquin-Stanislaus County line, on the east by the San Joaquin River and Fresno Slough, and on the south by the Tranquility Irrigation District boundary near the community of San Joaquin. Average annual rainfall in the Delta-Mendota Subbasin averages about 9 inches (SLWD 2021). Surface water in the Delta-Mendota Subbasin drains northeast and north from adjacent watersheds in the Diablo Range onto the valley floor and/or to the San Joaquin River.

Geology and Hydrogeology

In the Delta-Mendota Subbasin, the Tulare Formation extends to depths of several thousand feet and to the base of freshwater. It is composed of interbedded layers and lenses of clay, sand, and gravel. The Tulare Formation contains the Corcoran Clay or E-Clay, a laterally extensive diatomaceous clay or silty clay deposit of lacustrine origin. In general, groundwater in the basin flows from the southeast and eastern portions of the subbasin toward the western and northwestern portions of the basin to the Pajaro River (SBCWD GSA 2021). There are no faults underlying the Delta-Mendota Subbasin that impact groundwater levels and groundwater flow in the upper and lower aquifers (DWR 2006).





Project Area (649.91 acres)
Groundwater Subbasins

0 6 12 Miles
(At original document size of 8.5x11)
1:800,000

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-26
TR by TR on 2024-07-26

Client/Project
185705411
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure No.
Figure 4.10-1

Title
Groundwater Subbasins

Notes
1. Coordinate System: NAD_1983_StatePlane_California_III_FIPS_0403_Feet
2. Data Source: California Department of Water Resources 2023. Stantec 2023
3. Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

V:\1857\Active\185705411\03_data\gis_cad\gis\mxd\Fig2_GroundwaterSubbasins.mxd Revised: 2024-07-26 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Groundwater Supply and Quality

Estimations of the total storage capacity of the Delta-Mendota Subbasin were calculated by DWR in 1995 and range between 30,400,000 AF to a depth of 300 feet and 81,800,000 AF to the base of fresh water using an estimated specific yield of 11.8 percent. These same calculations give an estimate of 26,600,000 AF of groundwater in storage to a depth of 300 feet (DWR 2006).

Historic (2003–2012) groundwater production in the NCDMR averages 108,000 AFY (NCDMR 2022). Current (2013) groundwater production in the NCDMR is 124,000 AF. Projected groundwater production in the NCDMR is estimated to be 138,000, 137,000 and 102,000 AFY from 2014 to 2070, under the baseline, climate change, and climate change with implementation of Projects and management actions (NCDMR 2022).

Groundwater quality within the Delta-Mendota Subbasin is characterized by mixed sulfate to bicarbonate water types in the northern and central portions of the subbasin with areas of sodium chloride and sodium sulfate waters in the central and southern portions (DWR 2006), which was assessed in the NCDMR GSP (NCDMR 2022) and San Joaquin River Exchange Contractors Group GSP (SJREC GSP Group 2022). Constituents showing elevated concentrations in the subbasin include total dissolved solids (TDS) and localized areas of nitrate, selenium, boron, hexavalent chromium, and arsenic.

Merced Subbasin

Geography and Climate

The Merced Subbasin borders the Delta-Mendota Subbasin on a portion of its eastern boundary (Figure 4.10-1). The Merced Subbasin is bounded by the Merced River on the north, the crystalline basement rocks of the Sierra Nevada Mountains foothills on the east, the Chowchilla River (Merced-Madera County line) and Chowchilla Water District boundary on the south and the San Joaquin River on the west (MIUGSA 2022).

Average annual rainfall in the Merced Subbasin averages about 11 to 13 inches increasing eastward (DWR 2004). Surface water in the Merced Subbasin drains southwest and west to the San Joaquin River from watersheds with headwaters in the Sierra Nevada Mountains. These include the larger Merced and Chowchilla Rivers and a series of smaller drainages including Bear, Owens, and Dutchman Creeks (MIUGSA 2022).

Geology and Hydrogeology

In the Merced Subbasin, the Tulare Formation contains the Corcoran Clay or E-Clay, a laterally extensive diatomaceous clay or silty clay deposit of lacustrine origin. In the eastern Merced Subbasin, the Corcoran Clay is part of the Turlock Lake Formation (Marchand and Allwardt 1981). The Corcoran Clay thins and pinches out in the eastern Merced Subbasin (NCDMR 2022). In the eastern Merced Subbasin the Tulare Formation correlatives, Laguna and Turlock Lake Formations, overlie the Miocene to late Pliocene age Mehrten Formation (Marchand and Allwardt 1981). The Mehrten Formation consists of fluvial volcanoclastic conglomerate, breccia, sandstone, siltstone and claystone. The base of fresh water in the Merced Subbasin is considered to be about 1,200 feet. There are no major faults or other geologic

structures that impact groundwater levels and groundwater flow in the underlying aquifers in the Merced Subbasin (NCDMR 2022).

Groundwater Supply and Quality

Estimations of the total storage capacity of the Merced Subbasin were calculated by DWR in 1995 and range between 21,000,000 AF to a depth of 300 feet and 47,600,000 AF to the base of fresh water. In contrast, MIUGSA (2022) estimated the amount of fresh groundwater in storage to be 45,300,000 AF in 2015 based on the Merced Water Resources Model. The change in groundwater in storage between 2006 and 2015 in the Merced Subbasin is estimated to have declined 1,920,000 AF (MIUGSA 2022).

In the Merced Subbasin, groundwater quality is separated by aquifer zone based on well depths. Constituents showing elevated concentrations in the subbasin include total dissolved solids (TDS) and localized areas of nitrate, chloride, arsenic, iron, manganese, and hexavalent chromium.

North San Benito Subbasin

Geography and Climate

The North San Benito Subbasin is located within the Gilroy-Hollister Valley Basin within the Pajaro River Watershed (Figure 4.10-1). The subbasin consists of a series of connected valleys and uplands and is characterized by unconsolidated to semi-consolidated sediments. The northern boundary of the North San Benito Subbasin is defined by the county line and shared with the Santa Clara County Llagas Subbasin. These basins are hydrologically connected (SBCWD GSA 2021).

In the North San Benito Subbasin, long-term average rainfall is 13.4 inches per year from 1922-2018. In general, San Benito County receives an average annual rainfall of 7 inches per year in the eastern portion of the county and up to 27 inches per year in the higher elevations to the south (SBCWD et al. 2021).

Geology and Hydrogeology

The North San Benito Subbasin boundaries are defined mostly by geologic contacts with relatively impermeable consolidated rocks and by faults that may form barriers to groundwater flow. Faults crossing the Basin are partial barriers to groundwater and also are important because they may offset bedrock and affect the local depth of the Basin. Most notable is the Calaveras Fault (SBCWD GSA 2021).

Due to the heterogeneity, regional zones of low or high permeability have not been distinguished. The valley portions contain unconsolidated alluvial deposits—clay, silt, sand, and gravel—that store and transmit significant quantities of groundwater. These geologic deposits, underlie some upland areas and hills in the southern portion of the Basin, but generally are more consolidated and less permeable than in the valley areas. The principal aquifers include the unconsolidated alluvial deposits in the valley areas and generally range from 0 to 300 feet thick. Secondary aquifers include the older, less permeable deposits that underlie the valleys at depth, crop out in portions of the valley areas, and occur in upland areas with thickness up to several thousand feet (SBCWD GSA 2021).

Groundwater Supply and Quality

The annual groundwater reports prepared by SBCWD indicate that the groundwater in storage in the subbasin has been stable since 1987 when CBCWD began receiving CVP water supplies (SBCWD GSA 2021). Future model projection shows the change in storage to be positive in above normal and wet years and negative in normal, dry and critically dry years (SBCWD GSA 2021). The GSP concluded the North San Benito Subbasin is not in overdraft and sufficient groundwater in storage remains in the subbasin to accommodate additional dry conditions with limited imported water (SBCWD GSA 2021). The estimated sustainable yield for the North San Benito Subbasin using a future simulation period is 90,098 AFY (SBCWD GSA 2021).

Water is supplied through groundwater recharge via reservoirs along the San Benito River and Tres Pinos Creek, with releases of 9,472 AFY and 2,037 AFY in water year 2020, respectively. In addition, local streams supply water for groundwater recharge, notably Pacheco Creek (SBCWD GSA 2021). Dispersed recharge over broad areas derives from applied irrigation water, rainfall, and from streams.

Groundwater quality in the North San Benito Subbasin is of marginal water quality for drinking and agricultural purposes and is highly mineralized. In additional, groundwater has been impacted by human activities including agricultural, urban, and industrial land uses. Primary threats to water quality include regulated sites with soil and groundwater contamination, septic tanks, an oil and gas field, and non-point sources (SBCWD GSA 2021). TDS and nitrates are key constituents of concern for the subbasin (SBCWD GSA 2021).

4.10.2.3 Flooding and Other Hazards

The Federal Emergency Management Agency (FEMA) maps areas subject to flooding during a 100-year flood event. These are defined as areas that would be inundated by a flood event having a 1 percent chance of being equaled or exceeded in any given year. According to the FEMA FIRM Map, the Project site is in an area of minimal flood hazard (Zone X) and does not lie within a 100-year flood zone or any other special flood hazard zones (FEMA 2023). Additionally, per the Merced County's High Flows Flood Risk Map, the Project site is outside of and at a distance from potential high flows of the San Joaquin River to the northeast and would also not be impacted by potential road closures during high flows (Merced County 2023)

4.10.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to stormwater runoff patterns, groundwater conditions, and water quality. If an impact is determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.10.3.1 Methodology

The methodology for determining impacts relating to hydrology and water quality focuses on the potentially significant impacts related to the routine source, use, and drainage of ground and surface water into the environment. The Project's impacts are compared to the Thresholds of Significance (see

below) related to hydrology and water quality to determine whether implementation of the Project would result in impacts on humans or the environment.

4.10.3.2 Thresholds of Significance

The significance criteria used to identify hydrology and water quality impacts are taken from CEQA Guidelines Appendix G. The following questions were analyzed and evaluated to determine whether impacts to hydrology and water quality were significant.

Would the project:

- Violate any water quality standard or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:
    i. Result in substantial erosion or siltation on- or off-site;
    ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
    iv. Impede or redirect flood flows?
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

4.10.3.3 Project Impacts

This section discusses potential impacts to hydrology and water quality associated with Project construction, decommissioning, and operations, and provides mitigation measures when necessary.

Water Quality Standards

Impact HYD-1 The Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction and Decommissioning

Construction of the Project would include various site preparation activities, such as vegetation removal, and selective grading. Ground-disturbing activities could expose soils to wind erosion or water erosion and subsequent transport downstream via overland flow. Disturbed sediment could enter ephemeral watercourses (i.e., existing agricultural drainage ditches) resulting in increased turbidity and alteration of ditch characteristics that could affect downstream beneficial uses. Construction activities would involve the use of excavators, graders, tractors, skid steers, cranes, pickup trucks, and other types of heavy equipment. The relatively flat existing topography found on the Project site would require minimal grading, which would not substantially change the topography of the Project site or disturb extensive areas of topsoil. However, construction and decommissioning would necessitate disturbance of surface soils in some areas of the Project site, which would temporarily increase the potential for erosion and sedimentation during wind and storm events.

The use of construction equipment would temporarily increase the risk accidental release of fuels, oils, greases, and other hazardous substances during the construction and decommissioning phases and excessive application of water for dust suppression could generate some runoff that may entrain and transport pollutants (e.g., sediment and dissolved solids) to surface waters. These pollutants could also infiltrate soils and overtime migrate through the soil horizon. Sanitary waste during construction would be contained in portable facilities, collected at least weekly, and disposed of at an offsite disposal or treatment facility.

Project construction activities would disturb more than one acre and require coverage under the State Construction General Permit (CGP). For enrollment, a project-specific SWPPP must accompany the NOI submittal. The SWPPP would outline the temporary construction BMPs for erosion and sediment control, wind erosion control, tracking control, spills, non-stormwater management and waste management and materials pollution control (i.e., Spill Prevention and Control Plan) to avoid and minimize potential adverse effects to receiving waters. Results of the SWRCB's risk determination worksheet (Appendix 1 of the 2022 State CGP) indicate that based on Project site slopes, soil types, and regional R-factor (rainfall erosivity), K-factor (soil erodibility) and LS factor (length-slope value), the Project would be classified as Risk Level 1 and present low risk to receiving water. The Project would be required, through permit conditions, to comply with applicable SJVAPCD rules and regulations. Construction and decommissioning activities would comply with Regulation VIII, Fugitive Dust Prohibitions and the BMPs disclosed within Rule 8021.

Decommissioning impact mechanisms would be comparable to those described for construction, namely the potential for erosion or release of construction-related water quality pollutants and any off-site sediment transport mechanisms. Decommissioning activities would be required to comply with the same applicable federal, state, and local water quality regulations that would apply during construction

activities. Ground-disturbing activities during decommissioning would also require coverage under the State CGP and a project-SWPPP to effectively control erosion, sedimentation, and the release of construction-related pollutants during decommissioning activities.

Compliance with the conditions of the State CGP and implementation of the provisions and measures of the SWPPP would reduce the potential for both on-site and off-site erosion and sedimentation and the off-site conveyance of pollutants in surface runoff throughout construction and decommissioning. Refer to the analysis for Impact GEO-2 for additional discussion of the potential for Project construction and decommissioning activities to result in substantial soil erosion or the loss of topsoil. Mitigation measures for further characterization of Project site soils (MM GEO-1), and vegetation and soil management (MM BIO-2) would be needed post-construction to maintain stable site conditions throughout operations. Therefore, through compliance with provisions of the State CGP and implementation of Mitigation Measures GEO-1 and BIO-2, the potential for short-term impacts to water quality would be reduced to a level of less than significant with mitigation.

Operation

Soil and Vegetation Management

On-going management of soil and vegetation conditions would be necessary to minimize risk of soil and wind erosion across the Project site. Post-construction and decommissioning BMPs would require effectiveness monitoring throughout long-term operations to ensure site conditions do not degrade and pose potential risk to receiving water quality. This impact would be potentially significant; however, with implementation of MM BIO-2 and GEO-1 long-term risk to water quality would be reduced to a level of less than significant with mitigation.

Septic Tanks or Alternative Wastewater Disposal Systems

During operation and maintenance, wastewater generated by the O&M building sinks and toilets would be disposed of through an on-site private septic system which would consist of a septic tank and leach field. No connection to the region's wastewater treatment systems would be required. Approval of an onsite wastewater treatment systems (OWTS) permit from the Merced County Division of Environmental Health would be required, which is intended to increase protection of water quality and public health in California and would ensure that the septic system would be designed to avoid potential impacts to groundwater quality. Refer to impact GEO-4 for additional analysis. The potential impact to groundwater quality would be less than significant.

Panel Washing and Herbicide Application

During operation and maintenance, periodic panel washing and herbicide application could result in indirect impacts to surface water and groundwater quality. Panel washing activities would need to comply with Merced County Ordinance 1923. Section 9.53.030, Regulations and Requirements to Reduce Runoff and Pollutants Associated with Runoff, 4) Source Control Measures. This ordinance requires that pollutant generating activities, such as vehicle or equipment cleaning, implement operation source control measures. The application of herbicides for vegetation management would have the potential to degrade surface water quality (primary impact mechanism would be wind erosions) and groundwater quality

(primary impact mechanism would be migration through the soil horizon to seasonally high groundwater) over the long-term if incorrectly applied. The impact would be potentially significant. Implementation of MM BIO-2 and MM GEO-1 would reduce potential impacts for herbicide applications to a level of less than significant.

Accidental Spills of Pollutants

See Section 4.9 Hazards and Hazardous Materials and the analysis for impact HAZ-1. A Hazardous Materials Business Plan would be prepared for the Project, which would describe proper handling, storage, transport, and disposal techniques and methods to be used to avoid spills and minimize impacts to water quality in the event of a spill. As discussed in Section 4.9, Hazards and Hazardous Materials, the accidental release of hazardous materials would be managed through hazardous materials training and management measures in accordance with applicable federal, state, and local regulations to minimize exposure to workers and/or the public and potential impacts to water quality. The Hazardous Materials Business Plan would ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to maintenance workers and/or the public. Through adherence to the Project's Hazardous Materials Business Plan, the potential to degrade water quality as a result of accidental release of hazardous materials during operations would be less than significant.

Level of Significance Before Mitigation

Potentially Significant impact.

Mitigation Measures

- MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources
- MM GEO-1: Geotechnical Analysis and Report

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Groundwater

Impact HYD-2	**The 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.**

Project water demand would be potentially sourced from groundwater produced from the Delta-Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin. As such, this analysis considers groundwater supply and recharge within each basin. As described in Section 4.10.1, Regulatory Setting, the Delta Mendota Subbasin and Merced Subbasins are designated by DWR as a critically overdrafted high priority. The North San Benito Subbasin is considered a medium priority subbasin. Therefore, the analysis also considers whether the project would impede sustainable groundwater management or

recovery of the subbasin from overdraft conditions. If the Project would not conflict with recovery from overdraft conditions or interfere with sustainable groundwater management, potentially adverse impacts would be minimized or avoided. The WSA prepared for the project evaluated the sufficiency of the region's water supply for construction and operation of the Project based on the current and projected water budgets of each subbasin (Appendix N). The water year (WY) consists of the period October 1 through September 30 of the following year and is identified by the end year.

As further outlined below, the Delta-Mendota and Merced Subbasins are currently in overdraft conditions, but recovering from overdraft through the implementation of GSPs, which provide direction for sustainable groundwater management through project management actions to address overdraft. The North San Benito Subbasin is not currently overdrafted; this subbasin is also being managed under a GSP to improve groundwater storage and improve long-term reliability. Due to the small size of the Project's operational demands, and the effective implementations of project management actions defined in the subbasins' respective GSPs, the proposed Project would not impede recovery of the subbasins from overdraft conditions, or the achievement of sustainable conditions through implementation of the GSPs. The Project would not affect the ability of each subbasin to avoid undesirable results such as chronic lowering of groundwater levels and significant and unreasonable reduction of groundwater storage.

Delta-Mendota Subbasin

Table 4.10-1 includes a summary of the current and projected groundwater budget within the Delta-Mendota Subbasin (e.g., inflow and outflow per year) as outlined in the GSP. The GSP provides a roadmap for how groundwater basins will reach long-term sustainability.

The estimated WY2025 groundwater budget inflow and outflow are 852,000 AF and 616,000 AF, respectively. Single dry [water] year inflow and outflow correspond to WY2033 and are 665,000 AF and 893,000 AF, respectively. (SJREC GSP Group 2022, NCDMR 2022). Multiple dry [water] year inflow and outflows correspond to WY2026, 2027 and 2028 are also presented in Table 4.10-1. During this period the groundwater balance is negative as outflow exceeds inflow.

Table 4.10-1. Current and Projected Groundwater Budgets in the Delta-Mendota Subbasin Accounting for Implementation of Projects and Management Actions and Climate Change Factors

Current Source	Water Year (WY2025)	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1 (WY2026)	Year 2 (WY2027)	Year 3 (WY2028)
Groundwater Inflow	852,000	665,000	716,000	852,000	665,000
Groundwater Outflow	616,000	893,000	903,000	616,000	893,000
Groundwater Budget	**236,000**	**(228,000)**	**(187,000)**	**236,000**	**(228,000)**

Source: SJREC GSP Group 2022 Table CC-15
Note: All units are in acre-feet; WY (water year)

As further described in the WSA, additional considerations to understand groundwater budgets within the entire Delta-Mendota Subbasin across 5-year increments as well as cumulatively over the lifespan of the project. This information provides additional context for how groundwater subbasins trend over time between dry and wet years leading to overdraft and surplus conditions. At the end of the Project,

WY2067, due to implementation of project management actions in the Delta-Mendota Subbasin, the cumulative change in groundwater in storage has increased an estimated 645,000 AF without the Project and 644,655 with the Project. The incremental impact of the Project on the cumulative change in groundwater in storage over the period WY2025-2067 is 0.05 percent for the Delta-Mendota Subbasin.

Once construction is complete, groundwater needed for operation would reduce significantly to 0.06 AFY for potable water and 2.71 AFY of non-potable water annually. Potable groundwater for Project operation water demand would have an imperceptible effect on the rate of groundwater recovery. Due to the small size of the Project's operational demands, and the effective implementations of PMAs defined in the subbasins' respective GSPs, the proposed Project would not impede recovery of the subbasins from overdraft conditions, or the achievement of sustainable conditions through implementation of the GSPs. The Project would not affect the ability of each subbasin to avoid undesirable results such as chronic lowering of groundwater levels and significant and unreasonable reduction of groundwater storage.

The Project would not substantially decrease groundwater supplies or interfere with groundwater recharge of the Delta-Mendota Subbasin and the impact would be less than significant.

Merced Subbasin

For the Merced Subbasin, the groundwater budget projection with climate change impacts is shown in Table 4.10-2. The projected condition water budget indicates average annual inflow and outflow of 723,000 AFY and 805,000 AFY, respectively, for a change in groundwater in storage deficit of 82,000 AFY. The climate change water budget shows an average annual inflow and outflow of 743,000 AFY and 873,000 AFY, respectively, which results in a negative average annual change in groundwater in storage of 130,000 AF (MIUGSA 2022).

Table 4.10-2. Projected Annual Average Groundwater Budget in the Merced Subbasin with Climate Change Impacts (WY1969–2018)

Current Source	Projected Condition Water Budget	Climate Change Water Budget
Groundwater Inflow	723,000	743,000
Groundwater Outflow	805,000	873,000
Change in Groundwater in Storage	**(82,000)**	**(130,000)**

Source: MIUGSA 2022 Table 2-25
Notes: All units in acre-feet

Table 4.10-3 presents the groundwater budget for the Merced Subbasin for the sustainable condition during the WY2041-2090 with implementation of projects and management actions and accounting for climate change factors. The sustainable yield water budget accounts for implementation of PMAs and climate change. In this scenario inflow equals outflow at 702,000 AFY. The groundwater budget is zero due to implementation of demand reduction combined with increased groundwater recharge activities.

Table 4.10-3. Projected Annual Average Groundwater Budget in the Merced Subbasin During Sustainability Period (WY2041-2090) with Implementation of Projects and Management Actions and Climate Change Factors

Current Source	Sustainable Condition
Groundwater Inflow	702,000
Groundwater Outflow	702,000
Groundwater Budget	**0**

Source: MIUGSA 2022 Table 2-17
Note: All units in acre-feet; WY (water year)

Based on the average annual projected condition water budget of -82,000 AFY, the estimated project water demands for a portion of the project O&M activities are additive to this deficit. In WY2067, when the Project is decommissioned, there is an added water demand of 75 AF to the sustainable groundwater budget (calculated as a zero balance) for a deficit of -75 AF. Construction and decommissioning water demands are short-term, two years and one year, respectively, and would not impact long-term water budgets or outflows. Operational water demand of approximately would be considered negligible compared to the annual average projected condition water budget (0.0037 percent increase). Consequently, there would be a minimal change to the projected condition baseline and sustainable yield groundwater budgets and only a minimal impact on the management of groundwater supplies in the Merced Subbasin for this use. There would be sufficient water supplies in the Merced Subbasin for the Project in addition to existing and planned future uses.

Therefore, the Project would not substantially decrease groundwater supplies or interfere with groundwater recharge of the Merced Subbasin and the impact would be less than significant.

North San Benito Subbasin

The North San Benito Subbasin of the Gilroy-Hollister Basin is currently in a sustainable condition and is not affected by overdraft. Table 4.10-4 presents the groundwater budget for the North San Benito Subbasin for the current (WY 2015–2017) and future (WY2018–2068) condition. In the current water year, the groundwater budget is 24,734 AF. In the future scenario the groundwater budget is slightly negative at -855 AFY. However, the groundwater budget fluctuates between positive and negative depending on the water year type. For example, in wet and above normal years the groundwater budget is positive, and in normal, dry and critically dry years the groundwater budget is negative (SBCWD GSA 2021).

Table 4.10-4. Current and Future Groundwater Budgets in the North San Benito Subbasin

Current Source	Current Water Year (WY2015–2017)	Future (WY2018–2068)
Groundwater Inflow	160,879	134,337
Groundwater Outflow	136,145	135,192
Groundwater Budget	**24,734**	**(855)**

Source: SBCWD GSA (2021) Tables 5-6 through 5-9
Note: All units are in acre-feet; WY (water year)

The Project non-potable water demand of 75 AFY for construction (two years) and decommissioning (one year) could temporarily increase the groundwater budget deficit to -930 AFY, resulting in an increase in the groundwater deficit of 8.8 percent in those three years.

Once construction is complete, groundwater needed for operation would reduce significantly to 0.06 AFY for potable water and 2.71 AFY of non-potable water. The Project O&M water demand could increase the annual groundwater budget deficit by 0.35 percent to -858 AF. The groundwater budget in the North San Benito Subbasin fluctuates between positive and negative depending on the water year type, and Project water demand will have a minor influence on this process. For example, in wet and above normal years the groundwater budget is positive, and in normal, dry and critically dry years the groundwater budget is negative.

While the construction and decommissioning water demand could have a short-term impact on the future groundwater budget depending on the prevailing water year type, the long-term O&M Project water demand would have a minimal impact of the future groundwater budget.

Therefore, the Project would not substantially decrease groundwater supplies or interfere with groundwater recharge of the North San Benito Subbasin and the impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Alteration of Existing Drainage

Impact HYD-3 **The 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 through the addition of impervious surfaces, in a manner that would**

i. Result in substantial erosion or siltation on- or off-site;

Construction and Decommissioning

As discussed in Impact HYD-1, the Project would disturb more than one acre of land during construction; however, construction and decommissioning activities would minimize ground disturbance and alteration of existing drainage patterns to the extent practicable to install Project components. Construction and decommissioning would require select grading, excavations, and temporary soil exposure in some areas, which can increase the potential for erosion and siltation if soil cover is not restored and vegetation is not

appropriately managed (refer to impact GEO-2 analysis). In the context of potential impacts to existing drainage patterns, Project construction and decommissioning would not substantially alter the existing drainage pattern of the site or area through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site. The level of potential short-term impact would be less than significant.

Operation

The amount of land converted to impervious surfaces that would affect water infiltration and potentially impact existing drainage patterns would be up to 5 percent, which would not be substantial enough to alter existing drainage patterns that have established across the Project site. The addition of impervious surfaces would be limited. The Project would be constructed to follow the existing topography of the Project site to limit erosion potential and maintain existing drainage patterns. Therefore, the project would not increase the rate and volume of stormwater runoff at the Project site to the extent that drainage patterns would be altered and existing erosion processes would be accelerated. According to NRCS, the Project soils are considered to have K factors between 0.32 and 0.37 (NRCS 2018). Even at these moderate K factors the Project's soils comprise the flat topography of the Project site and are classified as having relatively low to moderate potential for erosion. Additionally, the Project site experiences very low annual rainfall (9 to 11 inches per year on average [DWR 2003]), and as a result, the soils are rarely saturated to the point that measurable surface runoff is generated and drainage patterns significantly changed. During precipitation events that exceed infiltration capacities of Project site soils, ponding would be expected across portions of the Project site, similar to existing conditions. Project operations would require very few ground disturbing activities and would not substantially change the topography or drainage of the Project site. The Project would not substantially alter the existing drainage pattern of the site or area, including through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site. In the context of alteration of Project site drainage, the level of long-term impact to would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

Construction and Decommissioning

The Project would not be constructed within a FEMA floodplain, would not substantially change existing topography of the Project site, and would not significantly increase impervious surfaces. The rate or amount of surface runoff generated during construction would be minimized through adherence to the required project SWPPP measures for control of stormwater runoff during the construction period and during decommissioning activities. The level of potential short-term impact would be less than significant.

Operation

The Project would not be operated within a FEMA floodplain, would not substantially change existing topography of the Project site, and would not significantly increase impervious surfaces (i.e., up to a 5 percent increase in impervious surfaces compared to existing conditions) such that the rate or volume of

surface runoff would be measurably altered. Additionally, the site design parameters would include the infrastructure appropriate to control runoff from compacted surfaces and rooflines.

The Project soil types identified range in drainage class from somewhat poorly drained to well drained (see Section 4.7 Geology and Soils) and as provided earlier, the Project area is not located within a floodplain. Runoff is anticipated to be limited, and with implementation of BMPs such as mulching, seeding, or other stabilization measures to protect uncovered soils and using barriers, such as fiber rolls and silt fencing, off-site flooding is not expected. The stormwater runoff from impervious surfaces or from the PV modules themselves also would percolate into the ground (consistent with current conditions) and continue to infiltrate to the existing groundwater basin. Stormwater drainage infrastructure will be addressed in the final Project design, if applicable.

In addition, most channels and drainages surrounding the Project site are ephemeral due to the seasonal nature of rainfall, low annual precipitation totals, lack of irrigation demands due to the covenant, and the relatively high permeability of the valley floor alluvial deposits. Therefore, a majority of water input from Project operations (i.e., panel washing) and direct precipitation would percolate into the groundwater supply if not lost through evaporation. It is possible under large rain event scenarios there would be some runoff, but it would not be substantially increased from current condition. As such, the Project would not result in on- or off-site flooding, and impacts would be less than significant.

iii. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

Construction and Decommissioning

The Project would be constructed to follow the existing topography of the Project site to minimize erosion potential and maintain existing drainage patterns. The site experiences very low annual rainfall (an average annual precipitation of 9 to 11 inches per year [DWR 2003]); as a result, the soils are rarely saturated to the point that any measurable runoff can be generated. The final drainage plan would demonstrate the ability of any planned on-site storm drainage to adequately collect on-site stormwater flows in accordance with all applicable standards and requirements by minimizing impervious surfaces and directing flows according to BMPs. With the addition of nominal impervious surfaces and PV modules, the Project site would be designed to control stormwater runoff and minimize erosion on site. For these reasons, the Project would have little to no impact on the available capacity of existing stormwater drainage systems or provide substantial additional sources of polluted runoff.

Operation

The Project would convert up to approximately 5 percent of the site to impermeable surfaces; however, the stormwater runoff from these surfaces would percolate into the ground or pond and evaporate as occurs under existing conditions. Runoff is anticipated to be limited, and with implementation of BMPs no substantial runoff or additional sources of polluted runoff anticipated. The amount of land converted to impervious surfaces would be minimal; therefore, the increase in impervious surfaces would have a less-than-significant impact.

iv. Impede or redirect flood flows

According to FEMA, the Project site is located within Zone X, which is outside both the 100-year and 500-year floodplains. No FEMA-designated Special Flood Hazard Areas or mapped regulatory floodways exist on or adjacent to the Project site. Additionally, the Project site is outside of and at a distance from potential high flows of the San Joaquin River to the northeast and would also not be impacted by potential road closures during high flows. Therefore, there would be no impact related to impediment or redirection of flood flows.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Risk Release of Pollutants Due to Project Inundation

Impact HYD-4 The Project would not be exposed to flood hazard, tsunami, or seiche zones that would risk release of pollutants due to Project inundation.

The Project site would not be exposed to flood hazard, tsunami, or seiche zones because the Project site is not located near large bodies of water, an ocean, a hillside, or a flood zone. As discussed in Section 4.9.2, above, the Project site is in an area of minimal flood hazard (Zone X) and does not lie within a 100-year flood zone or any other special flood hazard zones (FEMA 2023). Therefore, no impacts associated with flood hazard, tsunami, or seiche zone would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Groundwater Management Plan

Impact HYD-5 The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

As discussed in impact HYD-1, the Project would obtain coverage under the State CGP and implement a SWPPP during construction and decommissioning activities. The SWPPP would include BMPs to reduce potential impacts to water quality and would be consistent with water quality guidelines. Project operation activities would continue to follow Merced County Ordinance 1923. Section 9.53.030, for panel washing activities and stormwater management. As such, the project would be in alignment with the water quality standards and beneficial uses of water identified in the Basin Plan. As discussed in impact HYD-2, Project water demand would be potentially sourced from groundwater produced from the Delta-Mendota Subbasin (Groundwater Sustainability for the Northern and Central Delta-Mendota Region), Merced Subbasin (Merced Groundwater Subbasin Groundwater Sustainability Plan), or the North San Benito Subbasin Groundwater (North San Benito Groundwater Sustainability Plan). As described in impact HYD-2, the project would not impede sustainable groundwater management or recovery from overdraft conditions in the local subbasins, nor would it conflict with GSP goals. Therefore, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and no impacts would occur.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.10.3.4 PG&E Interconnection Infrastructure

Pacific Gas & Electric (PG&E) would incorporate upgrades to Mercy Springs Substation to support interconnection of the generation tie (gen-tie) line, including installation of a new circuit breaker and additional switches, which would occur within areas previously disturbed and occupied by existing electrical facilities. The construction of the PG&E infrastructure would likely require minimal ground disturbance (less than one acre) that is not expected to violate water quality standards or substantially degrade surface or ground water quality. PG&E's improvements within the existing substation would not affect the surface and groundwater supply, alter drainage patterns, or contribute to stormwater runoff. Therefore, activities associated with the PG&E interconnection infrastructure would also result in less-than-significant impacts relating to hydrology and water quality.

4.10.3.5 Cumulative Impacts

Cumulative impacts to hydrology and water quality could occur as a result of the project's incremental effect in combination with related impacts from other past, present, and probable future projects. Table 4.0-3: List of Projects Included in Cumulative Analysis, in Section 4.0, Environmental Impact Analysis, lists surrounding projects in the County. These cumulative projects are between 12.3 miles to 38 miles north and northeast of the Project site and would not affect the Project vicinity's water quality or drainage system.

Water Quality

The Project is required to prepare and implement a SWPPP and BMP requirements in accordance with applicable regulations and, therefore, the Project would result in less than significant impacts to the overall watershed because of the pollution protection, erosion control, and other measures set by NPDES. All cumulative projects that would disturb more than one acre also would be required to prepare a SWPPP, which would include BMPs designed to prevent the mixture of sediment and other pollutants with stormwater and degrading water quality. They would also be required to follow Merced County's codes for stormwater management. Furthermore, the Project would implement a Hazardous Materials Business Plan that would require appropriate handling of hazardous materials on site to ensure they do not come into contact with stormwater and affect water quality. All other projects in the vicinity that would handle hazardous materials would be required to comply with hazardous material regulations. Therefore, adherence to existing regulations would ensure that the Project and other related projects would not result in significant cumulative impacts to water quality, and the Project's incremental contribution would not be cumulatively considerable.

Drainage Patterns and Flooding

Like the Project, cumulative projects would be required to comply with drainage requirements and implement post-construction measures from within the Construction General Permit to minimize drainage impacts that could increase the potential for erosion or flooding, or exceed the capacity of existing drainage facilities. Adherence to these requirements would ensure that cumulative impacts related to erosion, drainage, and groundwater supplies would not be significant. Therefore, the Project in combination with other projects would not result in a significant cumulative impact, and the Project's incremental contribution would not be cumulatively considerable.

Flooding-related impacts are generally site-specific hazards. The Project would not impede or redirect flood flows as it is not located within a flood hazard area. Therefore, cumulative impacts would be less than significant, and the Project's incremental contribution would not be cumulatively considerable.

Groundwater Supplies

As described in impact HYD-2, the Project would not substantially decrease groundwater supplies or interfere with sustainable groundwater management in the Delta-Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin. The GSPs for each respective subbasin provides a roadmap for how groundwater basins will reach long-term sustainability. The GSPs estimate inflow and outflow

groundwater budgets over the short- and long-term with all planned uses considered and, therefore, address cumulative use of groundwater within each subbasin. The GSP projected groundwater budget scenario includes forecasted groundwater pumping demands from agricultural and municipal and industrial uses based on a variety of inputs, including future potential development under the relevant general plans of cities and counties within the basin. As discussed above, the Project's groundwater demand would not impede sustainable groundwater management of the Delta-Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin, and would not impede recovery from overdraft conditions in the affected subbasins. Accordingly, cumulative impacts would be less than significant, and the Project's incremental contribution would not be cumulatively considerable.

4.11 LAND USE AND PLANNING

This section describes the existing and potential land use effects that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations, and analysis of environmental impacts of the Project related to land use and planning. Where applicable, mitigation measures are included for significant impacts. The County received no scoping comments pertaining to land use and planning (Appendix A).

4.11.1 Regulatory Setting

4.11.1.1 Federal

No federal regulations are applicable.

4.11.1.2 State

No state regulations are applicable.

4.11.1.3 Local

Merced County General Plan

The 2030 Merced County General Plan (2030 General Plan) is Merced County's long-range comprehensive planning document. It consists of the following 11 required and optional elements: Economic Development, Land Use, Agricultural Element, Transportation and Circulation, Housing, Public Facilities and Services, Natural Resources, Recreation and Cultural Resources, Health and Safety, Air Quality, and Water.

The land use element for the 2030 General Plan includes a description of the goals, policies, and standards for future land use, development, community design, energy efficiency, and agriculture/resource protection in unincorporated Merced County. The land use element includes a detailed description of the land use designations and standards in the County.

The Project site is designated as Agricultural in the 2030 General Plan, which provides for cultivated agricultural practices that rely on good soil quality, adequate water availability, and minimal slopes (Merced County 2013). This is the largest County land use designation by area in the County and is typically applied to areas on the valley floor. The 2030 General Plan policies that are relevant to the Project are discussed in Table 4.11-1.

Merced County Zoning Code

The Merced County Zoning Code provides a description of permitted uses for the various zoning districts within the County. The Zoning Ordinance consists of two primary parts: a Zoning Map that delineates the boundaries of zoning districts; and a Zoning Code that explains the purpose of the districts, specifies permitted and conditional uses, and establishes development and performance standards. The purpose of the Zoning Code is to carry out the policies of the Merced County General Plan; promote the orderly

development of the County; promote and protect the public health, safety, comfort, convenience, morals, peace, and general welfare; protect the character, social diversity, and economic vitality of neighborhoods; and ensure the beneficial development of the County. Together with the Zoning Map, the Zoning Code identifies particular uses permitted on each parcel of land in the County and sets forth regulations and standards for development to ensure that the policies, goals, and objectives of the General Plan are implemented. The Project site is zoned Exclusive Agricultural (A-2). Merced County Zoning Code Chapter 18.10.20 identifies Energy Generation Facilities, including solar facilities, as allowable in the A-2 zone with approval of a Conditional Use Permit (CUP) (Merced County 2023).

Merced County Association of Governments Regional Transportation Plan / Sustainable Communities Strategy

In August 2022, the Merced County Association of Governments (MCAG) adopted the 2022 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS), which is a long-range planning document that provides the framework for investments in roads, freeways, public transit, bikeways and other ways people move around Merced County for the next 25 years (MCAG 2022). Each metropolitan planning organization is required to prepare an SCS pursuant to SB 375. The primary goal of each SCS is to reduce regional VMT and, as a result, reduce GHG emissions associated with mobile sources.

4.11.2 Environmental Setting

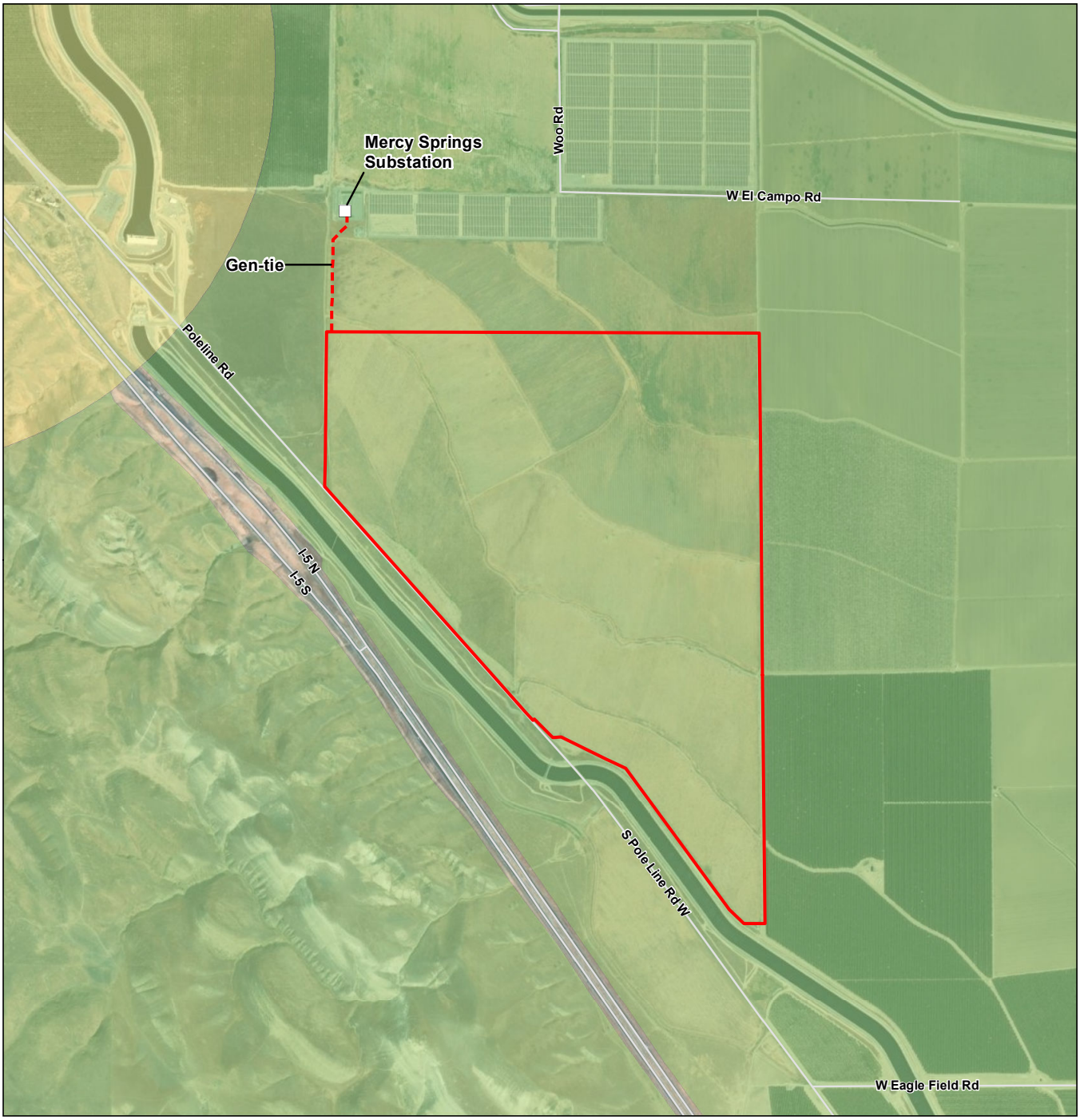
The Project is located on privately owned land in southwestern Merced County, approximately nine miles south of Los Banos. The land use designation for the Project site is Agricultural under the 2030 General Plan (Merced County 2013) and zoned Exclusive Agricultural (A-2) under the County Zoning Code (Merced County 2023). The Mercy Springs Substation is located approximately 1,700 feet north of the Project site, which has a land use designation of Agricultural under the 2030 General Plan (Merced County 2013) and is zoned Exclusive Agricultural (A-2) under the County Zoning Code (Merced County 2023) (Figure 4.11-1).

Pursuant to Zoning Code Section 18.10.020, energy generation facilities, including solar facilities, are allowed in the A-2 zone with approval of a CUP (Merced County 2023). As discussed in Chapter 2, Project Description, and Section 4.2, Agriculture, the Project site consists of the following important farmland categories: Prime Farmland, Farmland of Local Importance, Grazing Land, and Vacant or Disturbed Land. The Project site consists of fallow agricultural lands and is under a Restrictive Covenant Prohibiting Irrigation dated March 1, 2011. There has been no agricultural production on the Project site for more than 10 years. As described in Section 4.2, Agriculture, the DOC is currently reviewing site conditions; therefore, the agricultural designation is expected to change such that the Project site will not contain any Prime Farmland. The Project site is located within the County's agricultural preserve but is not subject to a contract under the California Land Conservation Act of 1965 (Williamson Act). An Agricultural Preserve Amendment would be required to remove the parcels from the agricultural preserve and allow for development of the Project.

Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre) developed area to the south housing a cell tower and undeveloped, hilly grasslands used for cattle grazing to the west. The California Aqueduct and

Interstate 5 (I-5) run parallel to the southwest Project boundary about 300 feet and 800 feet to the west of the Project site, respectively. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5 miles northwest of the Project site, respectively. The nearest residential properties are located at 35001 Poleline Road, approximately 3,750 feet northwest of the Project site, and 24477 S. Woo Road, approximately 4,330 feet north of the Project site. Zoning surrounding the Project site consists of Exclusive Agricultural (A-2) to the north, south, east, and west.

The project site is not located within the boundaries of an Airport Influence Area. Los Banos Municipal Airport is located approximately 9.9 miles north of the Project site, and Dos Palos Airport approximately 9.9 miles east of the Project site.





Project Area
Gen-tie
Mercy Springs Substation

Zoning *

Exclusive Agriculture
Highway Interchange Center

* Source: County of Merced, 2023.

0 0.25 0.5 N
Miles
1:24,000
(At original document size of 8.5x11)

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-30
TR by CS on 2024-07-31

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.11-1

Title
Zoning

V:\1857\Active\185705411\03 data\gis cad\gis\mxd\AqConversion\CEQA\Fig4.11-1 Zoning.mxd Revised: 2024-07-31 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

4.11.3 Environmental Impacts

This section analyzes the Project's potential to result in significant environmental impacts to land use and planning. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.11.3.1 Methodology

The Project's effects were compared to the thresholds of significance to determine whether the Project would result in a significant impact to land use and planning.

4.11.3.2 Thresholds of Significance

In accordance with the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether the impacts to land use and planning would be significant.

- Would the project physically divide an established community?
- Would the proposed project 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?

4.11.3.3 Project Impacts

Physically Divide an Established Community

Impact LUP-1 The Project would not physically divide an established community.

The division of an established community could result if a project resulted in a barrier to a neighborhood or impeded access to an established town center or community. The Project site is located in a rural, unincorporated area of Merced County. There are no established communities, rural centers, or urban communities in the immediate vicinity of the Project site. The nearest residential properties are located at 35001 Poleline Road, approximately 3,750 feet northwest of the Project site, and 24477 S. Woo Road, approximately 4,330 feet north of the Project site. Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre) developed area to the south housing a cell tower and undeveloped, hilly grasslands used for cattle grazing to the west. The Project includes development of PV panels and battery storage facilities on the Project site and an overhead gen-tie line to the existing Mercy Springs Substation. The proposed gen-tie line would occur within a dedicated utility easement. Therefore, disturbance would be limited to contiguous parcels of fallow agricultural lands under a restrictive irrigation covenant. The Project would not result in the removal or blockage of existing public roadways and would not extend or include any features that would physically divide an established community. Additionally, during decommissioning, Project components would be dismantled and removed from the site for proper disposal or recycling, and the Project site would be restored to current site conditions. Therefore, no potential impacts associated with the division of an established community would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Conflict with Applicable Plans, Policies, or Regulations

Impact LUP-2 The Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The 2030 General Plan and the Merced County Zoning Code establish land use policies and regulations that are applicable to the Project. The following discussion evaluates the conformity of the Project to the land use plans, policies, and regulations that were adopted for the purposes of avoiding or mitigating an environmental effect.

Consistency with Zoning

The Project site is zoned Exclusive Agricultural (A-2) in the Merced County Zoning Code. The Exclusive Agricultural (A-2) zoning district is intended to provide for areas with considerably expanded agricultural enterprises. Pursuant to Merced County Zoning Code Section 18.10.020, energy generation facilities, including solar facilities, are allowed in the A-2 zone with approval of a CUP. While the Project site is designated as A-2, as discussed in Section 4.2, Agriculture, there has been no agricultural production on the site for more than 10 years, and there is currently no access to irrigation water for the Project site. The Project site has been under a non-irrigation covenant with the San Luis Water District (SLWD) since 2011, and the site has not been irrigated since that time. This agreement prohibits agricultural irrigation into perpetuity. The Project site is located within the County's agricultural preserve but is not subject to a contract under the California Land Conservation Act of 1965 (Williamson Act). An Agricultural Preserve Amendment would be required to remove the parcels from the agricultural preserve and allow for development of the Project. Additionally, in accordance with the Merced County Zoning Code, the Applicant is requesting approval of a CUP (Application No. CUP22-015) to construct, operate, maintain, and decommission the Project. Upon County approval of the CUP, as well as implementation of any conditions of approval, the Project would not conflict with zoning requirements. In accordance with the Merced County Zoning Code Section 18.116.040, the CUP would only be approved after determining that the proposed use is consistent with the 2030 General Plan, allowed within the zone and complies with the zoning code, and the design, location, size, and operating characteristics are compatible with allowed uses in the vicinity (Merced County 2023). Overall, the Project is a conditionally permitted use within the A-2 zoning district, and the Project would be consistent with the County Zoning Code.

Consistency with the General Plan

The Project site is designated Agricultural under the 2030 General Plan (Merced County 2013). The Exclusive Agricultural (A-2) zoning designation is consistent with the Agricultural land use designation. The proposed use at the Project site would be compatible with surrounding uses because the Project would not compromise the long-term agricultural capability of adjacent agricultural lands or the operation of existing infrastructure.

Table 4.11-1 analyzes the Project's consistency with the goals and policies included in the 2030 General Plan that are applicable to the Project and related to land use and planning. As shown in detail in Table 4.11-1, the Project is consistent with the goals and policies of the Merced County General Plan.

Table 4.11-1. General Plan Consistency Analysis

Chapter	Goal/Policy	Consistency Determination
Agricultural	Policy AG-3.11: Solar and Wind Energy Production Facilities (RDR) Encourage the installation of solar and wind energy production facilities in agricultural areas so long as they do not result in a tax burden to the County, do not result in permanent water transfers off of productive agricultural land, do not require cancellation of Williamson Act contracts, and do not conflict with sensitive habitats or other biological resources. In addition, approval of such facilities shall require dedications of agricultural land and habitat mitigation when impacts to these resources have been determined to be significant pursuant to CEQA, measures to control erosion, and assurances for financing decommissioning activities.	**Consistent.** As discussed in Section 4.2, Agriculture, the Project would be privately financed and would pay property taxes over the life of the Project. The Project would not result in a tax burden to the County, as it would provide Merced County, as well as the State of California, with a renewable energy source that would assist the State of California in complying with the Renewable Portfolio Standards (RPS) established under Senate Bill 100 and other similar renewable and reliability programs in the state. The Project site is subject to a non-irrigation covenant entered into with the SLWD. However, the water rights transfer under the covenant did not result from the Project. The Project site is not located on land currently under Williamson Act contracts. Thus, the Project does not require cancellation of Williamson Act contracts. Finally, the Project would not result in significant adverse impacts to agricultural land and would not conflict with sensitive habitats or other biological resources. Therefore, the Project would be consistent with this policy.
Agricultural	Policy NR-2.1: Renewable Energy Use (RDR) Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.	**Consistent.** Given the state's efforts to support implementation of renewable energy with the Clean Energy and Pollution Reduction Act (Senate Bill 350) and the 100 Percent Clean Energy Act of 2018 (Senate Bill 100), the Project would help contribute to meeting a statewide target of 100 percent clean energy by year 2045 and reducing greenhouse gas emissions that lead to climate change effects. The Project's BESS would further assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid and assist utilities in their efforts to meet the energy storage goals mandated by the California Public Utilities Commission. According to the Merced County General Plan, climate change effects have been found to exacerbate the drought conditions and diminish water supplies that impact agricultural land. Therefore, the Project would help mitigate future climate change impacts by facilitating the transition to renewable energy. The Project would be consistent with this policy.
Air Quality	Policy AQ-1.1: Energy Consumption Reduction. Encourage new residential, commercial, and industrial development to reduce air quality impacts from energy consumption.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Air Quality	Policy AQ-1.10: Public Awareness. Increase public awareness about climate change and encourage County residents and businesses to become involved in activities and lifestyle changes that will aid in reduction of GHG emissions.	**Consistent.** The Project would help mitigate future climate change impacts by facilitating the transition to renewable energy and reducing GHG emissions. The Project would be consistent with this policy.
Air Quality	Policy AQ-1.5: Climate Action Plan. Prepare a Climate Action Plan that includes an inventory of 1990 and 2010 GHG emissions, determines project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD, and identifies strategies to achieve state emission reduction targets.	**Consistent.** Section 4.3, Air Quality, analyzes Project air impacts in accordance with SJVAPCD standards. As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. The Project also would offset a significant amount of GHG emissions through the production of renewable energy. The Project would be consistent with this policy.
Air Quality	Policy AQ-1.6: Air Quality Improvement. Support and implement programs to improve air quality throughout the County by reducing emissions related to vehicular travel and agricultural practices.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. Further, long-term Project operations would require minimal vehicle travel and VMT impacts would be less than significant. The Project would be consistent with this policy
Air Quality	Policy AQ-1.8: Climate Change Adaptation. Prepare appropriate strategies to adapt to climate change based on peer-reviewed scientific findings of the potential impacts.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. The Project also would help mitigate future climate change impacts by facilitating the transition to renewable energy. The Project would be consistent with this policy.
Air Quality	Policy AQ-2.1: Air Quality Plan Compliance. Require all development projects to comply with applicable regional air quality plans and policies.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not conflict with or obstruct implementation of the applicable Air Quality Management Plans. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Air Quality	Policy AQ-2.2: Development Review Process. Use the development review process to achieve measurable reductions in criteria pollutants, TACs, and GHG emissions.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. There are no sensitive receptors located near the Project site (within 1,000 feet) that could be impacted by TACs, and impacts would be less than significant. The Project also would offset a significant amount of GHG emissions through the production of renewable energy. The Project would be consistent with this policy.
Air Quality	Policy AQ-2.3: Cumulative Impacts. Encourage the reduction of cumulative air quality impacts produced by projects that are not significant by themselves but result in cumulatively significant impacts in combination with other development.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the Project would be consistent with this policy.
Air Quality	Policy AQ-2.4: Mitigation. Require that local and regional air quality impacts identified during CEQA review for projects reviewed and approved by the County are consistently and fairly mitigated.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the Project would be consistent with this policy.
Air Quality	Policy AQ-2.5: Innovative Mitigation Measures. Encourage innovative mitigation measures and project redesign to reduce air quality impacts by coordinating with the SJVAPCD project applicants and other interested parties.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the Project would be consistent with this policy.
Air Quality	Policy AQ-2.6: County Decision-Making Process. Require climate change planning and program implementation in the County decision-making process.	**Consistent.** The Project would help contribute to meeting a statewide target of 100 percent clean energy by year 2045 and reducing greenhouse gas emissions that lead to climate change effects. The Project's BESS would further assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid and assist utilities in their efforts to meet the energy storage goals mandated by the California Public Utilities Commission. Therefore, the Project would help mitigate future climate change impacts by facilitating the transition to renewable energy. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Air Quality	Policy AQ-2.7: Air District Best Performance Standards. Require the County to use the Best Performance Standards adopted by the SJVAPCD during the development review and decision-making process to help ensure new projects meet the targets set by the district.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. The Project also would comply with all applicable SJVAPCD rules and regulations, including Regulation VIII, Fugitive Dust Prohibitions and the BMPs disclosed within Rule 8021. The Project would also be subject to Rule 2010 for any new stationary sources such as emergency generators. The Project would be consistent with this policy.
Air Quality	Policy AQ-6.1: Particulate Emissions from Construction. Support SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with state and federal regulations.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards. The Project would also comply with SJVAPCD rules and regulations designed to reduce emissions. SJVAPCD Regulation VIII would require fugitive dust control measures that are consistent with BMPs established by the SJVAPCD to reduce the Project's construction-generated fugitive dust impacts. The Project would be consistent with this policy.
Air Quality	Policy AQ-6.3: Paving Materials. 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.	**Consistent.** As discussed in Section 4.3, Air Quality, The Project would construct on-site roadways and pathways throughout the Project site. However, the roads would be gravel, and the only paving that would occur would be in areas such as the parking lot (in compliance with Americans with Disabilities Act regulations) or via the addition of an apron to the county road. Paving at the Project site will be minimal and would be constructed with materials that minimize particulate emissions. The Project would be consistent with this policy.
Air Quality	Policy AQ-6.8. Voluntary Emissions Reduction Agreement. Require all project applicants, where project emissions for any criteria pollutant have been evaluated to exceed SJVAPCD significance thresholds, to consult with SJVAPCD regarding the establishment of a Voluntary Emissions Reduction Agreement between the Applicant and SJVAPCD. Support SJVAPCD in its efforts to fund the Emissions Reduction Incentive Program.	**Consistent.** As discussed in Section 4.3, Air Quality, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards, and the Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Health and Safety	Policy HS-1.4: Ensure Earthquake Resistant Design Regulation and Development Review (RDR) Require earthquake resistant design for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges, freeway overpasses, and dams that are subject to County permitting requirements.	**Consistent.** As discussed in Section 4.7, Geology and Soils, the Project structural designs would be consistent with the California Building Code, which requires engineers to design structures to withstand adequate earthquake loads. The Project would be consistent with this policy.
Health and Safety	Policy HS-1.7: Hillside Development Discourage construction and grading on slopes in excess of 30 percent.	**Consistent.** As discussed in Section 4.7, Geology and Soils, the topography of the Project site is relatively flat with a gentle slope and will not require construction or grading on slopes in excess of 30 percent. The Project would be consistent with this policy.
Health and Safety	Policy HS-1.8: Grading Standards Require that the provisions of the International Building Code (IBC) be used to regulate projects subject to hazards from slope instability.	**Consistent.** As discussed in Section 4.7, Geology and Soils, the Project would enforces all standards in the International Building Code related to construction on unstable soils. The Project would be consistent with this policy.
Health and Safety	Policy HS-1.9: Unstable Soils (RDR) Require and enforce all standards contained in the International Building Code related to construction on unstable soils.	**Consistent.** As discussed in Section 4.7, Geology and Soils, the Project would comply with all standards in the International Building Code related to construction on unstable soils. With compliance with applicable building code requirements and the implementation of Mitigation Measure GEO-1, the Project would be consistent with this policy.
Health and Safety	Policy HS-3.1: Adequate Water Supplies for Fire Suppression. Require adequate water supplies be available for fire suppression prior to occupancy of any structure in urban areas where a public water system does not exist prior to occupancy of any structures located in the County.	**Consistent.** As discussed in Section 4.9, Hazards and Hazardous Materials, the Project would be required to implement Mitigation Measure HAZ-1 and prepare a fire protection plan. The Applicant would coordinate with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training. The intent of this training would be to familiarize both responders and Project staff with potential fire hazards and reduction processes associated with solar power and BESS. The fire protection plan would be submitted to the Merced County Fire District for approval prior to the start of construction. One or more above-ground water storage tanks with a total capacity of up to 50,000 gallons may also be placed onsite near the O&M building, with appropriate fire department connections to be used for fire suppression purposes. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Health and Safety	Policy HS-3.10: Emergency Equipment Access – New Development. Require safe all-weather access for fire and other emergency equipment as part of the subdivisions and building permit application review process.	**Consistent.** As discussed in Section 4.17, Wildfire, the Project would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Given the low potential for fire, the Project site's flat topography, and adherence to applicable existing regulations, codes and ordinances, the Project would be consistent with this policy.
Health and Safety	Policy HS-3.12: Fire-Resistant Vegetation. Require that development 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.	**Consistent.** The Project site is not located in a high fire hazard area. Further, as discussed in Section 4.17, Wildfire, the Project would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Given the low potential for fire, the Project site's flat topography, and adherence to applicable existing regulations, codes and ordinances, the Project would be consistent with this policy.
Health and Safety	Policy HS-3.13: Uniform Fire Code (RDR) Require the Uniform Fire Code to be used as a guide for project-level fire prevention and suppression activities, including site access, water supply, fire protection systems, and the use of fire resistant building materials.	**Consistent.** All buildings and structures will be constructed in accordance with applicable building codes. The Project would be consistent with this policy.
Health and Safety	Policy HS-3.13: Uniform Fire Code. Require the Uniform Fire Code to be used as a guide for project-level fire prevention and suppression activities, including site access, water supply, fire protection systems, and the use of fire-resistant building materials.	**Consistent.** As discussed in Section 4.17, Wildfire, the Project would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Given the low potential for fire, the Project site's flat topography, and adherence to applicable existing regulations, codes and ordinances, the Project would be consistent with this policy.
Health and Safety	Policy HS-3.5: Vegetation Clear Zones. Encourage and maintain vegetation "clear zones" around new and existing residential structures in areas designated as having a high or extreme fire hazard severity and assist property owners in identifying how the clear zones should be maintained.	**Consistent.** As discussed in Section 4.17, Wildfire, the project would not involve residential structures in high or extreme fire hazard severity areas. The Project would be consistent with this policy.
Health and Safety	Policy HS-3.6: Weed Abatement. Encourage weed abatement programs throughout the County in order to promote fire safety.	**Consistent.** As discussed in Section 4.17, Wildfire, the Project includes the preparation of a pest and weed management plan to reduce the Project's susceptibility to fire. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Health and Safety	Policy HS-3.7: Road Fire Buffers. Encourage fire buffers along heavily traveled roads within high and extreme hazard zones by thinning, disking, or controlled burning. Plan parks, golf courses, utility corridors, roads, and open space areas so they can serve a secondary function as a fuel break.	**Consistent.** The Project site is not located within a high or extreme hazard zone. However, as discussed in Section 4.17, Wildfire, the proposed perimeter road, aqueduct, and freeway would act as a fire buffer between the Project site and the neighboring moderate fire hazard severity zone. The Project would be consistent with this policy.
Health and Safety	Policy HS-3.9: Building Permit Review (RDR) Require all buildings and structures to be constructed to fire safety standards prescribed in the Building Code and the County Fire Prevention Ordinance. Where minimum fire flow water pressure is not available to satisfy Fire Department standards, alternate fire protection measures shall be identified and incorporated into the development.	**Consistent.** All buildings and structures will be constructed in accordance with applicable building codes. The Project would be consistent with this policy.
Health and Safety	Policy HS-5.1: Compliance with Safety Standards (RDR) Require that hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, state, and federal safety standards.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. The Project would be consistent with this policy.
Health and Safety	Policy HS-5.2: Hazardous Material and Waste Transport (Inter-Governmental Coordination [IGC]) Coordinate with the California Highway Patrol to establish procedures for the movement of hazardous wastes and explosives within the County.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. The Project would be consistent with this policy.
Health and Safety	Policy HS-5.3: Incompatible Land Uses (RDR) Prohibit incompatible land uses near properties that produce or store hazardous waste.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. The Project would be consistent with this policy.
Health and Safety	Policy HS-5.4: Contamination Prevention (RDR) Require new development proposals to protect soils, surface water, and groundwater from hazardous materials contamination.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. In addition, regulations under the CWA require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Section 4.7, Geology and Soils, for further discussion). The SWPPP is required to comply with state and federal water quality regulations and would identify, implement, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges from the Project site during construction. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Health and Safety	Policy HS-5.6: Hazardous Waste Residual Repositories (RDR/Infrastructure and Service Master Plans, Strategies, and Programs [MPSP]) Prohibit hazardous waste residual repositories (as defined by the Merced County Hazardous Waste Management Plan [HWMP]) to be located in significant wetland and threatened species habitats or adjacent to state and federal wildlife refuges or management areas.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.1: Noise Standards for New Land Uses. Require new development projects to meet the standards shown in Tables HS-1 and HS-2, at the property line of the proposed use, through either project design or other noise mitigation techniques.	**Consistent.** As discussed in Section 4.11, Noise, noise levels generated from the construction and operation of the Project would comply with the noise standards in the 2030 General Plan. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.12: New Project Noise Mitigation Requirements. Require new projects to include appropriate noise mitigation measures to reduce noise levels in compliance with the Table HS-2 standards within sensitive areas. If a project includes the creation of new non-transportation noise sources, require the noise generation of those sources to be mitigated so they do not exceed the interior and exterior noise level standards of Table HS-2 at existing noise-sensitive areas in the project vicinity. However, if a noise-generating use is proposed adjacent to lands zoned for residential uses, then the noise-generating use shall be responsible for mitigating its noise generation to a state of compliance with the standards shown in Table HS-2 at the property line of the generating use in anticipation of the future residential development.	**Consistent.** As discussed in Section 4.11, Noise, noise levels generated from the construction and operation of the Project would comply with noise standards in the 2030 General Plan. There are no noise sensitive areas or uses in the immediate vicinity of the Project site, and the Project site is not located adjacent to land zoned for residential use. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.13: Noise Exemptions. Support the exemption of the following noise sources from the standards in this element: a) Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours. b) Activities at schools, parks, or playgrounds, provided such activities occur during daytime hours. c) Activities associated with County-permitted temporary events and festivals.	**Consistent.** These exemptions do not apply to the Project. As discussed in Section 4.11, Noise, noise levels generated from the construction and operation of the Project would comply with noise standards in the 2030 General Plan. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Health and Safety	Policy HS-7.3: Existing Rural Sources. Discourage new noise-sensitive land uses in rural areas with authorized existing noise-generating land uses.	**Consistent.** The Project is not located within a noise sensitive land use. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.4: New Noise-Generating Uses. Require new commercial and industrial uses to minimize encroachment on incompatible noise-sensitive land uses. Also consider the potential for encroachment by residential and other noise-sensitive land uses on adjacent lands which could significantly impact the viability of the commercial or industrial areas.	**Consistent.** As discussed in Section 4.11, Noise, noise levels generated from the construction and operation of the Project would comply with noise standards in the 2030 General Plan. There are no noise sensitive areas or uses in the immediate vicinity of the Project site, and the Project site is not located adjacent to land zoned for residential use. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.5: Noise-Generating Activities. Limit noise-generating activities, such as construction, to hours of normal business operation.	**Consistent.** As discussed in Section 4.11, Noise, noise levels from construction activities would be temporary and intermittent, and construction activities would generally be limited to daytime hours in accordance with Section 10.60.030.B.5 in the Merced County Code (Merced County 2005). Nighttime activities could potentially include but are not limited to refueling equipment, staging material for the following day's construction activities, quality assurance and control, and commissioning. These activities do not involve heavy construction equipment and therefore are much quieter as daytime construction work. Noise levels generated from the construction and operation of the Project would comply with noise standards in the 2030 General Plan. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.7: Noise Impacted Residential Area Monitoring. Consider any existing residential area "noise impacted" if the exposure to exterior noise exceeds the standards shown in Table HS-2. Identify and evaluate potential noise impacted areas and identify possible means to correct the identified noise/land use incompatibilities.	**Consistent.** The Project is not located in a noise impacted area. The Project would be consistent with this policy.
Health and Safety	Policy HS-7.8: Project Design. Require land use projects to comply with adopted noise standards through proper site and building design, such as building orientation, setbacks, natural barriers (e.g., earthen berms, vegetation), and building construction practices. Only consider the use of soundwalls after all design-related noise mitigation measures have been evaluated or integrated into the project or found infeasible.	**Consistent.** As discussed in Section 4.11, Noise, noise levels generated from the construction and operation of the Project would comply with noise standards in the 2030 General Plan. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Land Use	a) Policy LU-2.5: Agricultural Support Facilities. Allow consideration of locating characteristically specific commercial and industrial uses in rural areas in limited cases based on the unique nature of the use and for health and safety reasons, which require location on large parcels or in sparsely populated areas. In addition, consider the following criteria during the Conditional Use Permit review process: b) The use requires location in a rural area because of one or more of the following characteristics: unusual site area requirements, natural resource production purposes, the use is directly agricultural related, or because of specific operational characteristics which pose a health or safety problem to urban populations. c) The use is located near or readily accessible to a probable work force. d) The use is consistent with the intent and policies of the Agricultural, Natural Resources, and Health and Safety Elements. e) The use will not significantly impact adjacent agricultural, recreational, natural, cultural, wildlife, or other identified Natural Resources Element. f) The use is protected from hazards identified in the Health and Safety Element. g) The use is not located on productive agricultural land when nonproductive agricultural land is available in the vicinity of the proposed project. h) The use is limited in size, time of operation, or length of permit authority where necessary to ensure compatibility with adjacent land uses. i) The use shall not have a detrimental effect on surface or groundwater resources. j) The use shall provide adequate infrastructure and improvements to reduce impacts on County services. k) The use shall have access to adequate transportation facilities without creating abnormally high traffic volumes and shall provide road improvements to mitigate impacts generated by the project	**Consistent.** As discussed in Section 4.2, Agriculture, the Project is located in a rural area near existing transmission infrastructure and is a type of natural resource extraction use that requires large areas of undeveloped land for purposes of constructing solar arrays to capture solar energy. Further, there has been no agricultural production on the Project site for more than ten years, the Project's LESA score indicates that impacts to agricultural land would be less than significant, and it is anticipated that no Prime Farmland will remain on the Project site at the time of construction. Finally, as explained in Sections 4.4, 4.5, 4.10, and 4.13 of this Draft EIR, the Project would not result in significant impacts to recreational, natural, cultural, wildlife, or other identified natural resources, or impacts to groundwater resources. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Land Use	Policy LU-2.7: Rural Energy Production (RDR/SO) Allow the development of ethanol production, co-generation, solar, and wind facilities in Agricultural and Foothill Pasture areas that produce renewable energy, support agricultural-related industries, and/or use agricultural waste, provided that such uses do not interfere with agricultural practices or conflict with sensitive habitats or other biological resources.	**Consistent.** The Project would be a solar facility that produces renewable energy within a rural area. The Project site is designated as Agricultural under the 2030 General Plan. However, as noted previously, there has been no agricultural production on the site for over 10 years. As discussed in Section 4.4, Biological Resources, the Project site is covered by fallow fields dominated by non-native herbaceous plants that do not provide preferred habitat for most special-status species. In addition, there are no federal or state jurisdictional wetlands or other waters on the Project site. Project construction may temporarily disturb local wildlife due to presence of personnel and noise from equipment. The Project would reduce potential impacts to sensitive wildlife habitats and biological resources by implementing avoidance and minimization measures and standard equipment operating requirements, as required through mitigation as described in Section 4.4, Biological Resources. As a result, the Project would not interfere with agricultural practices or conflict with sensitive habitats or other biological resources with the implementation of avoidance, mitigation, and minimizations measures. The Project would be consistent with this policy.
Natural Resources	Policy NR-1.17: Agency Coordination. Consult with private, local, state, and federal agencies to assist in the protection of biological resources and prevention of degradation, encroachment, or loss of resources managed by these agencies.	**Consistent.** As discussed in Section 4.4, Biological Resources, the Project would consult with relevant agencies, if required under applicable law, regarding biological resources. The Project would be consistent with this policy.
Natural Resources	Policy NR-1.21: Special-Status Species Surveys and Mitigation. Incorporate the survey standards and mitigation requirements of state and federal resource management agencies for use in the County's review processes for both private and public projects.	**Consistent.** As discussed in Section 4.4, Biological Resources, the Project conducted various site surveys to determine the potential for special-status species to occupy the site. The Project would be subject to mitigation measures, including special-status species preconstruction surveys and avoidance and minimization measures designed to protect special status species. Impacts would be less than significant and the Project is consistent with this policy.
Natural Resources	Policy NR-2.2: Clean Alternative Energy Requirement. Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).	**Consistent.** The Project would entail development of a utility-scale solar project in a rural location and would not harm agricultural productivity or habitat values. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Natural Resources	Policy NR-2.4: Solar Power (RDR) Encourage onsite solar power use in residential, commercial, and industrial buildings, as well as utility-scale solar power projects in rural locations that do not harm agricultural productivity and habitat values consistent with Policies AG-3.11 and LU-2.7.	**Consistent.** The Project would entail development of a utility-scale solar project in a rural location and would not harm agricultural productivity or habitat values. The Project would be consistent with this policy.
Natural Resources	Policy NR-2.6: Open Space Impacts (MPSP/IGC/JP) Work with public agencies and private energy providers to ensure that energy projects avoid or minimize impacts to open space, natural resources, and productive agricultural land.	**Consistent.** The Project is a solar energy project and would not adversely affect open space, natural resources, or agricultural productivity. The Project would be consistent with this policy.
Natural Resources	Policy NR-2.9: Energy Conservation (RDR) Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).	**Consistent.** Given the state's efforts to support implementation of renewable energy with the Clean Energy and Pollution Reduction Act (Senate Bill 350) and the 100 Percent Clean Energy Act of 2018 (Senate Bill 100), the Project would help contribute to meeting a statewide target of 100 percent clean energy by year 2045 and reducing greenhouse gas emissions that lead to climate change effects. The Project's BESS would further assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid and assist utilities in their efforts to meet the energy storage goals mandated by the California Public Utilities Commission. According to the Merced County General Plan, climate change effects have been found to exacerbate the drought conditions and diminish water supplies that impact agricultural land. Therefore, the Project would help mitigate future climate change impacts by facilitating the transition to renewable energy. The Project would be consistent with this policy.
Natural Resources	Policy NR-3.1: Soil Protection (RDR/SO) Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.	**Consistent.** As discussed in Section 4.7, Geology and Soils, an SWPPP would be prepared for the Project, and Mitigation Measure GEO-2, which includes the Applicant submitting a soil reclamation plan to the County. These measures would ensure the Project does not result in significant soil erosion or contamination. The Project would be consistent with this policy.
Natural Resources	Policy NR-3.2: Soil Erosion and Contamination (RDR) Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.	**Consistent.** As discussed in Section 4.7, Geology and Soils, Grading is expected to be minimal due to the relatively flat nature of the Project site. A SWPPP would be prepared for the Project and Mitigation Measure GEO-2, which includes the Applicant submitting a soil reclamation plan to the County. These measures would ensure the Project reduces erosion and avoids stormwater contamination. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Natural Resources	Policy NR-4.1: Scenic Resource Preservation. Promote the preservation of agricultural land, ranch land, and other open space areas as a means of protecting the County's scenic resources.	**Consistent.** As discussed in Section 4.1, Aesthetics, the Project would not substantially alter any elevated, expansive view toward San Joaquin Valley and there are no scenic resources designated at the Project. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-1.8: New Development Financing (FB). Require new development to provide adequate financing, where a nexus can be shown, that meets all identified public facility costs.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would comply with the requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County and would implement MM HAZ-1, which would further reduce fire risks on site. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-1.9: Public Safety Services. Coordinate with cities and special districts to ensure adequate public safety services are provided countywide, and develop mechanisms to ensure financial resources are allocated for fire protection and sheriff patrol.	**Consistent.** This policy is not directly applicable to the Project. However, as discussed in Section 4.13, Public Services, the Project would comply with the requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County and would implement MM HAZ-1, which would further reduce fire risks on site. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-2.2: Wastewater Treatment and Disposal Capacity (RDR/MPSP) Require applicants for discretionary projects located within special district boundaries to provide a "Can and Will Serve" letter or other documentation from the appropriate sewer and/or water district demonstrating the commitment of capacity prior to acceptance of the discretionary application as complete. Discretionary applications generally include: general plan amendments, zone changes, conditional use, location and development, tentative subdivision and administrative permit application.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, groundwater from a nearby subbasin or surface water from SLWD would meet the construction and operational water demands for the Project. Additionally, the Project would not require or result in the construction or relocation of new or expanded wastewater facilities that would cause an adverse environmental effect. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-2.3: Sewer and Water District Requirement (RDR) Require at the final map or building permit stage for permitted developments proof of approved service from a local sewer and/or water district or approval from the County Health Department for on-site systems outside districts outside urban special districts service boundaries. For discretionary applications, a "Can and Will Serve" letter from the local sewer and/or water district shall be required as part of the application materials. For discretionary applications outside a district, initial clearance for processing must be obtained from the County Health Department for projects utilizing on-site systems.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, groundwater from a nearby subbasin or surface water from SLWD would meet the construction and operational water demands for the Project. See below regarding on-site septic system. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Public Facilities and Services	Policy PFS-2.6: Septic System Standards (RDR/MPSP) Require adequate standards for private septic systems to protect water quality and public health.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, wastewater generated by the O&M building would be disposed of through a proposed on-site private septic system consisting of a septic tank and leach field. The on-site septic system would have no connection to the region's wastewater treatment systems. Approval of an OWTS permit from the Merced County Division of Environmental Health for the septic system would require compliance with special requirements and measures that provide effective sewage treatment, protect water quality, and would not cause significant environmental effects. The Project would not require or result in the construction or relocation of new or expanded wastewater facilities that would cause an adverse environmental effect. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-3.2: Stormwater Facilities in New Development (Regulation and Development Review [RDR]/MPSP) Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal, and the existing topography on the Project site would not substantially change. Any excess water from panel cleaning or surface flows from storm events would remain on the Project site and either would evaporate or percolate into the ground. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-3.3: Community Drainage Systems (MPSP/SO) Encourage development of community drainage systems rather than individual project-level systems, in order to use land more efficiently and project people, property and the environment in a more comprehensive manner.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, no stormwater drainage facilities are proposed to be constructed as part of the Project. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-3.4: Agency Coordination (Inter-Governmental Coordination [IGC]) Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Public Facilities and Services	Policy PFS-3.5: Pre-Development Storm Flows (Infrastructure and Service Master Plans, Strategies, and Programs [MPSP]) Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal, and the existing topography on the Project site would not substantially change. Any excess water from panel cleaning or surface flows from storm events would remain on the Project site and either would evaporate or percolate into the ground. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-3.6: Retention/Detention Facility (RDR/MPSP) Encourage stormwater detention/retention Project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal, and the existing topography on the Project site would not substantially change. Any excess water from panel cleaning or surface flows from storm events would remain on the Project site and either would evaporate or percolate into the ground. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-4.2: Landfill Location (RDR) Require landfills to be located in areas that avoid health and safety risks and ensure that future adjacent land uses do not restrict landfill operations.	**Consistent.** All hazardous materials and wastes would be handled, transported, and disposed of in accordance with all applicable federal, state, and local regulations. The project is not located adjacent to an existing or planned landfill. Construction of a new landfill will not be required as part of the Project. The project would be consistent with this policy.
Public Facilities and Services	Policy PFS-4.3: Spill Site Development (RDR) Prohibit development on sites identified by federal, state, or local agencies as spill sites or hazardous waste areas unless approved cleanup occurs prior to development.	**Consistent.** The Project is located on a hazardous waste site. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-4.5: Solid Waste Service Availability (RDR): Require all new development to adequately provide solid waste storage, handling, and collection through the development review and permitting process.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, a construction waste recycling program would be implemented and the operator would remove solid waste on a regular basis and dispose of it in local landfills in accordance with applicable regulations. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Public Facilities and Services	Policy PFS-4.6: Solid Waste Reduction (SO) Support and promote feasible waste reduction, recycling, and composting efforts.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, a construction waste recycling program would be implemented and the operator would remove solid waste on a regular basis and dispose of it in local landfills in accordance with applicable regulations. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-6.1: Staffing Levels (SO). Encourage optimum staffing levels for both sworn sheriff deputies and civilian support staff in order to provide quality law enforcement services in Merced County.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would comply with the requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-6.2: Sheriff Department Response Time Standards (SO). Strive to achieve and maintain appropriate Sheriff's Department response times for all call priority levels to provide adequate law enforcement services for all County residents.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would not result in the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-6.4: Fair Share (RDR). Require new development to pay its fair share of the costs for providing law enforcement service facilities and equipment to new residents.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would comply with the requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-7.1: Fire Staffing and Response Time Standards (SO). Strive to maintain fire department staffing levels and response times consistent with National Fire Protection Association standards.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would not result in the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. The Project also would implement MM HAZ-1, which would reduce fire risks on site. The Project would be consistent with this policy.
Public Facilities and Services	Policy PFS-7.7: Fire Facility Fees (RDR/JP/FB). Require new development to pay its fair share of public facility fees for new fire station facilities, equipment, and staffing necessary to maintain the County's service standards in that area. New development may also be required to create or join a special assessment district or other funding mechanism to pay the costs associated with the operation of a fire station.	**Consistent.** As discussed in Section 4.13, Public Services, the Project pay its fair share of public facility fees for maintaining necessary staffing to maintain the County's service standards in the area. The Project also would implement MM HAZ-1, which would reduce fire risks on site. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Public Facilities and Services	Policy PFS-7.9: Fire Safety Standard Compliance (RDR). 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.	**Consistent.** As discussed in Section 4.13, Public Services, the Project would be reviewed by the Merced County Fire Protection District to ensure compliance with fire safety standards. The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction and comply with National Fire Protection Association (NFPA). The Project would be consistent with this policy.
Recreation and Cultural Resources Element	Policy RCR-2.1: Archeological Site and Artifact Protection (Regulation and Development Review [RDR]). Require development projects that impact archeological sites and artifacts to avoid disturbance or damage to these sites.	**Consistent.** As discussed in Section 4.5, Cultural Resources, there are no known archaeological resources within the Project site or in the vicinity of the Project area that are at risk due to Project activities. Thus, there is no risk of impacting known archaeological resources. Mitigation Measures CUL-1 and CUL-2 would be implemented to reduce impacts resulting from an inadvertent discovery of an archaeological resource. The Project would be consistent with this policy.
Recreation and Cultural Resources Element	Policy RCR-2.10: Tribal Consultation (Regulation and Development Review [RDR]). Consult with Native American tribes regarding development projects and land use policy changes consistent with Planning and Zoning Law at Government Code Section 6531, and the Office of Planning and Research Tribal Consultation Guidelines.	**Consistent.** As discussed in Section 4.15, Tribal Cultural Resources, a search of the NAHC Sacred Lands Files returned a negative result for sacred lands within the Project area. The County of Merced contacted the tribes listed by the NAHC and received no requests for consultation. The Project would be consistent with this policy.
Recreation and Cultural Resources Element	Policy RCR-2.2: Historical Area Preservation (RDR). Support the preservation of historical structures and area, particularly those listed on the NRHP and the California Register of Historic Places.	**Consistent.** As discussed in Section 4.5, Cultural Resources, there are no known historical resources within the Project site or in the vicinity of the Project area that are at risk due to Project activities. The Project would be consistent with this policy.
Recreation and Cultural Resources Element	Policy RCR-2.5: Human Remains Discovery (RDR). Require that, in the event of the discovery of human remains on any Project construction site, all work in the vicinity of the find will cease and the County coroner and NAHC will be notified.	**Consistent.** As discussed in Section 4.5, Cultural Resources, in the event that human remains are inadvertently discovered during project construction activities, Mitigation Measure CUL-3 would be implemented, which outlines procedures for an inadvertent discovery of human remains during Project construction. The Project would be consistent with this policy.
Transportation and Circulation	Policy CIR-1.1: Require a Countywide roadway system, consisting of interstate/principal arterial, minor arterial, major collector, minor collector, collector, and local roadways, and specific to urban and rural areas, that adequately serves existing and planned land uses based on the County's Functional Classifications and Level of Service Standards.	**Consistent.** This policy is not directly applicable to the Project. However, as discussed in Section 4.14, Transportation, the Project would not conflict with the County's transportation or circulation network. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Transportation and Circulation	Policy CIR-1.5: Implement a Countywide roadway system that achieves the following level of service (LOS) standards during peak traffic periods: - For roadways located within rural areas: LOS "C" or better. - For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of “D” or better. - For roadways located within Urban Communities: LOS of "D" or better.	**Consistent.** As discussed in Section 4.14, Transportation, the Project would not conflict with the County’s transportation or circulation network. Worker trips would not impact local roadway conditions, as they would represent a small increase in traffic compared to existing traffic volumes. Additionally, the roadways in the vicinity of the site are generally free flowing, with few if any delays, which would not change as the result of the Project. Project construction traffic would be temporary and would not result in long-term or permanent changes to local roadway conditions. Operational traffic would be imperceptible. The Project would be consistent with this policy.
Water	Policy W-1.1: Countywide Water Supply (MPSP/IGC) Secure continued supplies of surface and groundwater to be available to serve existing and future uses by supporting water districts and agencies in groundwater management and water supply planning; requiring that new development have demonstrated long-term water supply; and assisting both urban and agricultural water districts in efforts to use water efficiently.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, sufficient water supply is available to serve the Project as proposed. The Project would be consistent with this policy.
Water	Policy W-1.10: Groundwater Overdraft Protection (RDR/MPSP) Where a water supply source is nearby and accessible, encourage large water consumers to use available surface irrigation water (secondary water) for school athletic fields, sports complexes, and large landscape areas.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the Project would not interfere with groundwater recharge or deplete groundwater supplies. The Project also would not contain on-site wells that could impact groundwater supply. The Project would be consistent with this policy.
Water	Policy W-1.2: Demonstrating Sufficient Water Supply for New Development (RDR/MPSP/IGC) Require all new development within the adopted service area of a water purveyor to demonstrate adequate quantity and quality of water will be available prior to issuing building permits.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, sufficient water supply is available to serve the Project as proposed. The Project would be consistent with this policy.
Water	Policy W-1.4: Groundwater Recharge Projects (RDR) Support implementation of groundwater recharge projects consistent with adopted Integrated Regional Water Management Plans to minimize overdraft of groundwater and ensure the long-term availability of groundwater.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the Project would not interfere with groundwater recharge or deplete groundwater supplies. The Project also would not contain on-site wells that could impact groundwater supply. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Water	Policy W-1.7: Water Sufficiency Requirement (RDR) Require new developments to prepare a detailed source water sufficiency study and water supply assessment per Title 22 and SB 610, consistent with any Integrated Regional Water Management Plan or similar water management plan. This shall include studying the effect of new development on the water supply of existing users, with public input.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, sufficient water supply is available to serve the Project as proposed. The Project would be consistent with this policy.
Water	Policy W-2.1: Water Resource Protection (RDR) Make certain that land uses and development on or near water resources will not impair the quality or productive capacity of these water resources.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal. The Project would be consistent with this policy.
Water	Policy W-2.3: Natural Drainage Channels (RDR/MPSP) Encourage the use of natural channels for drainage and flood control to benefit water quality and other natural resource values.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal, and the existing topography on the Project site would not substantially change. The Project would be consistent with this policy.
Water	Policy W-2.5: Septic Tank Regulation (RDR) Enforce septic tank and on-site system regulations of the Regional Water Quality Control Board to protect the water quality of surface water bodies and groundwater quality.	**Consistent.** As discussed in Section 4.16, Utilities and Service Systems, wastewater generated by the O&M building would be disposed of through a proposed on-site private septic system consisting of a septic tank and leach field. The on-site septic system would have no connection to the region's wastewater treatment systems. Approval of an OWTS permit from the Merced County Division of Environmental Health for the septic system would require compliance with special requirements and measures that provide effective sewage treatment, protect water quality, and would not cause significant environmental effects. The Project would not require or result in the construction or relocation of new or expanded wastewater facilities that would cause an adverse environmental effect. The Project would be consistent with this policy.

Chapter	Goal/Policy	Consistency Determination
Water	Policy W-2.7: NPDES Enforcement (RDR) Monitor and enforce provisions of the U.S. Environmental Protection Agency NPDES program to control nonpoint source water pollution.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal. The Project would be consistent with this policy.
Water	Policy W-2.8: Water Contamination Protection (RDR/MPSP) Coordinate with the SWRCB, Regional Water Quality Control Board, and other responsible agencies to ensure that sources of water contamination (including boron, salt, selenium and other trace element concentrations) do not enter agricultural or domestic water supplies, and will be reduced where water quality is already affected.	**Consistent.** As discussed in Section 4.10, Hydrology and Water Quality, the NPDES Construction General Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The amount of land converted to impervious surfaces would be minimal. The Project would be consistent with this policy.

Merced County Association of Governments Regional Transportation Plan / Sustainable Communities Strategy

The MCAG's 2022 RTP/SCS was prepared to comply with SB 375, which requires a reduction in GHG emissions from the transportation sector. None of the goals, objectives, or actions identified in the MCAG's 2022 RTP/SCS specifically relate to the Project. Action Item 4.1.5 calls for the support of vehicle electrification and electrification infrastructure; the Project would indirectly support this Action Item by providing additional electric resources to the County's grid. In addition, the Project would not affect local transportation or land use during operations and would not conflict with any policies identified in the RTP/SCS. Overall, by providing a new source of renewable energy, the Project would generally support the overarching goal of the RTP/SCS to reduce GHG emissions. Therefore, the Project would be consistent with the RTP/SCS.

Summary

As discussed above, the Project is consistent with the applicable General Plan and Zoning Code goals and policies that were adopted for the purposes of avoiding or mitigating environmental effects. Furthermore, compliance with the conditions of approval for the CUP would ensure that the Project would not conflict with General Plan or zoning requirements. The impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.11.3.4 PG&E Interconnection Infrastructure

As described in Section 4.0, Environmental Impact Analysis, PG&E would construct, own, and operate the Project's interconnection facilities. Activities would include the installation of the gen-tie line terminal and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities. The improvements would not divide an established community and would comply with applicable land use plans, policies, and regulations. Impacts would be less than significant.

4.11.3.5 Cumulative Impacts

The geographic scope of cumulative impacts for the Project is Merced County. This scope was selected to analyze the cumulative impact to regional land use patterns of project development in the area, and because there is some uniformity to existing land use patterns in this region. The surrounding area is still relatively rural in nature; therefore, the Project, along with related projects, has the potential to contribute

to a cumulative influence on proposed land uses in and around the project site, including increased development and the loss of agricultural space. There are no potential projects located within the immediate Project vicinity, and potential land use impacts require evaluation on a case-by-case basis because of the interactive effects of a specific development and its immediate environment. Like the Project, cumulative projects would be required to demonstrate consistency with all applicable planning documents governing the respective project site. As discussed above, the Project is allowed under the General Plan land use designation, and with approval of a CUP, is allowed within the zoning classification for the project site. The Project also is consistent with the goals and policies of the 2030 General Plan, which was designed specifically to achieve and promote consistency with the planning documents of other neighboring cities and counties. Notably, the 2030 General Plan EIR concluded that impacts related to land use and planning as a result of future development under the General Plan would not be cumulatively considerable. Therefore, as the Project is consistent with the goals and policies of the General Plan, the Project would not contribute to or result in in a cumulatively significant impact to land use. Cumulative impacts would be less than significant.

4.12 NOISE

This section describes the impacts related to noise that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations related to noise, and analysis of environmental impacts of the Project. Where applicable, mitigation measures are included for significant impacts. The County received no scoping comments pertaining to noise (Appendix A).

4.12.1 Noise Fundamentals and Terminology

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and interferes with or disrupts normal activities. The effects of noise on people can be grouped into four general categories:

- Subjective effects (dissatisfaction, annoyance);
- Interference effects (communication and sleep interference, learning);
- Physiological effects (startle response); and
- Physical effects (hearing loss).

The principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. The subjective responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, its appropriateness to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Sound is mechanical energy transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level (SPL) is the most common metric used to characterize the loudness of an existing sound level.

Although the decibel (dB) scale, which is a logarithmic scale, is used to quantify sound amplitude, it does not accurately describe how sound is perceived by human hearing. The perceived loudness of sound is dependent upon many factors, including SPL and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dB(A), and referred to as A-weighted decibels. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Table 4.12-1 summarizes typical A-weighted sound levels for different common noise sources.

Table 4.12-1. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	-110-	Rock band
Jet flyover at 1,000 feet		
	-100-	
Gas lawnmower at 3 feet		
	-90-	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
Noisy urban area, daytime	-80-	Garbage Disposal at 3 feet
Gas lawnmower, 100 feet		
Commercial area	-70-	Vacuum Cleaner at 10 feet
Heavy traffic at 300 feet		Normal Speech at 3 feet
	-60-	
Quiet urban daytime		Large business office
	-50-	Dishwasher in next room
Quiet urban nighttime		
Quiet suburban nighttime	-40-	Theater, large conference room (Background)
Quiet rural nighttime	-30-	
		Library
	-20-	Bedroom at night, concert hall (Background)
	-10-	Broadcast/recording studio
	-0-	

Source: Caltrans Technical Noise Supplement Traffic Noise Analysis Protocol (Caltrans 2013).

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (Leq), the minimum and maximum sound levels (Lmin and Lmax), percentile-exceeded sound levels (such as L10, L20), the day-night sound level (Ldn), and the community noise equivalent level (CNEL). Ldn and CNEL values often differ by less than 1 dB. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment. Table 4.12-2 defines sound measurements and other terminology used in this report.

Table 4.12-2. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dB(A))	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
Maximum Sound Level (Lmax)	The maximum sound level measured during the measurement period.
Lmin	The minimum sound level measured during the measurement period.

Sound Measurements	Definition
Leq	The equivalent steady state sound level that, in a stated period of time, would contain the same acoustical energy. It is essentially the average sound level measured during a specific time interval.
Percentile-Exceeded Sound Level (Lxx)	The sound level exceeded xx% of a specific time period. L10 is the sound level exceeded 10% of the time. L90 is the sound level exceeded 90% of the time. L90 is often considered to be representative of the background noise level in a given area.
Day-Night Level (Ldn)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
CNEL	The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment.

Source: Federal Highway Administration Construction Noise Handbook (FHWA 2006).

With respect to how humans perceive and react to changes in noise levels, a 1 dB(A) increase is imperceptible, a 3 dB(A) increase is barely perceptible, a 5 dB(A) increase is clearly noticeable, and a 10 dB(A) increase is subjectively perceived as approximately twice as loud. These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady state pure tones or broadband noise and to changes in levels of a given noise source. These findings are thought to be most applicable to noise levels in the range of 50 to 70 dB(A), as this is the usual range of voice and interior noise levels. Many agencies and municipalities have developed or adopted noise level standards consistent with the foregoing general rule to help prevent annoyance and to protect against the degradation of the existing noise environment.

For a point source, such as a stationary compressor or construction equipment, sound attenuates at a rate of approximately 6 dB per doubling of distance. For a line source, such as free-flowing traffic on a freeway, sound attenuates at a rate of approximately 3 dB per doubling of distance. Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface, such as grass, attenuates at a slightly greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers, such as buildings and topography that block the line of sight between a source and receiver, also increase the attenuation of sound over distance.

4.12.2 Decibel Addition

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. On the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, their combined sound level at a given distance would be 3 dB higher than one source under the same conditions. For

example, if one source produces a sound pressure level of 70 dB(A), two identical sources would combine to produce 73 dB(A). The cumulative sound level heard by a receptor of any number of sources, such as mechanical equipment, traffic, etc., can be determined using decibel addition.

4.12.3 Vibration Fundamentals

Vibration is like noise such that it involves a source, a transmission path, and a receiver. While related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, and vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to vibration depends on their individual sensitivity to vibration, amplitude, and frequency of the source.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocity (PPV) in inches per second (in/sec)[1]. Standards pertaining to perception and damage to structures have been developed for vibration levels defined in terms of PPV (in/sec).

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 4.12-3 notes the general threshold at which human annoyance could occur is 0.035 in/sec PPV (in/sec) for continuous/frequent sources. Table 4.12-4 indicates that the threshold for damage to typical residential and commercial structures ranges from 0.3 to 0.5 PPV (in/sec) for continuous/frequent sources.

Table 4.12-3. Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe	2.0	0.40

Source: Caltrans Transportation and Construction Vibration Guidance Manual (Caltrans 2020).
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seal equipment, vibratory pile drivers, and vibratory compaction equipment.

[1] Peak Particle Velocity (Peak Velocity or PPV) is a measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/second.

Table 4.12-4. Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.30	0.12
Historic and some old buildings	0.50	0.20
Older residential structure	0.70	0.30
New residential structures	1.2	0.50
Modern industrial/commercial buildings	2.0	0.50

Source: Caltrans Transportation and Construction Vibration Guidance Manual (Caltrans 2020).
Notes: Transient sources again create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seal equipment, vibratory pile drivers, and vibratory compaction equipment.

The operation of heavy construction equipment, particularly pile driving, and other impact devices, such as pavement breakers, create seismic waves that radiate along the surface of the ground and downward into the earth. These surface waves can be felt as ground vibration. Vibration from the operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance. Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities.

Table 7-4, Vibration Source Levels for Construction Equipment, in the 2018 Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual lists vibration source levels for the construction equipment most likely to generate high levels of ground vibration (FTA 2018). The equipment listed in the Federal Transit Administration (FTA) table includes impact and sonic pile drivers, clam shovel drops, hydromills, vibratory rollers, hoe rams, large and small bulldozers, caisson drilling, loaded trucks, and jackhammers. Table 4.12-5, below, summarizes typical reference vibration levels generated by select construction equipment proposed for the Project.

Table 4.12-5. Reference Vibration Source Levels for Construction Equipment

Equipment	Reference in/sec PPV in/sec (PPV_{ref}) at 25 Feet
Vibratory Roller	0.210
Caisson Drilling	0.089
Loaded Trucks	0.076
Large Bulldozer	0.089
Small Bulldozer	0.003

Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018).

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling.

4.12.4 Regulatory Setting

Federal, state, and local agencies regulate different aspects of environmental noise. Generally, the federal government sets standards for transportation-related noise sources closely linked to interstate commerce, including aircraft, locomotives, and trucks. The state government sets standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles intended to guide and influence development plans.

4.12.4.1 Federal

United States Environmental Protection Agency, Environmental Noise Levels

The United States Environmental Protection Agency (USEPA) provided guidance on environmental noise levels in Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety (USEPA 1974), commonly referenced as the “Levels Document,” that establishes an Ldn of 55 dBA, as the requisite level, with an adequate margin of safety, for areas of outdoor uses, including residences and recreation areas. The Levels Document does not constitute USEPA regulations or standards but identifies safe levels of environmental noise exposure without consideration of costs for achieving these levels or other potentially relevant considerations.

4.12.4.2 State

The State requires all municipalities to prepare and adopt a comprehensive long-range general plan. General plans must contain a noise element (California Government Code Section 65302(f) and Section 46050.1 of the Health Safety Code). The requirements for the noise element of the general plan include describing the noise environment quantitatively using a cumulative noise metric such as CNEL or DNL, establishing noise/land use compatibility criteria, and establishing programs for achieving and/or maintaining land use compatibility. Noise elements should address all major noise sources in the community, including mobile and stationary noise sources. In California, most cities and counties have also adopted noise ordinances which serve as enforcement mechanisms for controlling noise.

The California Department of Health Services has studied the correlation of noise levels and their effects on various land uses and established guidelines for evaluating the compatibility of various land uses, for the noise elements of local general plans, as a function of community noise exposure. The guidelines are the basis for most noise element land use compatibility guidelines in California. Persons in low-density residential settings are most sensitive to noise intrusion, with noise levels of 60 dBA CNEL and below are considered “normally acceptable.” For land uses such as schools, libraries, churches, hospitals, and parks, acceptable noise levels are up to 70 dBA CNEL (OPR 2022).

California Noise Act of 1973 (Health and Safety Code Sections 46000-46002)

The California Noise Act of 1973 sets forth a resource network to assist local agencies with legal and technical expertise regarding noise issues. The objective of the act is to encourage the establishment and enforcement of local noise ordinances. Chapter 10.60, Noise Control, of the Merced County Code was adopted to implement noise control regulations.

4.12.4.3 Local

2030 Merced County General Plan

The "Noise" section within Chapter 10, Health and Safety, in the 2030 Merced County General Plan (2030 General Plan) (Merced County 2013) provides information to quantify noise impacts in the County. Tables HS-1 and HS-2 of the 2030 General Plan (see Tables 4.12-6 and 4.12-7) set standards for noise-sensitive land uses affected by transportation and non-transportation sources. As shown in Table 4.12-6, the noise standards for residential uses affected by traffic, railroad, and airport noise are 65 dB(A) Ldn for outdoor areas and 45 dB(A) for sensitive interior areas. Table 4.12-7 lists non-transportation noise standards of 55 dB(A) L50 and 75 dB(A) Lmax for residential uses during daytime hours and 50 dB(A) L50 and 70 dB(A) Lmax during nighttime hours.

The 2030 General Plan also lists several policies relating to noise applicable to the Project, including the following:

- **Policy HS-7.1: Noise Standards for New Land Uses.** Require new development projects to meet the standards shown in Tables HS-1 and HS-2, at the property line of the proposed use, through either project design or other noise mitigation techniques.
- **Policy HS-7.4: New Noise-Generating Uses.** Require new commercial and industrial uses to minimize encroachment on incompatible noise-sensitive land uses. Also consider the potential for encroachment by residential and other noise-sensitive land uses on adjacent lands which could significantly impact the viability of the commercial or industrial areas.
- **Policy HS-7.5: Noise-Generating Activities.** Limit noise-generating activities, such as construction, to hours of normal business operation.
- **Policy HS-7.7: Noise Impacted Residential Area Monitoring.** Consider any existing residential area "noise impacted" if the exposure to exterior noise exceeds the standards shown in Table HS-2. Identify and evaluate potential noise impacted areas and identify possible means to correct the identified noise/land use incompatibilities.
- **Policy HS-7.8: Project Design.** Require land use projects to comply with adopted noise standards through proper site and building design, such as building orientation, setbacks, natural barriers (e.g., earthen berms, vegetation), and building construction practices. Only consider the use of soundwalls after all design-related noise mitigation measures have been evaluated or integrated into the project or found infeasible.

- **Policy HS-7.12: New Project Noise Mitigation Requirements.** Require new projects to include appropriate noise mitigation measures to reduce noise levels in compliance with the Table HS-2 standards within sensitive areas. If a project includes the creation of new non-transportation noise sources, require the noise generation of those sources to be mitigated so they do not exceed the interior and exterior noise level standards of Table HS-2 at existing noise-sensitive areas in the project vicinity. However, if a noise-generating use is proposed adjacent to lands zoned for residential uses, then the noise-generating use shall be responsible for mitigating its noise generation to a state of compliance with the standards shown in Table HS-2 at the property line of the generating use in anticipation of the future residential development.

Table 4.12-6. 2030 Merced County General Plan Table HS-1 – Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise

New Land Use	Sensitive Outdoor[1] Area – Ldn	Sensitive Interior[2] Area – Ldn	Notes
All Residential	65	45	3
Transient Lodging	65	45	3,4
Hospitals & Nursing Homes	65	45	3,4,5
Theaters & Auditoriums	---	35	4
Churches, Meeting Halls, Schools, Libraries, etc.	65	40	4
Office Buildings	65	45	4
Commercial Buildings	---	50	4
Playgrounds, Parks, etc.	70	---	
Industry	65	50	4

Notes:
[1] Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.
[2] Sensitive Interior Areas include any interior area associated with any given land use at which noise sensitivity exists and the location at which the County's noise level standards are applied. Examples of sensitive interior spaces include, but are not limited to, all habitable rooms of residential and transient lodging facilities, hospital rooms, classrooms, library interiors, offices, worship spaces, theaters. Interior noise level standards are applied within noise-sensitive areas of the various land uses with windows and doors in the closed positions.
[3] Railroad warning horn usage shall not be included in the computation of Ldn.
[4] Only the interior noise level standard shall apply if there are no sensitive exterior spaces proposed for these uses.
[5] Since hospitals are often noise generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
Key:
Ldn = day-night noise level

Table 4.12-7. 2030 Merced County General Plan Table HS-2 – Non-Transportation Noise Standards Median (L50) / Maximum (L_{max})[1]

Receiving Land Use	Outdoor Area[2]		Interior[3] Day or Night	Notes
	Daytime	Nighttime		
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5,6
Theaters & Auditoriums	—	—	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	—	35 / 60	6
Office Buildings	60 / 75	—	45 / 65	6
Commercial Buildings	55 / 75	—	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	—	—	6
Industry	60 / 80	—	50 / 70	6

Notes:
1 These standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards in this table, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2 Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise sensitivity exists and the location at which the County's exterior noise level standards are applied.
3 Sensitive Interior Areas include any interior area associated with any given land use at which noise sensitivity exists and the location at which the County's interior noise level standards are applied.
4 Outdoor activity areas of transient lodging facilities are not commonly used ruing nighttime hours.
5 Since hospitals are often noise-generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6 The outdoor activity areas of these uses (if any) are not typically used ruing nighttime hours.
7 Where median (L50) noise level data is not available for a particular noise source, average (L_{eq}) values may be substituted for the standards of this table provided the noise source operates for at least 30 minutes. If the source operates less than 30 minutes, the maximum noise level standards shown shall apply.
Key:
L_{max} = maximum noise level

Merced County Code

Chapter 10.60, Noise Control, of the Merced County Code (Merced County 2005) sets the following limitations on noise levels at the property line of affected parcels as follows:

A. No person shall cause, suffer, allow, or permit the operation of any sound source on private property in such a manner as to create a sound level that results in any of the following, when measured at or within the real property line of the receiving property:

   1. Exceeds the background sound level by at least ten (10) dB(A) during daytime hours (seven a.m. to ten p.m.) and by at least five dB(A) during nighttime hours (ten p.m. to seven a.m.). The background sound level for purposes of this section shall be determined as set forth in Section 10.60.060; or

   2. Exceeds sixty-five (65) dB(A) Ldn on residential real property or seventy (70) dB(A) Ldn on nonresidential real property; or

   3. Exceeds seventy-five (75) dB(A) Lmax on residential real property or eighty (80) dB(A) Lmax on nonresidential real property.

The Code exempts several noise sources, including noise generated from construction activity between 7 a.m. and 6 p.m. if all construction equipment is properly muffled and maintained (Ord. 1869 §2, 2009; Ord. 1726 §1, 2004).

4.12.5 Environmental Setting

The Project site consists of fallow agricultural lands. Land uses surrounding the Project site mostly consist of undeveloped agricultural lands to the north, south, and east and a small, developed (0.15 acre) fenced cellular tower site. Poleline Road abuts the southwestern Project site boundary. The California Aqueduct and Interstate 5 (I-5) run parallel to the southwest Project boundary about 300 feet and 800 feet to the west, respectively. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5-mile northwest, respectively.

4.12.5.1 Sensitive Receptors

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are considered to be more sensitive to noise intrusion than are commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development.

There are no noise-sensitive uses or residential dwellings located in the immediate vicinity of the Project site. The nearest sensitive receptor location is the property at 25001 Poleline Road, about 3,750 feet northwest of the Project site. The property at 24477 S. Woo Road is approximately 4,330 feet north of the Project site.

The closest vibration receptor was assumed to be the existing aqueduct and berm located about 270 feet south of the edge of the Project site.

4.12.5.2 Ambient Noise Levels

The existing, or ambient, noise environment in a project area is characterized by the area's general level of development. Areas which are not urbanized are typically relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities.

Merced County is exposed to several sources of noise, including traffic on major highways, like I-5, noise from traffic on busy arterial roads, and noise from commercial and industrial activities. Ambient noise levels around the Project site were determined using the noise contours listed in Table 15-1 of the 2030 General Plan, Predicted Traffic Noise Level and Project Related Traffic Noise Level Increases, Merced County 2030 General Plan and Draft PEIR (Merced County 2013). This table lists future noise levels of 80 dB(A) Ldn at 100 feet from I-5 and future noise levels of 73 dB(A) Ldn 100 feet from SR-165.

Using distance attenuation from a line source, as previously described in Section 4.12.1, noise levels at the Project site are anticipated to range from about 74 dB(A) Ldn at the edge of the Project site closest to the freeway to about 64 dB(A) Ldn at the northeast corner of the Project site farthest from I-5 (1.25 miles away). Noise levels at the closest sensitive receptor at 25001 Poleline Road are calculated at 72 dB(A) Ldn accounting for noise from both I-5 (566 feet away) and SR-165 (0.54 miles away).

4.12.6 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to noise and vibration. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.12.6.1 Methodology

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to estimate the noise impact from short-term construction activities. The RCNM is used as the FHWA's national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels at a defined distance for a variety of construction equipment. The model inputs include acoustical use factors and distance to receptors and calculates the expected Lmax values and Leq values at a selected receptor.

Noise impacts from the operation of the facility were calculated using the SoundPLAN acoustic modeling software. SoundPLAN uses standardized prediction techniques (per ISO 9613) and accounts for distance, topography, vegetation, and the effect of shielding and reflections produced by buildings and acoustic barriers.

Vibration impacts from construction of the project were calculated using the reference vibration levels from Table 4.12-5 and the following distance attenuation equation in the 2018 Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018):

$$PPV = PPV_{ref} \times (25/Distance)^{1.5}$$

"PPV_{ref}" is the reference PPV from Table 4.12-5 and "Distance" is the distance between the source and the receptor.

Please refer to the Noise Assessment prepared for the Project for further detail regarding the noise and vibration modeling assumptions (see Appendix K).

4.12.6.2 Thresholds of Significance

In accordance with the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts related to noise would be significant.

Would the Project result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- Generation of excessive groundborne vibration or groundborne noise levels?

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

For this project, noise generated by construction activities was compared to the guidelines listed in the September 2018 FTA Transit Noise and Vibration Impact Assessment Manual. This manual includes a guideline threshold of 80 dB(A) for construction noise received by residential properties during daytime hours.

Operational noise from the project was compared with the limits listed in Chapter 10.60, Noise Control, of the Merced County Code (Merced County 2005). Again, this section lists a threshold of 65 dB(A) Ldn for noise received by a residential real property.

4.12.6.3 Project Impacts

This section discusses potential impacts to noise associated with the Project and provides mitigation measures where necessary.

Noise Levels in Excess of Standards

Impact NOI-1	**The proposed Project would not result in the generation of a substantial temporary or permanent increase in noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Construction

Construction tasks for the Project would include civil work, facility construction, and testing and commissioning. Decommissioning would result in similar noise to construction and therefore was not modeled separately. Each construction task has its own mix of equipment, and consequently, its own noise characteristics. The various construction operations would change the character of the noise generated at the Project site and the noise level as construction progresses. The loudest stages of construction typically involve earthmoving and grading equipment. The main types of noise-producing equipment for each task are shown in Table 4.12-8.

Table 4.12-8. Construction Tasks and Equipment

Construction Task	Construction Equipment Type and Quantity	
Civil Work	Pickup Trucks (7) Excavators (2) Haul Truck	Graders (2) Front-End Loaders (2) Water Trucks (26)
Facility Construction	Pickup Trucks (7) Vibratory Rollers (1) Front-End Loaders (2)	Utility Truck Pile Drivers (Drill Rig Trucks) (6) Crane (Hydraulic) Water Trucks (26)
Testing and Commissioning	Pickup Trucks (7) Skid Steer Loaders (10) Utility Trucks / Pile Drivers (Drill Rig Trucks) (6)	Water Trucks (26) Excavators (2) Generators (2)

Table 4.12-9 lists the types of construction equipment and the maximum and average noise level estimates as measured at 3,750 feet from the operating equipment. The 3,750-foot distance represents the approximate distance between the Project site and the closest residential home at 25001 Poleline Road.

Table 4.12-9. FHWA RCNM Source Noise Levels

Construction Equipment Source at the Project Site	Distance to Closest Residential Receptor (feet)	Sound Level at Receptor		
		Lmax, dB(A)	Acoustical Use Factor	Leq, dB(A)
Crane (Hydraulic)	3,750	43.0	16%	35.1
Dump Truck	3,750	38.9	40%	35.0
Excavator	3,750	43.2	40%	39.2
Front-End Loader	3,750	45.9	40%	41.9
Generator	3,750	43.1	50%	40.1
Grader	3,750	47.5	40%	43.5
Pickup Truck	3,750	37.5	40%	33.5
Utility Truck / Pile Driver (Drill Rig Truck)	3,750	41.6	20%	34.6
Vibratory Roller	3,750	42.5	20%	35.5
Water Truck	3,750	37.5	40%	33.5

Source: FHWA RCNM, v1.1
Key: Lmax = maximum noise level, Leq = equivalent noise level, dB(A) = A-weighted decibels

A worst-case condition for each construction task would assume all noise-generating equipment were operating at the same time and at the same distance from the closest receptor. Using this assumption, the RCNM program calculated the following combined Leq and Lmax noise levels for each construction task at the nearest receptor.

Table 4.12-10. Calculated Noise Level for Each Construction Task

Construction Task	Distance to Closest Residential Receptor (feet)	Calculated Lmax, dB(A)	Calculated Leq, dB(A)
Civil Work	3,750	56.4	52.4
Facility Construction	3,750	56.0	51.3
Testing and Commissioning	3,750	57.5	53.2

Source: Appendix K.
Key: Lmax = maximum noise level, Leq = equivalent noise level, dB(A) = A-weighted decibels

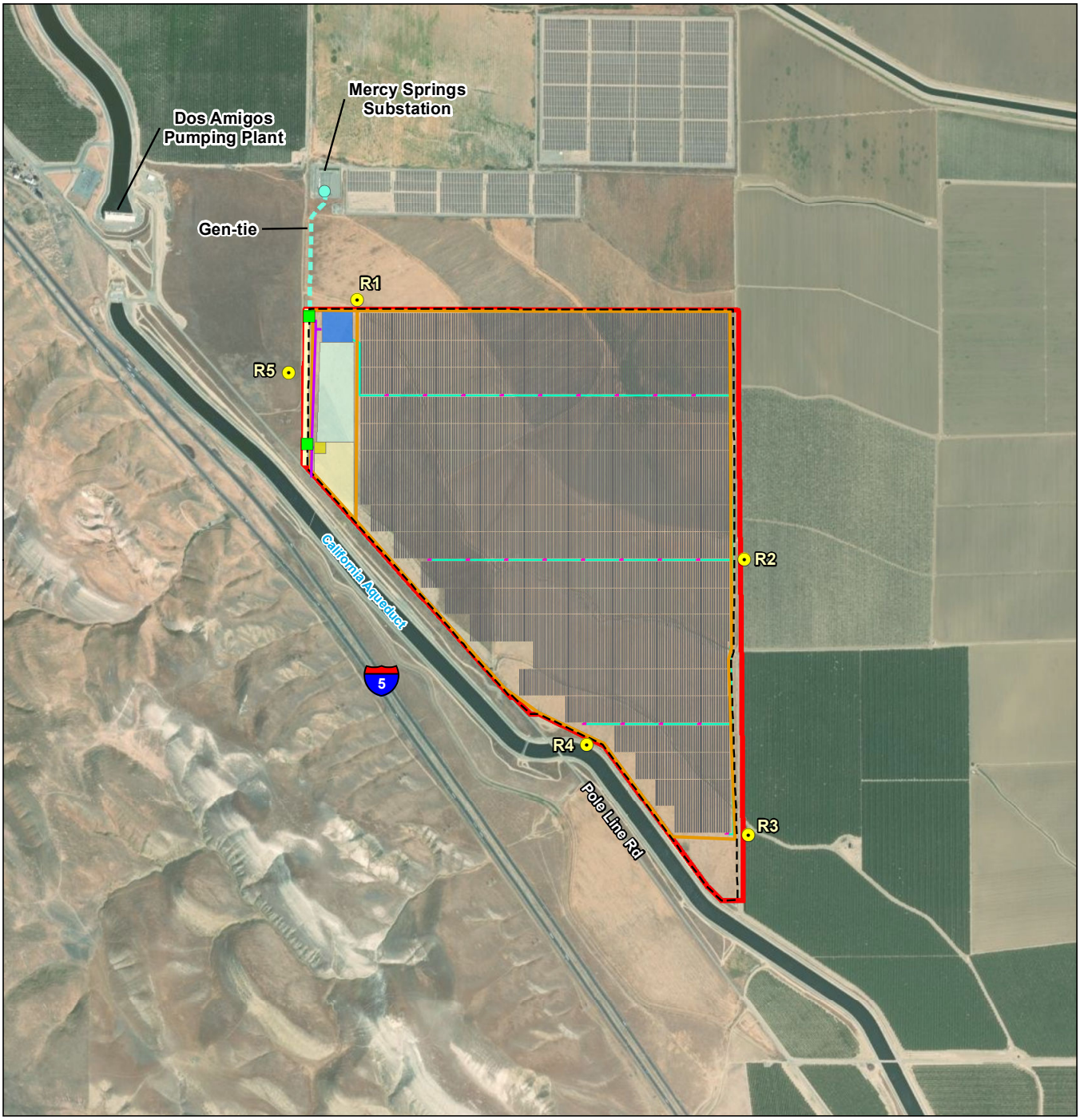
Noise levels generated from the construction of the Project that are received by the closest neighboring properties are expected to be below the 80 dB(A) threshold guideline listed in the September 2018 FTA Transit Noise and Vibration Impact Assessment Manual. Noise levels generated from the construction of the Project that are received by sensitive receptors located further away would be even lower. Construction noise also would fall below the anticipated ambient noise level in the vicinity of the Project, including at the nearest sensitive receptor at 25001 Poleline Road.

Additionally, any increase in noise levels from construction activities would be temporary and intermittent, and construction activities would generally be limited to daytime hours in accordance with Section 10.60.030.B.5 in the Merced County Code (Merced County 2005). Nighttime activities could potentially include but would be limited to refueling equipment, staging material for the following day's construction activities, quality assurance and control, and commissioning. These activities do not involve heavy construction equipment and therefore are much quieter than daytime construction work. Accordingly, noise levels generated from construction would not result in any increase in nighttime noise and would also comply with the 70 dB(A) nighttime threshold guideline listed in the FTA Transit Noise and Vibration Impact Assessment Manual.

Finally, traffic noise from daily trips by construction workers commuting to the site would contribute to the traffic noise levels along access routes. Construction-generated vehicle traffic would include a mix of light-duty automobiles and trucks and heavy-duty trucks. However, the project's construction vehicle traffic would not result in a substantial increase in average-daily vehicle traffic noise levels. Therefore, impacts from construction noise would be less than significant.

Operation

During operation, rows of solar modules mounted in rows on single-axis trackers and racking equipment would occupy most of the Project site. The modules would extend up to 12 feet above the ground at maximum tracker tilt. The Project would also include an underground DC collector system; up to 21 electrical equipment pads, each with inverter and transformer equipment; a 15-acre battery energy storage system (BESS) area with regularly spaced battery units; and an approximately 3.5-acre switchyard and/or substation with riser equipment in the northwest part of the Project. The BESS area will be the main source of noise generated from the operation of the Project. Noise generated from all on-site BESS equipment would radiate from the Project site. Twenty-six outdoor battery containers/collectors and up to 21 electrical equipment pads with inverters and transformers were included in the operational noise analysis of the Project. The location and the configuration of the Project's equipment is shown in Figure 4.12-1.





Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

- Project Site Boundary
- Receptor Calculation Point
- Gen-tie
- Point of Interconnection
- Zeta Substation
- Panel Layout
- Inverters
- O&M Building
- Laydown Yard
- BESS
- Mv Collectors
- Fence
- Access Road
- Perimeter Road
- Utility Lines
- Gate

0 0.25 0.5 Miles
(At original document size of 8.5x11)
1:24,000

N

Stantec

Project Location
Merced County, CA

Prepared by PG on 2024-07-26
TR by TF on 2024-07-29

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.12-1

Title
Configuration of the Zeta Solar Proposed Equipment and Location of Property Line Receptor Calculation Points

V:\1857\Active\185705411103_data\gis_cad\gis\mxd\Figures\VisualNoise\Fig_4.12-4_Configuration.mxd Revised: 2024-07-26 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Operations Analysis Conditions and Results

The following conditions and assumptions were included in the operational noise analysis of the Project equipment:

- The predicted noise levels were calculated using the SoundPLAN acoustic modeling software. SoundPLAN uses standardized prediction techniques (per ISO 9613) and accounts for distance, topography, vegetation, and the effect of shielding and reflections produced by buildings and acoustic barriers.
- All topography (such as berms or hills), ground conditions (soft vs paved ground), and shielding elements (such as buildings) associated with the Project were taken directly from Google Earth.
- Since there are no noise-sensitive receptors located in proximity to the location of the proposed solar equipment, operational noise levels were calculated at each of the Project's property lines (shown as black dots in Figure 4.12-1). All receptors were positioned at 5 feet above ground level.
- The Project would include a solar array area surrounded by an up to 8-foot-tall chain-link security fence, which has no acoustic benefit.
- Inverter units were modeled as a point source and the exterior battery module sources were modeled as an area source.
- Noise data for the battery segments and inverters used in the SoundPLAN model are shown in Table 4.12-11. The noise data were provided by the Applicant via email on October 14, 2022.

Table 4.12-11. Noise Data for Battery Segments and Inverters

Equipment	Sound Pressure Level Assumption (per unit)
Battery Segments/Collection Longroad	67 dB measured at 2 meters
Inverter	67 dBA measured at 10 meters

Source: Longroad Development Company, LLC (Applicant), via email October 14, 2022

- All units were assumed to be operating at full capacity, continuously.

Using the provided sound level data, the configuration of the on-site equipment shown in Figure 4.12-1, and the assumptions above, the predicted noise contour map is included in Figure 4.12-2 and the predicted SPL at the receptors are shown in Table 4.12-12.



Project Location
Merced County, CA

Prepared by PG on 2024-08-16
TR by JDLR on 2024-08-16

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 4.12-2

Title
Noise Contour Map of Zeta Solar BESS Site to Adjacent Receptors

V:\1857\Active\185705411103_data\gis_cad\gis\mxd\Figures\VisualNoise\Fig_4.12-5_NoiseContours_v2.mxd Revised: 2024-08-16 By: pglendening

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Table 4.12-12. Receptor Noise Levels

Receptor Location	Estimated Ambient Noise Level, dB(A) Ldn	Predicted SPL, dB(A)	Calculated Ldn, dB(A)	Merced County Code Limits, Ldn dB(A)	Merced County General Plan Limits, Leq, dB(A)	Exceed Merced County Code Noise Threshold?
R1 North	73	37	43	65 Residential 70 Non-Residential	55 Daytime 50 Nighttime	No
R2 East	65	30	36	65 Residential 70 Non-Residential	55 Daytime 50 Nighttime	No
R3 Southeast	65	35	41	65 Residential 70 Non-Residential	55 Daytime 50 Nighttime	No
R4 South	74	39	45	65 Residential 70 Non-Residential	55 Daytime 50 Nighttime	No
R5 West	74	41	47	65 Residential 70 Non-Residential	55 Daytime 50 Nighttime	No

Source: Appendix K.

As shown in both Table 4.12-12 and Figure 4.12-2, the estimated noise levels at the Project's property line are estimated to be below the limits set forth in Chapter 10.60 in the Merced County Code (Merced County 2005) and Table HS-2 (Table 4.12-7) in the 2030 General Plan (Merced County 2013). In addition, operational noise generated by the Project would be below the estimated ambient noise levels present in the area. Also, maintenance vehicle trips to the site would be intermittent and generate a negligible increase in traffic noise levels. Therefore, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project, and the impact of operational fixed-source noise and traffic noise would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Excessive Groundborne Vibration

Impact NOI-2 The proposed Project would not result in the generation of excessive groundborne vibration or groundborne noise levels.

During construction of the Project, equipment such as trucks, drill rig trucks, and rollers may be used as close as about 270 feet from the existing aqueduct and berm.

Based on the PPV_{ref} presented in Table 4.12-5 and the distance to the nearest receptor, equipment used during Project construction could generate vibration levels between 0 between 0.002 PPV (in/sec) and 0.006 PPV (in/sec) at 270 feet, as shown below in Table 4.12-13. All estimated vibration levels would be below the FTA vibration threshold for potential building damage as defined in Table 4.12-3 and 4.12-4. Therefore, the Project would not result in the generation of excessive groundborne vibration or groundborne noise levels, and impacts from construction vibration would be less than significant.

Table 4.12-13. Estimated Vibration Levels for Construction Equipment

Type of Equipment	PPV (in/sec) at 270 Feet	Threshold which Building Damage Could Occur	Exceed Threshold for Building Damage?
Loaded Trucks	0.002	0.50	No
Caisson Drilling	0.003	0.50	No
Vibratory Roller	0.006	0.50	No

Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018).

Groundborne vibration is not anticipated to occur during Project operations. In addition, any vibration generated during decommissioning would be similar to what is presented in Table 4.12-13 and would be considered less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Airstrip/Airport Impacts

Impact NOI-3	**For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

The Project is not within two miles of a public airport or public use airport. The closest airports or private airstrip to the Project site are the Dos Palos Airport, over 9.9 miles northeast of the Project and the Los Banos Municipal Airport, over 9.9 miles north of the Project. Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels from airports, and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.12.6.4 PG&E Interconnection Infrastructure

As noted in Chapter 2, Project Description, the Project's proposed 70 kV gen-tie line would extend approximately 1,700 feet north from the Project substation to the Mercy Springs Substation, which is the Project point of interconnection to the grid. As part of the interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities within the substation.

The noise-generating equipment located at the Mercy Springs Substation is approximately 3,750 feet from the closest residential property at 25001 Poleline Road. This distance is approximately the same as the distance used to evaluate construction noise from the main Project to the residence. According to the results presented in Table 4.12-10, worst-case construction noise levels at that distance would comply with the 2018 guidelines and would not exceed anticipated ambient noise levels in the area. Assuming the construction equipment used for the interconnection infrastructure is similar to that used for the main project and again assuming the same distance between the residence and the construction activity, noise levels from the construction of the interconnection infrastructure may increase noise levels at the closest receptor by a maximum of 3 dB(A). Therefore, noise levels generated from the construction of the interconnection infrastructure in addition to the main project would still be below the 2018 FTA guideline limits. Construction traffic associated with PG&E's improvements would be minimal and would not

increase average vehicle traffic noise levels. Since the gen-tie line typically consists of low-noise emitting elements, such as power line towers, conductors, insulators, cables, and safety equipment, the operation of the gen-tie terminal equipment would result in minimal noise, well below the BESS equipment analyzed above. Further, construction and operation of the interconnection infrastructure would not generate excessive groundborne vibration or groundborne noise levels. Impacts would be less than significant.

4.12.6.5 Cumulative Impacts

As effects of noise are highly localized, the geographic scope for considering cumulative noise impacts comprises related projects within 0.25 mile of the Project. Construction, operation, and decommissioning of the Project would result in less-than-significant impacts with respect to noise and groundborne vibration.

Cumulative noise impacts could occur from multiple projects resulting in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or exposure to groundborne vibration and groundborne noise. However, there are no planned projects within 0.25 miles of the Project (Table 4.0-3, List of Related Projects). Therefore, the cumulative noise and vibration impacts would be less than significant, and the contribution from the Project would not be cumulatively considerable.

4.13 PUBLIC SERVICES

This section describes the impacts on public services that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations related to public services, and analysis of environmental impacts of the Project. Where applicable, mitigation measures are included for significant impacts. The County did not receive any scoping comments pertaining to public services (Appendix A).

4.13.1 Regulatory Setting

4.13.1.1 Federal

No federal regulations pertaining to public services apply to the Project.

4.13.1.2 State

California Fire Code

The California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operation. Chapter 6 of the Code (Building Services and Systems) focuses on building systems and services as they relate to potential safety hazards and when and how they should be installed. The building services and systems that are addressed include emergency and standby power systems, electrical equipment, wiring and hazards, and stationary storage battery systems. Chapter 33 of the Code (Fire Safety During Construction and Demolition) outlines general fire safety precautions to maintain required levels of fire protection, limit fire spread, establish the appropriate operation of equipment, and promote prompt response to fire emergencies. Features regulated under Chapter 33 include fire protection systems, fire fighter access to the site and building, means of egress, hazardous materials storage and use, temporary heating equipment, and other potential ignition sources.

4.13.1.3 Local

Merced County General Plan

The following lists goals and policies from the 2030 Merced County General Plan pertaining to public services that are applicable to the Project.

Policy PFS-1.8: New Development Financing (FB). Require new development to provide adequate financing, where a nexus can be shown, that meets all identified public facility costs.

Policy PFS-6.1: Staffing Levels (SO). Encourage optimum staffing levels for both sworn sheriff deputies and civilian support staff in order to provide quality law enforcement services in Merced County.

Policy PFS-6.2: Sheriff Department Response Time Standards (SO). Strive to achieve and maintain appropriate Sheriff's Department response times for all call priority levels to provide adequate law enforcement services for all County residents.

Policy PFS-6.4: Fair Share (RDR). Require new development to pay its fair share of the costs for providing law enforcement service facilities and equipment to new residents.

Policy PFS-7.1: Fire Staffing and Response Time Standards (SO). Strive to maintain fire department staffing levels and response times consistent with National Fire Protection Association standards.

Policy PFS-7.7: Fire Facility Fees (RDR/JP/FB). Require new development to pay its fair share of public facility fees for new fire station facilities, equipment, and staffing necessary to maintain the County's service standards in that area. New development may also be required to create or join a special assessment district or other funding mechanism to pay the costs associated with the operation of a fire station.

Policy PFS-7.9: Fire Safety Standard Compliance (RDR). 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.

Merced County Code

Chapter 16.30 of the Merced County Code provides the Merced County Fire Code, which is an adoption of the 2015 International Fire Code as published by the International Code Council and amended by the California Building Standards Commission, except as amended. The purpose of the Fire Code is to regulate the safeguarding of life, property, and public welfare to a reasonable degree from hazards of fire, hazardous materials release, conditions hazardous to life, and providing for issuance of permits and collection of fees.

4.13.2 Environmental Setting

4.13.2.1 Fire Protection

Fire protection services in the vicinity of the Project site are provided by the Merced County Fire Protection District. The Merced County Fire Protection District serves a population of more than 286,000 in a service area encompassing approximately 1,979 square miles in the communities of El Nido, Planada, Cressy, Le Grand, Dos Palos, Ballico, Livingston, Stevinson, Snelling, Gustine, Winton, Los Banos, Santa Neila, Dos Palos Wye, Merced, Mc Kee, Hilmar, Delhi, Franklin, Beachwood, and McSwain (Merced County 2022). In cooperation with the California Department of Forestry and Fire Protection (CAL FIRE), the Merced County Fire Department provides fire protection, emergency medical services, and rescue from 19 staffed fire stations with a total of 29 firefighters on duty daily (Merced County 2022). While Merced County Fire Protection District employs professionally trained firefighters, the Paid-Call Firefighter Program adds personnel to an already staffed fire apparatus to provide an augmentation of staff for each emergency response (Merced County 2022). The nearest fire station to the Project site is Los Banos Fire Station, located approximately 10 miles north of the Project site at 525 H Street in Los

Banos. The Los Banos Fire Station has an average response time of approximately 20 minutes (Merced County 2023).

According to the CAL FIRE Merced County Fire Hazard Severity Zone Maps for the Local Responsible Areas (LRA), the Project site is located in an unincorporated local responsibility area and is designated as "unzoned" (CAL FIRE 2007).

4.13.2.2 Police Protection

The Merced County Sheriff's Department provides law enforcement services to the unincorporated areas of the County and several incorporated cities by contract. The Merced County Sheriff's Department is responsible for protecting the life and property of the residents that are living in the unincorporated areas of Merced County. The main sheriff's office is located 31 miles northeast of the Project site at 700 West 22nd Street in the City of Merced. The main sheriff's office provides court protection, jail administration, coroner services for the entire County, and patrol, detective, and other police services for the unincorporated parts of the County. Additionally, the Sheriff Department maintains patrol staff who cover the Project site at the Jess "Pooch" Bowling Justice Center, located approximately 10 miles north of the Project site at 445 "I" Street in Los Banos.

4.13.2.3 Schools/Parks/Other Public Facilities

The Project site is located within the Los Banos Unified School District (LBUSD), which includes nine elementary schools, one district-wide Transitional Kindergarten Center and two junior high schools (grades 7-8), two comprehensive high schools, one alternative high school and one alternative education center (LBUSD 2023). The Los Banos Unified School District is composed of approximately 11,242 students from kindergarten to 12th grade and approximately 585 certified and 510 classified employees. Other school districts located in the vicinity include Gustine Unified, Dos Palos – Oro Loma Unified, and McSwain Union Elementary. The closest school to the Project site is Charleston Elementary School, located approximately 4.2 miles north of the Project site.

The Public Works Department, Parks and Recreation manages the parks and recreation facilities in Merced County. There are approximately 114,00 acres of park and recreation facilities in Merced County that offer a variety of amenities such as picnicking, swimming, boating, hunting bird watching, playgrounds, sports fields, and hiking.

Other public facilities include library facilities, post office facilities, and courthouses. Merced County's main public library is located in Merced. The library system operates 16 facilities throughout the County, including a law library. These facilities lend books, records, cassettes, and magazines to County residents. In addition, there are 19 post offices that serve Merced County (Post Locations 2023). Furthermore, there are four court houses within Merced County (Superior Court 2023).

4.13.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts on public services. When an impact is determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.13.3.1 Methodology

The Project's effects were compared to the thresholds of significance to determine whether the Project would result in a significant impact on public services.

4.13.3.2 Thresholds of Significance

In accordance with the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to public services would be significant.

- Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities [or the] need for new or physically altered 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 public services:
  - Fire protection?
  - Police protection?
  - Schools?
  - Parks?
  - Other public facilities?

4.13.3.3 Project Impacts

This section discusses potential impacts associated with the Project and provides mitigation measures where necessary.

Impact PUB-1	**The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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.**

Fire Protection

Fire protection services in the vicinity of the Project site are provided by the Merced County Fire Protection District. The nearest fire station to the Project site is Los Banos Fire Station, located approximately 10 miles north of the Project site at 525 H Street in Los Banos. The Project would not include residential uses, and no people would reside on the Project site.

Construction

Construction of the Project would occur over 24 consecutive months. The construction phases of the Project would be consecutive, and the number of construction workers onsite is expected to average from 40 to 50 workers per day with a maximum of 150 workers per day. The peak number of workers onsite is expected to occur from construction months 6 to 18. Fire protection requirements are based on the number of residents and workers in the service area. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the fire department. As the number of residents and workers increases, so does the number of emergency medical calls. There are no residential uses proposed as a part of the Project. As such, no residents would occupy the Project site and an increase in service demands as a result of an increase in residential uses would not occur.

The increase in people commuting to the Project site would temporarily affect the demand for fire protection and emergency response services due to the increased traffic associated with construction worker vehicle trips and the delivery of construction equipment, vehicles, and materials to the area. Service demands as a result of personnel onsite also could occur during construction of the Project. Typically, service demands per employee are less than service demands per resident. In addition, the Project site is not within an area of high or very high fire hazard as determined by CAL FIRE. Furthermore, as disucssed further in Section 4.9, Hazards and Hazardous Materials, of this Draft EIR, Mitigation Measure HAZ-1 would require preparation of a fire protection plan and would include coordination with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training, among other measures. Because the increased need as a result of workers would be temporary, the number of workers onsite would peak at 150 employees, and because the Project would implement a fire protection plan, no new or physically altered fire protection facilities would be required to meet demand, and Merced County Fire Protection District staffing levels and response times would be maintained. Therefore, impacts associated with fire protection services would be less than significant during construction of the Project.

Operation

Once operational, the Project would employ up to 10 full-time employees for facility operation and up to 10 part-time employees for maintenance tasks. These employees are anticipated to be drawn from the local labor force and would commute to the Project site from nearby urban areas, such as Fresno, Madera, and Merced. It is anticipated that the average number of employees at the Project site would be 10 people per day with a peak number of 20 people per day. The Project site preventative maintenance program—including equipment maintenance and panel washing—would be largely conducted onsite during nighttime hours with some activities occurring during daytime hours. Equipment repairs could take place in the early morning or evening when the facility would be producing the least amount of energy. Key program elements would include maintenance activities originating from the onsite O&M facilities or a regional O&M facility located in the County and onsite maintenance as required to clear weeds for ground-mount systems. During all other times, offsite security personnel would monitor the Project site and provide rapid response to any incidents; visits to the site for emergency purposes are expected to occur infrequently (i.e., only a few times per year).

As noted previously, the nearest fire station to the Project site is Los Banos Fire Station, located approximately 10 miles north of the Project site. In accordance with Merced County General Plan Policy PFS-7.9, the Project would be reviewed by the Merced County Fire Protection District to ensure compliance with fire safety standards. The Project would also follow General Plan Policy 7.7 by paying its fair share of public facility fees for maintaining necessary staffing to maintain the County's service standards in the area. In addition, the Applicant would coordinate with CAL FIRE and the Merced County Fire Protection District to provide appropriate photovoltaic (PV) and BESS training to fire responders, as well as to construction, operational, and maintenance staff. The intent of this training would be to familiarize both responders and workers with the codes, regulations, associated hazards, and processes related to solar power and energy storage facilities. The Project has been designed to account for the potential for a fire-related issue and planned for adequate precaution. In accordance with relevant safety standards, the battery energy storage system (BESS) containers would be equipped with fire suppression systems, fire/smoke detectors, and emergency stops. The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction. At a minimum, these safety systems will include a mix of thermal, smoke, and gas detectors along with explosion prevention per National Fire Protection Association (NFPA) standards 68 or 69. The BESS will undergo extensive testing and will be certified to UL9540, which is a safety standard for energy storage systems.

The inner fence perimeter road would function as a fire buffer, accommodate Project O&M activities, and facilitate onsite circulation for emergency vehicles. The inner fence perimeter road would be constructed in conformance with the state and Merced County recommendations for fire safety. One or more above-ground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M buildings. The storage tank(s) near the O&M buildings would have the appropriate fire department connections to be used for fire suppression purposes. In addition, as disucssed further in Section 4.9, Hazards and Hazardous Materials, of this Draft EIR, Mitigation Measure (MM) HAZ-1 would require preparation of a fire protection plan, which would include coordination with CAL FIRE and the Merced County Fire Protection District to provide fire responders and facility staff with appropriate fire response training, among other measures.

Based on the above, impacts associated with fire protection services would be less than significant during operation of the Project and impacts would be further reduced with implementation of MM HAZ-1.

Decommissioning

Decommissioning activities would take approximately 12 months and would comprise removal of above- and below-ground structures as well as site reclamation, including restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be implemented during the decommissioning phase of the Project. Decommissioning activities may require a similar number of employees as the construction phase and would temporarily increase the demand for fire protection services. However, similar to construction, because the increased need for fire protection services would be temporary and the number of employees during the decommissioning would be similar, no new or physically altered fire protection facilities would be required to meet demand. Therefore, impacts associated with fire protection services would be less than significant during decommissioning of the Project. Per Mitigation Measure HAZ-1, the Applicant would coordinate with CAL FIRE and the Merced

County Fire Protection District prior to decommissioning of the Project, which would further reduce potential impacts.

Police Protection Services

Police protection services in the vicinity of the Project site are provided by the Merced County Sheriff's Department. The main sheriff's office is located 31 miles northeast of the Project site at 700 West 22nd Street in the City of Merced. Additionally, the Sheriff Department maintains patrol staff who cover the Project site at the Jess "Pooch" Bowling Justice Center, located approximately 10 miles north of the Project site at 445 "I" Street in Los Banos.

Construction

Similar to impacts related to fire protection services, the construction of the Project could temporarily affect the demand for police protection services but would not require the construction of new or altered police protection facilities, nor require or result in the hiring of additional police officers. The project site is located in a relatively remote location surrounded by undeveloped land and agricultural uses. Land uses in the region consist largely of agriculture and grazing land unlikely to attract attention that would make project facilities susceptible to crime. Therefore, a large increase in police services is not expected. Police protection may be required for incidents such as the theft of construction equipment or vandalism of the construction area. However, during construction, the Project site would be secured with the installation of chain-link fencing and gates around the Project site perimeter and staging and laydown areas to reduce the demand for police protection services. Therefore, impacts associated with police protection services would be less than significant during construction of the Project.

Operation

As described above, the project site is located in a rural area and is thus unlikely to attract attention that would make project facilities susceptible to crime. The Project site would be surrounded by 8-foot-tall chain-link security fence along all perimeters, with access gates that serve as points of ingress and egress. The access gates would remain locked when not in use. Workforce, security, or operations personnel would be available for dispatch to the Project site 24 hours per day, 7 days a week. These employees would be drawn from the local labor force and are expected to commute to the Project site from nearby urban areas, such as Fresno, Madera, and Merced, and would most likely be within a 2-hour drive of the Project site. The limited access to the Project site and the full-time surveillance from offsite security personnel would deter incidents of theft and reduce the demand for police services during Project operations. Because no new permanent residents would be living on the Project site, the number of emergency law enforcement calls originating from the Project site would be minimal; as such, there would be no need for expansion of police services. The Project would comply with the General Plan Policy-6.1 and 6.4 requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County.

The Project does not include the development of new residences or businesses or other land uses that would directly increase the demand for police protection services. The Project would be limited to the proposed solar generation facility, BESS, onsite Project substation, and generation-tie (gen-tie) line and

would not increase the number of residents onsite, require the need for new facilities, or substantially increase the demand for police protection services. Therefore, impacts associated with police protection services would be less than significant during operation of the Project.

Decommissioning

Decommissioning activities would require a similar number of employees as the construction phase and would similarly temporarily increase the demand for police protection services. However, because the increased need for police protection services would be temporary, no new or physically altered police protection facilities would be required. Therefore, impacts associated with police protection services would be less than significant during decommissioning of the Project.

Schools/Parks/Other Public Services

Construction and operation of the Project would not result in substantial direct or indirect population growth that would substantially increase the school-aged population in the region and thus would not require the construction or expansion of school facilities, parks, or other public services. The presence of construction workers at the Project site would be temporary, and these construction workers would likely come from an existing local and/or regional construction labor force and would not likely relocate their households as a consequence of working on the Project. Thus, the short-term increase from employment of construction workers on the Project site would not result in a notable increase in the residential population of the area surrounding the Project site. The small operations staff also are expected to come from the local workforce and would not result in a population increase. Therefore, the Project would not result in substantial adverse physical impacts associated with the construction of new or physically altered facilities. Impacts associated with schools, parks and other public services would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.13.3.4 PG&E Interconnection Infrastructure

The Project's proposed 70-kilovolt (kV) gen-tie would extend approximately 1,700 feet north from the Project substation to the Mercy Springs Substation, which is the Project point of interconnection to the grid. PG&E would incorporate upgrades to Mercy Springs Substation to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities. Due to the minor nature of the upgrades within the existing Mercy Springs Substation, the upgrades would not

require new government facilities related to fire protection, law enforcement or other public services. Therefore, impacts associated with public services would be less than significant.

4.13.3.5 Cumulative Impacts

Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or substantially increase other environmental impacts. Cumulative impacts for a project are considered significant if the incremental effects of the individual projects are considerable when viewed in connection with the effects of past projects and the effects of other projects located in the vicinity of the project site. The cumulative study area is based on the service area for each of the fire, police protection, and other governmental services serving the Project site. As discussed above, the Project would have less-than-significant impacts to public services during construction, operation, and decommissioning. The Project would not result in the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. In addition, the Project would comply with the General Plan Policy-6.1 and 6.4 requirements for paying its fair share of costs of development impact fees and encouragement of optimum staffing levels for the County and would implement MM HAZ-1, which would further reduce fire risks on site.

Related projects that would be served by similar public services generally include solar and dairy expansion projects. Similar to the Project, related projects would exhibit similar low demand for public services. As it relates to fire protection, similar to the Project, related projects would be subject to review by the Merced County Fire Protection District. In addition, the related projects would likely include security features during construction or operation. Furthermore, the related projects would also be required to undergo environmental review, in compliance with the requirements of CEQA. Should potential impacts to public services be identified, appropriate mitigation would be prescribed that would reduce impacts to less-than-significant levels. Related projects also would be required to pay their fair share of costs of development impact fees. Further, the Project is an allowed use within the Agricultural land use designation under the County General Plan and, therefore, falls within the growth projections for the County that were considered and evaluated in the County General Plan’s EIR. Any potential impacts that would affect public services have already been anticipated and planned for by the County, and the Project would not result in additional impacts beyond what is already analyzed and anticipated. Therefore, cumulative impacts associated with public services would be less than significant, and the contribution from the Project would not be cumulatively considerable.

4.14 TRANSPORTATION

This section describes the transportation impacts that would result from implementation of the Project. Included are a review of existing conditions, a summary of applicable policies and regulations related to transportation, and an analysis of environmental impacts of the Project. Where applicable, mitigation measures are included for significant impacts. The County did not receive any scoping comments pertaining to public services.

4.14.1 Regulatory Setting

4.14.1.1 Federal

No federal regulations pertaining to transportation apply to the Project.

4.14.1.2 State

California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on California's highways. State highways within Merced County are under the jurisdiction of Caltrans District 10. The following Caltrans regulations apply to the potential transportation impacts of the Project:

- California Vehicle Code, Division 15, Chapters 1 through 5 (Size, Weight, and Load) includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.
- California Street and Highway Code, Sections 660-711, 670-695, requires permits from Caltrans for any roadway encroachment during truck transportation and delivery. This includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits that are required for any load that exceeds Caltrans' weight, length, or width standards for public roadways.

These state regulations would relate to the haul of heavy equipment and materials to the Project site during construction. Trucking companies and the Project must comply with these regulations.

Senate Bill 743

SB 743 was signed into law in September 2013 and includes several changes to CEQA for projects located in areas served by transit (e.g., transit-oriented development, or TOD). Most notably with regard to transportation and traffic assessments, SB 743 changes the way that transportation impacts are analyzed under CEQA (see Public Resources Code Section 21099). SB 743 required the Governor's Office of Planning and Research to amend the CEQA Guidelines to exclude level of service (LOS) and auto delay when evaluating transportation impacts.

With implementation of SB 743, new criteria have been established to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of

land uses. The Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA (Guidelines) provided recommendations for updating the State's CEQA Guidelines in response to SB 743 and contained recommendations for a vehicle miles traveled (VMT) analysis methodology in an accompanying Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory).

The Guidelines, including the Technical Advisory, recommended use of automobile VMT per capita as the preferred CEQA transportation metric, along with the elimination of automobile delay/LOS for CEQA purposes statewide. Public Resources Code Section 21099 and CEQA Guideline Section 15064.3 reflect this change. Under Section 21099, automobile delay, as measured by LOS or similar measures of traffic congestion or vehicular capacity, is not considered a significant effect on the environment.

4.14.1.3 Local

Merced County General Plan

The following lists goals and policies from the 2030 Merced County General Plan (Merced County 2013) pertaining to transportation that are applicable to the Project. The General Plan's Transportation and Circulation section provides the policy context for the County to achieve its vision for the safe and efficient circulation of people, vehicles, and goods throughout the County. The purpose of the element is to establish goals and guiding policies for the circulation system in order to balance the varying needs of motorists, bicyclists, pedestrians, and the unique needs for movement of farm equipment and agricultural commodities.

Goal CIR-1: Maintain an efficient roadway system for the movement of people and goods that enhances the physical, economic, and social environment while being safe, efficient, and cost-effective.

- **Policy CIR-1.1**: Require a Countywide roadway system, consisting of interstate/principal arterial, minor arterial, major collector, minor collector, collector, and local roadways, and specific to urban and rural areas, that adequately serves existing and planned land uses based on the County's Functional Classifications and Level of Service Standards.
- **Policy CIR-1.5**: Implement a Countywide roadway system that achieves the following level of service (LOS) standards during peak traffic periods:
    - For roadways located within rural areas: LOS "C" or better.
    - For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of "D" or better.
    - For roadways located within Urban Communities: LOS of "D" or better.

Regional Transportation Plan

The Merced County Association of Governments (MCAG) is responsible for regional transportation planning in Merced County. The Regional Transportation Plan for Merced County updated in 2022 is the federally mandated long-range, fiscally constrained transportation plan for the County.

4.14.2 Environmental Setting

The Project site is in unincorporated Merced County located approximately 9 miles south of Los Banos and approximately 0.15 miles east of I-5. Access to the Project site would be via two entrance gates on a new unpaved primary access road, to be constructed on the west side of the Project. The existing roadway network is described below and further analyzed in the Traffic Study Report included as Appendix L.

4.14.2.1 Major Highways

I-5 is a four-lane divided freeway. It runs parallel to the southwest Project boundary about 800 feet to the west. SR-165, a two-lane undivided rural highway, is located approximately 1.25 miles northwest of the site and is classified as principal arterial. It provides regional access to the Project site (via Poleline Road). The posted speed limit on SR-165 is 55 miles per hour (mph).

4.14.2.2 Local Roads

Poleline Road is a two-lane, undivided paved roadway that runs parallel to I-5 and is classified as a major collector. There is a 30-mph speed advisory posted along this roadway, and there are no bicycle or pedestrian facilities present.

Poleline Road would connect to the new unpaved Project primary access road, which would be a private, unpaved roadway that runs north–south, abutting the western boundary of the Project site. The Project's primary access road would be constructed near an existing private, unpaved access road in this area (First Lift Canal Road), but it will not follow the exact same alignment. The County General Plan does not provide classification for the existing roadway, and there are no posted speed limits along this roadway and no bicycle or pedestrian facilities.

Primary access to the proposed solar facility would be via two entrance gates on the new primary access road, which will be able to be accessed from Exit 391, Mercy Springs Road/SR-165 off I-5 south, and then south on Poleline Road. Alternatively, for those traveling on north I-5, they could take either Exit 379, Shields Avenue, or Exit 385, Nees Avenue, to access the Project site from Poleline Road to the Project primary access road.

4.14.2.3 Airports

There are no airports in the vicinity of the Project site. Los Banos Municipal Airport is located approximately 10 miles northwest of the Project site (approximately 12 miles driving distance), and Dos Palos Airport approximately 10 miles east of the Project site (approximately 17 miles driving distance).

4.14.2.4 Public Transportation Services

Public transportation in the Project area is provided by The Bus, Merced's Regional Transit System. It is the single public transportation service provider for all of the County, and it operates 15 fixed routes. The nearest bus route to the Project connects the City of Merced to Los Banos, approximately 9 miles north of the Project site. There is no public transportation service closer to the Project site.

4.14.2.5 Non-Motorized Transportation

There are currently no dedicated pedestrian or bicycle facilities in the immediate vicinity of the Project site or along the surrounding roadways or highways.

4.14.3 Environmental Impacts

This section analyzes the potential impacts of the Project on transportation and traffic associated with its construction and operation. For impacts determined to be significant, mitigation measures are identified that would reduce or avoid the impact.

4.14.3.1 Methodology

Potential impacts to the transportation system associated with the Project are primarily related to temporary construction and routine O&M activities. This traffic assessment focuses on impacts associated with changes in travel patterns and the increase in Project-related traffic volumes during construction, operation, and decommissioning of the facility. Although transportation impacts during construction are short-term, they are quantified because construction would result in additional trips for trucks and construction employee vehicles.

While not a criterion for an impact under CEQA, roadway conditions were analyzed based on peak hour traffic and LOS as part of a separate study (Appendix L). The evaluation of traffic impacts from implementation of the Project was undertaken by assessing trip generation (e.g., workers' vehicles and trucks hauling materials) for both the construction and operational tasks of the Project against existing traffic conditions.

4.14.3.2 Thresholds of Significance

In accordance with CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to transportation impacts are significant.

Would the project:

- Conflict with a plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
- Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision(b)?
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access?

4.14.3.3 Project Impacts

This section discusses potential impacts associated with the project and provides mitigation measures where necessary.

Consistency with Programs, Plans, Ordinances and Policies

Impact TRA-1 The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Construction

The construction of the Project would take approximately 24 months to complete. The peak of the construction is expected to take place from month 6 to month 18. Project construction would require three general tasks, civil work (e.g., site preparation and grading), Facility construction (e.g., concrete work and electrical equipment installation), and Testing and Commissioning (e.g., equipment calibration).

The timing where the construction tasks overlap would produce the highest level of construction-related traffic volumes, which is used in this analysis to conservatively predict impacts. To develop trip generation, construction traffic included construction workers, delivery of heavy equipment to the site, and delivery of construction materials.

Although carpooling would be encouraged, construction workers were assumed to commute individually and to arrive in the morning peak hour and leave during the afternoon peak hour each weekday. Heavy equipment would not be hauled to or from the Project site daily; it would be hauled in at the beginning of construction and hauled out upon completion of construction. Construction trips would occur throughout the day; but because the Project does not require intense grading or offsite hauling, the majority of the trips would be associated with construction workers traveling to and from the Project site and daily truck deliveries (e.g., solar panels, various equipment, and materials). All other non-peak hour activities (such as fuel and water deliveries) may occur sporadically throughout the construction duration, but they are not considered typical occurrences.

The specific equipment and material hauling route would be determined by the contractor. However, it is assumed that construction materials and worker trips would originate from the major urbanized areas in the region and nearby communities. Based on the existing roadway network serving the Project area and on information provided by the Applicant, truck trips would be routed on I-5 during construction. Upon exiting I-5 at the Mercy Springs Road/ SR-165 interchange, construction traffic would access the Project site from Poleline Road and the Project primary access road. Alternatively, the trucks could exit I-5 at Shields Avenue or Nees Avenue to the south and access the Project site from Poleline Road and the Project primary access road.

Project construction traffic would primarily include the delivery of construction equipment, materials delivery, and daily construction worker trips. Most of the equipment (e.g., solar PV panels, inverters, tracker steel, transmission poles, substation circuit breakers, and substation steel) would be delivered to

the Project site in standard widths and lengths by trucks, vans, and covered flatbed trailers. Some equipment may be delivered to the Project site on wide-load trailers.

The analysis of construction trip generation is based on the average daily volume of construction traffic. For the purposes of this analysis, the Project construction trip generation estimates are calculated based on the trips generated by the construction workers and those generated by heavy duty trucks, including construction material delivery and dump trucks and water delivery trucks. Based on the data provided by the Applicant, approximately 40 heavy duty trucks per day will be used during the peak of construction, which would generate approximately 80 average daily trips, which is equivalent to 173 passenger car equivalent (PCE) trips. (Heavy vehicles are approximated as more than one passenger car due to their physical and mechanical characteristics, such as slower acceleration and stopping.) A factor of 2.16 was used to convert heavy vehicles to PCE based on the average of 1.5 PCE for light duty trucks, 2.0 PCE for medium duty trucks, and 3.0 PCE for heavy duty trucks (Frontiers in Built Environmental 2019). Heavy vehicles consist of light, medium, and heavy duty trucks, including heavy duty diesel construction trucks.

During construction, the number of workers on-site would vary daily, with approximately 50 workers per day during non-peak construction, and up to 150 workers per day at the peak of construction, expected to be during month 6 to month 18. Assuming the most conservative scenario of 150 workers per day are required during peak of construction (i.e., assuming there is no carpooling), the number of trips generated by the construction workers would be a maximum of 300 trips per day based on an average of 2.0 trips per worker.

During construction, the Project is expected to generate approximately 300 passenger car trips per day and approximately 80 truck trips per day, as shown in Table 4.14-1. The total PCE volume equates to approximately 473 average daily PCE trips, which includes 300 passenger car trips and 173 heavy vehicle PCE trips.

Table 4.14-1. Construction Trip Generation

Site	Acres	Passenger Cars Trips	Heavy Vehicles Trips	Heavy Vehicles (PCE) Trips	Total PCE Trips
Zeta	650	300	80	173	473

Key: **PCE** = passenger car equivalent

Although the Project would result in 473 daily PCE trips during the peak of construction, only 150 trips would occur during AM and PM peak hours as workers arrive and leave the site. Heavy duty trucks would generally arrive and leave the site outside of peak hours. Worker trips would not impact local roadway conditions, as they would represent a small increase in traffic compared to existing traffic volumes. Additionally, the roadways in the vicinity of the site are generally free flowing, with few if any delays, which would not change as the result of the Project. Project construction traffic would be short-term and temporary and would not result in long-term or permanent changes to local roadway conditions. There are no pedestrian, bicycle, or transit facilities located near the Project. Thus, construction of the Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, and impacts would be less than significant.

Operation

The Project would introduce additional traffic volumes to local roadways, particularly along Poleline Road. The solar facility would have up to 10 full-time employees and up to 10 part-time employees. Additional support personnel would be employed as needed. To be conservative, assuming a maximum of 20 employees are present during the course of a day, there would be approximately 50 trips per day for the full facility based on an average trip rate of 2.5 trips per employee[1]. This is generally considered negligible over a 24-hour period and would have no negative or undesirable effects to the surrounding roadway network. Impacts would be less than significant.

Decommissioning

At the end of the project site's operational term, the project operator may determine that the project site should be decommissioned and deconstructed, which would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, state, and county regulations. Decommissioning impacts would be relatively similar to those identified for construction of the proposed project and would be short-term and temporary. Impacts would be less than significant.

Alternative Methods of Transportation

Merced County's General Plan (Merced County 2013) includes policies regarding access and the 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.

The Project would neither directly nor indirectly eliminate existing or planned alternative transportation corridors or facilities (e.g., transit, bike lanes) since the Project would not add or remove any bike lanes or adversely affect the transit route along Poleline Road. New access points to the Project site from I-5 via Poleline Road and the primary access road would conform to County and state design standards for public and private roads, respectively. Therefore, the Project would not conflict with adopted polices, plans, and programs supporting alternative transportation. As described above, construction activities associated with the Project would not generate traffic volume that would negatively affect traffic flow on area roadways. The performance of public transit, bicycle, and pedestrian facilities in the area would similarly not be adversely affected. Therefore, the impact on plans, ordinances, and policies would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

[1] The average trip rate of 2.5 trips per employee assumes that employee work during the day/night shift is two trips (one trip in and one trip out). In addition, some employees may travel an extra trip in between (e.g., lunch, errand), and there may be occasional deliveries to the site.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Consistency with Guidelines

Impact TRA-2 The proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

CEQA Guidelines Section 15064.3 was added to the CEQA Guidelines as part of the update to provide guidance for determining the significance of transportation impacts and became effective on December 28, 2018 (Governor's Office of Planning and Research, 2018). Section 15064.3 provides the following criteria for determining a project's transportation impacts:

1. **Land Use Projects**. Vehicle Miles Traveled (VMT) exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less-than-significant impact. Projects that decrease VMT in the project area compared to existing conditions should be presumed to have a less-than-significant transportation impact.

2. **Transportation Projects**. Transportation projects that reduce, or have no impact on, VMT should be presumed to cause a less-than-significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

3. **Qualitative Analysis**. If existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may analyze the project's VMT qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

4. **Methodology**. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms per capita per household or in any other measure. A lead agency may use models to estimate a project's VMT and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate VMT and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

The Project is not a traditional land use project that would generate VMT on a regular basis, and the County has not developed a threshold of significance for VMT for projects of this type. Therefore, for this Project, a qualitative analysis of transportation impacts per criteria 3 with respect to VMT is provided. As discussed in Section 2, Project Description, of this Draft EIR, the number of construction workers on-site are expected to range between an average of 40 to 50 workers and up to 150 workers per day during non-peak and peak construction, respectively. Local labor would be used to the maximum extent practicable. Workers would commute to and from the Project site daily from the nearby population centers such as Fresno (56 miles), Merced (45 miles), and Madera (49 miles). During Project operation, minimal on-site staff are anticipated for maintenance, expected to consist of 10 full-time employees and up to 10 part-time employees. Most of the operational labor force is expected to be from Merced and the surrounding communities, with an average anticipated one-way commute of 50–60 miles as noted above. Further, given the rural nature of the Project location, the VMT for the construction, operation, and decommissioning would be comparable to other rural uses in the County. Workers employed in the rural areas of the County typically use strategies to reduce their reliance on single occupancy vehicles to reduce their commute costs, such as vanpools and carpools. It would be reasonable to expect that workers needed for the Project would likewise employ similar strategies that would have the co-benefit of reducing VMT. During decommissioning, the anticipated labor force would be less than what is required during construction and would occur for a shorter period.

VMT primarily is a metric for assessing project-related GHG emissions impacts. The analysis related to GHG emissions associated with project-related construction traffic is analyzed elsewhere in this EIR; see Section 4.8, Greenhouse Gas Emissions. Overall, as the Project would provide renewable energy to the grid and would offset GHG emissions that would have otherwise resulted from producing energy from a non-renewable source, the Project will have a net beneficial impact in offsetting GHG emissions. Accordingly, because the increase in VMT related to construction is short-term, temporary and localized, project construction is not anticipated to result in long-term, permanent changes to the surrounding vehicle transportation system. Impacts from Project construction would be less than significant. The same would be true for Project decommissioning, which would require a similar number of trips as construction, if not fewer.

During operation, the Project would conservatively result in approximately 50 trips per day for the full facility, as described above. The State of California Office of Planning and Research's "Technical Advisory on Evaluating Transportation Impacts in CEQA," dated December 2018, describes a series of "screening thresholds" to identify when a project should be expected to cause less-than-significant impact. As discussed in the document, the screening threshold for small projects is "Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with an SCS or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact." The Project is not expected to generate more than 110 vehicle trips per day and, therefore, is considered a small project and VMT impacts would be less-than-significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Hazards

Impact TRA-3 The proposed 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).

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 motorists' 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 the California Streets and Highway Code. California Highway Patrol escorts may be required at the discretion of Caltrans and the County and would be detailed in respective oversized load permits. Due to the rural nature of the area roads and flat terrain, construction vehicles are not anticipated to cause hazards traveling to and from the Project site; Furthermore, the Project would not include a design feature or use vehicles with incompatible uses that would create a hazard on the roadways surrounding the Project site.

Access to the Project site would be provided via two entrance gates on a new primary access road from Poleline Road, located on the west side of the Project site. Design and construction of Project access road intersections would be required to conform with the Merced County Department of Public Works Improvement Standards and Specifications. As such, impacts associated with hazards resulting from a Project design feature would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Emergency Access

Impact TRA-4 The proposed project would not result in inadequate emergency access.

The Project would be located in a rural area with multiple access roads allowing adequate egress and ingress to the power blocks in the event of an emergency. Additionally, as part of the Project, internal access roads would be built to County standards for emergency access. Therefore, the Project would allow for adequate emergency access.

As described above, increased Project-related traffic would not cause a significant increase in congestion and would not significantly affect the capacity of area roads. Furthermore, the Project would not require closures of public roads that could inhibit access by emergency vehicles.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.14.3.4 PG&E Interconnection Infrastructure

The Mercy Springs Substation is owned and operated by PG&E. As part of the interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities. As above, most of the construction workforce is expected to live in the region and would commute to the site from various local communities. There would be no operational trips associated with the PG&E interconnection infrastructure. Construction and operation of the PG&E improvements would not conflict with a program, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, nor would it conflict with CEQA Guidelines section 15064.3(b). The improvements would not increase hazards due to a geometric design feature or result in inadequate emergency access. PG&E also would implement standard best management practices during construction and operation. Therefore, these improvements would have a less-than-significant transportation impact.

4.14.3.5 Cumulative Impacts

The cumulative assessment of transportation impacts considers existing traffic volumes, Project-generated traffic, and traffic from future projects within Merced County that could potentially affect the surrounding roadway network. These include potential cumulative traffic impacts during construction and operation.

Construction of other developments in the vicinity during the same construction timeframe as the Project could have a temporary negative cumulative impact on traffic conditions. Therefore, this cumulative analysis for potential cumulative impacts on traffic conditions includes only projects from the list provided in Chapter 4.0, Environmental Impact Analysis that have the same construction timeframe as the Project. As shown therein, all related projects that have the same construction timeframe as the Project are more than 10 miles away from the Project except one project on I-5, located approximately 2.85 miles south of the Project site, and another just 0.25 miles from the Project site. The traffic from these related projects would have a nominal effect on traffic volumes on the surrounding roadway network due to the remote location of the related project sites and, further, the construction trips are short-term and temporary. On this basis, there will be no additional traffic impacts under cumulative conditions. Traffic volumes associated with operational activities of the Project are negligible. Other future projects in the immediate vicinity of the Project would generate little operational traffic that would also have a nominal effect on traffic on the surrounding roadway network. Therefore, cumulative impacts would be less than significant.

4.15 TRIBAL CULTURAL RESOURCES

This section describes impacts on tribal cultural resources (TCR) that would result from implementation of the Project. Included is a summary of applicable policies and regulations related to TCRs and a review of existing conditions. This section also describes impacts on TCRs that would result from implementation of the Project based on the Cultural Resources Evaluation Report prepared by Stantec in July 2023. TCRs consist of a site, feature, place, or 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. The County received no scoping comments pertaining to tribal cultural resources (Appendix A).

4.15.1 Regulatory Setting

4.15.1.1 Federal

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 sets provisions for the inadvertent discovery and intentional removal of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants of the Native groups associated with the discovered remains, or culturally affiliated with the remains or objects. NAGPRA requires any federally funded institution (e.g., a museum, federal agency, or other entity) housing Native American remains or artifacts to compile an inventory of all cultural items within its possession and to provide a summary to any Native American tribe claiming affiliation. The Project is not located on federal or tribal land.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act (AIRFA) of 1978 was enacted to protect and preserve the traditional religious rights and cultural practices of Native Americans. These rights include, but are not limited to, access to sacred sites, freedom to worship through ceremonial and traditional rights and use, and possession of objects considered sacred. AIRFA requires that federal agencies evaluate their actions and policies to determine if changes are needed to ensure that Native American religious rights and practices are not disrupted by agency practices. Such evaluations are made in consultation with Native traditional religious leaders. The Project does not include any federal actions.

4.15.1.2 State

Assembly Bill 52 (Public Resources Code Section 21084.2)

Assembly Bill (AB) 52 amended sections of the Public Resources Code (PRC) (Section 5097.94) to add consideration of Native American culture within the California Environmental Quality Act (CEQA) (Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3). The goal of AB 52 is to promote the involvement of California Native American tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their

culture. To reach this goal, the bill establishes a formal role for tribes in the CEQA process. CEQA lead agencies are required to consult with tribes about potential TCRs in the Project area, the potential significance of Project impacts, the development of Project alternatives, and the type of environmental document that should be prepared. AB 52 specifically states that a project that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment. PRC Section 21074(a)(1) and (2) define tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe" that are either included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR) or included in a local register of historical resources, or a resource that is determined to be a tribal cultural resource by a lead agency, in its discretion and supported by substantial evidence.

Native American consultation occurred as described in Section 4.15.3, Environmental Impacts, below.

Native American Heritage Commission

PRC Section 5097.91 established the Native American Heritage Commission (NAHC) whose duties include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. PRC Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a County coroner.

California Health and Safety Code

California Health and Safety Code, Section 7050.5, declares that, in the event of the discovery of human remains outside of a dedicated cemetery, all ground disturbance must cease, and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Native American Graves Protection and Repatriation Act

Sections 8010 through 8030 establish the California Native American Graves Protection and Repatriation Act (CalNAGPRA) of 2001 and states the legislative intent to do the following:

1. Provide a seamless and consistent state policy to ensure that all California Indian [*sic*] human remains and cultural items are treated with dignity and respect.

2. Apply the state's repatriation policy consistently with the federal Native American Graves Protection and Repatriation Act (25 U.S. Code [USC] Sec. 3001 et seq.), which was enacted in 1990 as subsequently amended, while considering the unique history of California towards California Indian tribes and the canon of construction regarding federal Indian law with respect to laws must be interpreted as the Indians would have understood them, be construed liberally in favor of the Indians, resolve all ambiguities in the law in favor of the Indians, and preserve tribal property rights and sovereignty unless a contrary intent is clearly stated.

3. Facilitate the implementation of the federal Native American Graves Protection and Repatriation Act with respect to publicly funded agencies and museums in California.

4. Encourage voluntary disclosure and return of Native American human remains and cultural items by a private institution or museum.

5. Provide a process whereby lineal descendants and culturally or geographically affiliated California Native American tribes that file repatriation claims for human remains and cultural items under the Native American Graves Protection and Repatriation Act (25 USC Sec. 3001 et seq.) or under this chapter with California state agencies and museums may request assistance from the commission in ensuring that state agencies and museums are responding to those claims in a timely manner and in facilitating the resolution of disputes regarding those claims.

6. Provide a process whereby California tribes that are not federally recognized may file claims with agencies and museums for repatriation of human remains and cultural items.

4.15.1.3 Local

2030 Merced County General Plan

The 2030 Merced County General Plan outlines several policies intended for the protection of TCRs countywide, including the following, which apply to the Project:

Recreation and Cultural Resources Element

- **Goal RCR-2:** Preserve and protect the cultural, archaeological, and historic resources of the County in order to maintain its unique character.

- **Policy RCR-2.10: Tribal Consultation (Regulation and Development Review [RDR]).** Consult with Native American tribes regarding development projects and land use policy changes consistent with Planning and Zoning Law at Government Code Section 6531, and the Office of Planning and Research Tribal Consultation Guidelines.

4.15.2 Environmental Setting

Refer to Section 4.5, Cultural Resources, of this Draft Environmental Impact Report (EIR) for a discussion of Environmental Setting, including Ethnography and History of local Native American groups.

4.15.2.1 Native American Heritage Commission Sacred Lands File Search

The NAHC maintains a confidential Sacred Lands File (SLF), which contains sites of traditional, cultural, or religious value to the Native American community. In a letter response on May 20, 2023, the NAHC did not identify any sacred sites at the Project site and recommended contacting the tribes on the list provided for more information on potential sites and TCRs within the vicinity. In April 2023, the County completed required AB 52 Native American consultations and received no comments from local Native American representatives pertaining to identification, documentation, and mitigation of potential impacts to TCRs. One tribe, Table Mountain Rancheria, responded to the County's AB 52 notification, indicating that they declined to consult. See Appendix M for documentation.

4.15.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts to cultural resources. When an impact is determined to be significant, mitigation measures were identified to reduce or avoid that impact.

4.15.3.1 Thresholds of Significance

In accordance with the CEQA Guidelines' Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to cultural resources are significant.

Would the Project:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 PRC 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 subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in the subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American tribe.

4.15.3.2 Project Impacts

This section discusses potential impacts to cultural resources associated with the Project and provides mitigation measures where necessary.

Tribal Cultural Resources

Impact TCR-1	**The project would not cause a substantial adverse change in the significance of a TCR, defined in PRC 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 PRC 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 subdivision (c) of PRC Section 5024.1.**

A search of the NAHC Sacred Lands Files returned a negative result for sacred lands within the Project area. The County of Merced contacted the tribes listed by the NAHC in accordance with AB 52 and

received no requests for consultation. Based on the lack of identified cultural resources within the Project site and low archaeological sensitivity, the potential of the proposed project to cause a substantial adverse change in the significance of a tribal cultural resources as defined in PRC Section 21074 is low. However, in the event that buried significant tribal cultural resources are encountered during Project construction, significant impacts could occur. Implementation of Mitigation Measures CUL-1 (Retain a Qualified Archaeologist), CUL-2 (Inadvertent Discovery of Historic or Archaeological Resources), and CUL-3 (Inadvertent Discovery of Unmarked Burials) would be required (see Section 4.5, Cultural Resources). These measures would establish protocols to retain an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology, to carry out all Mitigation Measures related to cultural resources. In addition, these measures would outline the procedures should any tribal cultural resource be identified. Therefore, implementation of Mitigation Measures CUL-1 through CUL-3 would reduce the potential for impacts to tribal cultural resources to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

- MM CUL-1: Retain a Qualified Archaeologist and Training.
- MM CUL-2: Inadvertent Discovery of Historic or Archaeological Resources.
- MM CUL-3: Inadvertent Discovery of Unmarked Burials.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

4.15.3.3 PG&E Interconnection Infrastructure

As described in Chapter 2, Project Description, PG&E would construct the Project's interconnection facilities. Activities would include the installation of the gen-tie line and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation. PG&E's improvements would require minimal, if any, ground disturbance and would occur within areas previously disturbed and occupied by existing electrical facilities within the substation. There are no known tribal cultural resources within the PG&E substation. PG&E's standard best management practices and APMs include preconstruction cultural resources inventory and data recovery, if necessary, and minimization or avoidance of impacts to any potentially significant tribal cultural resources that might be discovered through standard protocols. Impacts would be less than significant.

4.15.3.4 Cumulative Impacts

The geographic scope for cumulative cultural resources impacts is considered the greater San Joaquin Valley area. This geographic scope of analysis is appropriate because the tribal cultural resources within this area are expected to be similar to those that may occur within the Project site because of their proximity, their similarities in environments and landforms, and their location within the same Native

American tribal territories. Further, this is a large enough area to encompass any effects of the proposed project on tribal cultural resources that may combine with similar effects caused by other past, current, and reasonably foreseeable future projects, and provides a reasonable context wherein cumulative actions could affect cultural resources.

Development of the Project, in combination with other projects in the area, has the potential to contribute to a cumulatively significant tribal cultural resources impact due to the potential loss of tribal cultural resources unique to the region. However, as discussed above, a search of the Native American Heritage Commission's Sacred Land Files returned a negative result, indicating that no known TCRs are located within the Project area. The County completed required AB 52 Native American consultations and received no comments from local Native American representatives pertaining to identification, documentation, and mitigation of potential impacts to TCRs. The project would not have a significant impact on tribal cultural resources with implementation of Mitigation Measures CUL-1 through CUL-3 addressing potential impacts to unknown TCRs. Other projects likely would be subject to similar mitigation requirements. Therefore, the total impact of related projects on TCRs would be less-than-significant, and the contribution from the Project would not be cumulatively considerable.

4.16 UTILITIES AND SERVICE SYSTEMS

This section describes the impacts on utilities and service systems, including water supply, wastewater service, stormwater, and solid waste management, that would result from implementation of the Project. Included is a review of existing conditions, a summary of applicable policies and regulations related to utilities and service systems, and analysis of the environmental impacts of the Project on utilities and service systems. Where applicable, mitigation measures are included for significant impacts. The County received one scoping comment letter pertaining to utilities and service systems from the State Water Resources Control Board regarding the proposed potable water supply (Appendix A). The comment letter has been incorporated into the EIR. Part of this analysis is based in part on the Water Supply Assessment (WSA) prepared for the Project, as provided in Appendix N of this Draft EIR.

4.16.1 Regulatory Setting

4.16.1.1 Federal

No federal regulations pertaining to utilities and service systems apply to the Project.

4.16.1.2 State

California Water Code (Senate Bill 610)

Senate Bill (SB) 610 became effective on January 1, 2002. SB 610, codified in Water Code Sections 10910-10915, specifies the requirements for Water Supply Assessments (WSAs) and their role in the CEQA process, and defines the role Urban Water Management Plans (UWMPs) play in the WSA process. SB 610 requires that, for projects subject to CEQA that meet specific size criteria, the water supplier will prepare WSAs that determine whether the water supplier has sufficient water resources to serve the projected water demands associated with the projects. SB 610 provides specific guidance regarding how future supplies are to be calculated in the WSAs where an applicable UWMP has been prepared. Specifically, a WSA must identify existing water supply entitlements, water rights, or water service contracts held by the public water system, and prior years' actual water deliveries received by the public water system. In addition, the WSA must address water supplies over a 20-year period and consider normal, dry, and multiple dry year conditions.

In accordance with SB 610, projects for which a WSA must be prepared are those subject to CEQA that meet any of the following criteria:

- Residential developments of more than 500 dwelling units
- Shopping centers or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space
- Commercial office buildings employing more than 1,000 persons or having more than 250,000 square feet of floor space
- Hotels, motels, or both having more than 500 rooms

- Industrial, manufacturing, or processing plants, or industrials parks planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area
- Mixed-use projects that include one or more of the projects specified in this subdivision
- Projects that would demand an amount of water equivalent to or greater than the amount of water required by a 500-dwelling unit project. (Water Code Section 912, CEQA Guidelines Section 15155(a))

The WSA must be incorporated into the CEQA document. The lead agency must then make certain findings related to water supply based on the WSA. As discussed under Methodology, below, the Project meets the above criteria for industrial facilities occupying more than 40 acres of land, and, therefore, a WSA is required.

Landscape Water Conservation (Assembly Bill 1881)

The Water Conservation in Landscaping Act of 2006 required the DWR to update the Model Efficient Landscape Ordinance. Furthermore, AB 1881 required local agencies to adopt the updated model ordinance or an equivalent ordinance by January 1, 2010. If local jurisdictions failed to adopt the updated model ordinance or an equivalent by January 1, 2010, the DWR's updated model ordinance would automatically be adopted by statute.

California Green Building Standards (CALGreen)

The California Green Building Standards Code—Part 11, Title 24, California Code of Regulations—known as CALGreen (CALGreen 2022), is the mandatory green building standards code. In 2007, the California Building Standards Commission developed green building standards in an effort to meet the goals of California's landmark initiative AB 32, which established a comprehensive program of cost-effective reductions of GHG to 1990 levels by 2020. CALGreen requires 65 percent diversion of waste from construction and demolition projects through recycling and/or salvage.

Underground Utilities (California Government Code Section 4216)

California Government Code Section 4216 et seq. requires owners and operators of underground utilities to become members of, participate in, and share the costs of a regional notification center. Underground Service Alert North (USA North) is the notification center for the Project area. USA North receives planned excavation reports and transmits the information to all participating members that may have underground facilities at the location of excavation. The USA North members will then mark or stake their facility, provide information, or give clearance to dig.

Solid Waste Reuse and Recycling (Assembly Bill 1327)

The Solid Waste Reuse and Recycling Access Act of 1991 (AB 1327) requires jurisdictions to adopt ordinances requiring development projects to provide adequate storage area for collection and removal of recyclable materials.

Disposal and Recycling of Hazardous and Universal Wastes (Title 22)

CCR Title 22 Division 4.5 establishes 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, defined as those wastes identified in Section 66273.9 of CCR Title 22, 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 CCR Title 22 also provides restrictions and standards relevant to waste destination facilities, provides authorization requirements for various waste handlers, includes California's Universal Waste Rule, and describes other waste handling and disposal requirements.

Integrated Waste Management Act (Assembly Bill 939)

The Integrated Waste Management Act was enacted in 1989 as AB 939 and codified in PRC Section 40050 et seq. The Integrated Waste Management Act requires cities and unincorporated portions of counties throughout California to divert a minimum of 25 percent of solid waste from landfills by 1995 and 50 percent by 2000. Diversion includes waste prevention, reuse, and recycling. The Integrated Waste Management Act resulted in the creation of the California Integrated Waste Management Board, which now is known as the California Department of Resources Recycling and Recovery (CalRecycle). Under the Integrated Waste Management Act, jurisdictions must submit solid waste planning documentation to CalRecycle. The Integrated Waste Management Act also set into place 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

The Sustainable Groundwater Management Act (SGMA) requires the formation of local-controlled groundwater sustainable agencies in high- and medium-priority groundwater basins. These groundwater sustainability agencies are responsible for developing and implementing a Groundwater Sustainability Plan (GSP) to ensure the basin is operated within its sustainable yield without causing undesirable results. The Project site is located within the Delta-Mendota Subbasin, which is currently designated as a "critically overdrafted high-priority" basin under SGMA. The Project site is located within the Northern and Central Delta-Mendota Region GSP area which is managed by the Northern and Central Delta-Mendota Region GSP Group and comprises the following eight Groundwater Sustainability Agencies: Central Delta-Mendota, City of Patterson, DM-II, Northwestern Delta-Mendota, Oro Loma Water District, Patterson Irrigation District, West Stanislaus Irrigation District, and Wildren Water District.

4.16.1.3 Local

Merced County General Plan

The 2030 Merced County General Plan (Merced County 2013) Public Facilities and Services element contains the following goals and policies related to utilities and service systems that are relevant to the Project:

Goal PFS-3: Ensure the management of stormwater in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.

- **Policy PFS-3.2: Stormwater Facilities in New Development (RDR/MPSP)** Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
- **Policy PFS-3.3: Community Drainage Systems (MPSP/SO)** Encourage development of community drainage systems rather than individual project-level systems, in order to use land more efficiently and project people, property and the environment in a more comprehensive manner.
- **Policy PFS-3.4: Agency Coordination (IGC)** Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.
- **Policy PFS-3.5: Pre-Development Storm Flows (MPSP)** Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.
- **Policy PFS-3.6: Retention/Detention Facility (RDR/MPSP)** Encourage stormwater detention/retention project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.
- **Policy PFS-4.5: Solid Waste Service Availability (RDR):** Require all new development to adequately provide solid waste storage, handling, and collection through the development review and permitting process.
- **Policy PFS-4.6: Solid Waste Reduction (SO)** Support and promote feasible waste reduction, recycling, and composting efforts.

Goal W-1: Ensure a reliable water supply sufficient to meet the existing and future needs of the County.

- **Policy W-1.1: Countywide Water Supply (MPSP/IGC)** Ensure that continued supplies of surface and groundwater are available to serve existing and future uses by supporting water districts and agencies in groundwater management and water supply planning; requiring that new

development have demonstrated long-term water supply; and assisting both urban and agricultural water districts in efforts to use water efficiently.

- **Policy W-1.2: Demonstrating Sufficient Water Supply for New Development (RDR/MPSP/IGC)** Require all new development within the adopted service area of a water purveyor to demonstrate adequate quantity and quality of water will be available prior to issuing building permits.
- **Policy W-1.4: Groundwater Recharge Projects (RDR)** Support implementation of groundwater recharge projects consistent with adopted Integrated Regional Water Management Plans to minimize overdraft of groundwater and ensure the long-term availability of groundwater.
- **Policy W-1.7: Water Sufficiency Requirement (RDR)** Require new developments to prepare a detailed source water sufficiency study and water supply assessment per Title 22 and SB 610, consistent with any Integrated Regional Water Management Plan or similar water management plan. This shall include studying the effect of new development on the water supply of existing users, with public input.
- **Policy W-1.10: Groundwater Overdraft Protection (RDR/MPSP)** Where a water supply source is nearby and accessible, encourage large water consumers to use available surface irrigation water (secondary water) for school athletic fields, sports complexes, and large landscape areas.

Goal W-2: Ensure the adequate wastewater collection, treatment, and disposal within the County

- **Policy W-2.5: Septic Tank Regulation (RDR)** Enforce septic tank and on-site system regulations of the Regional Water Quality Control Board to protect the water quality of surface water bodies and groundwater quality.
- **Policy PFS-2.2: Wastewater Treatment and Disposal Capacity (RDR/MPSP)** Require applicants for discretionary projects located within special district boundaries to provide a “Can and Will Serve” letter or other documentation from the appropriate sewer and/or water district demonstrating the commitment of capacity prior to acceptance of the discretionary application as complete. Discretionary applications generally include: general plan amendments, zone changes, conditional use, location and development, tentative subdivision and administrative permit application.
- **Policy PFS-2.3: Sewer and Water District Requirement (RDR**) Require at the final map or building permit stage for permitted developments proof of approved service from a local sewer and/or water district or approval from the County Health Department for on-site systems outside districts outside urban special districts service boundaries. For discretionary applications, a "Can and Will Serve" letter from the local sewer and/or water district shall be required as part of the application materials. For discretionary applications outside a district, initial clearance for processing must be obtained from the County Health Department for projects utilizing on-site systems.

- **Policy PFS-2.6: Septic System Standards (RDR/MPSP)** Require adequate standards for private septic systems to protect water quality and public health.

Merced County Code

The Merced County Health Department, Division of Environmental Health, Merced County Public Waste, and the Solid Waste Joint Powers Authority support Merced County in solid waste goals and operation of landfills. Titles 9.04, 9.06, 9.08, and 9.12 of the General Health and Safety Ordinance of the Merced County Code regulate solid waste disposal facilities and recycling on a local level (Merced County 2023).

Ordinance Number 1947 is an ordinance that establishes the regulation of on-site wastewater treatment systems and adds Chapter 9.54 to Title 9 of the Merced County Code (Merced County 2016a).

Merced County Division of Environmental Health

The California State Water Resources Control Board (SWRCB) adopted a Water Quality Control Policy for siting, design, operation, and maintenance of on-site wastewater treatment systems (OWTS) in June 2012 (SWRCB 2012). The policy regulates all aspects of the construction and operation of existing and new OWTS. To accomplish this purpose, the policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements, and sets the level of performance and protection expected from OWTS. In accordance with the Local Agency Management Program developed by Merced County and approved by the Central Valley Regional Water Quality Control Board, Merced County Division of Environmental Health issues permits and enforces standards for OWTS (Merced County Division of Environmental Health 2016). A permit would be required from the Division of Environmental Health prior to commencing construction, repair, replacement, or abandonment/destruction of any OWTS within the unincorporated areas of Merced County in accordance with Section 9.54.60 of the Merced County Code (Merced County 2016b).

4.16.2 ENVIRONMENTAL SETTING

4.16.2.1 Water Supply

Water supply for northern and eastern Merced County is obtained from groundwater pumping and from diversions of the Tuolumne and Merced Rivers. Western Merced County receives federal and state water project deliveries via the Delta-Mendota Canal and the California Aqueduct. The largest use of water in Merced County is agricultural irrigation, followed by municipal demands and habitat support (Merced County 2012).

As discussed in the WSA prepared for the Project, the Project is located within the service area of the San Luis Water District (SLWD), a predominantly irrigation water district that relies on Central Valley Project (CVP) surface water supplies and other local surface water supplies (Appendix N). However, SLWD infrastructure does not include public water system connections to the project site. Therefore, the

project is not located within the service area of a public water system[1], and there are no water distribution pipelines connecting the property to a public water system.

The Project site is subject to a Restrictive Covenant Prohibiting Irrigation, dated March 1, 2011, with SLWD, which restricts the use of irrigation on lands that are drainage impaired to reduce the quantity of mineral-heavy drainage water flow in the region.

Surface Water

Merced County is located in the central portion of the San Joaquin River drainage basin. According to the Merced County General Plan EIR (2012), several major tributaries contribute to the San Joaquin River drainage basin flowing west from the Sierra Nevada Mountains. The San Joaquin River flows southeast to northwest. In addition, Merced County also includes federal and state water project canals that travel adjacent to the San Joaquin River such as the California Aqueduct and the Delta-Mendota Canal. Approximately 10 to 12 inches of rainfall and 35 inches of snow melt per year contribute to surface flows within the valley. Surface water in Merced County is used for municipal, domestic, industrial, and agricultural sources (Merced County 2012).

There is currently no access to water on the Project site. There are unmaintained ditch segments and culverts on-site and a non-producing and unmaintained well. As noted above, the Project site has been subject to a restrictive covenant prohibiting irrigation with SLWD since 2011, and the Project site has not been irrigated since that time.

Groundwater

Merced County comprises four groundwater subbasins within the San Joaquin Valley Groundwater Basin (SJVGB): Merced Subbasin, Turlock Subbasin, Chowchilla, and the Delta-Mendota Subbasin. The Project site overlies the Delta-Mendota Subbasin; however, project water demand would be potentially sourced from groundwater produced from the Delta-Mendota Subbasin, Merced Subbasin, or the North San Benito Subbasin, as summarized in Section 4.10, Hydrology and Water Quality.

4.16.2.2 Wastewater

According to the Merced County General Plan, key organizations that regulate wastewater treatment and disposal in California include the U.S. EPA and the SWRCB (Merced County 2013). These agencies are responsible for carrying out and enforcing environmental laws enacted by Congress. Local government agencies, including the Merced County Division of Environmental Health, are responsible for establishing and implementing specific design criteria related to individual sanitary sewer systems. Within Merced County, most of the sanitary sewer systems in the unincorporated areas of Merced County serve individual small communities. Sanitary sewer service within the County is generally provided by special districts, including community service districts, public utility districts, sanitary districts, and sewer

[1] Section 10912(c) of the Water Code states, “[A] public water system means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.”

maintenance districts. Some agencies provide only sewer collection service, and they contract with surrounding agencies for wastewater treatment and disposal. Some of the unincorporated communities of Merced County lack sanitary sewer infrastructure and are serviced by individual or community septic systems. Wastewater service is not currently provided at the Project site.

4.16.2.3 Stormwater

No functioning stormwater drainage infrastructure is located on-site. An abandoned irrigation system with two excavated earthen ditches, five concrete-lined ditches, four abandoned concrete impoundments, and 23 pipe culverts are located on the Project site. The concrete impoundments are located where ditches previously converged. Many of the culverts were crushed or plugged with debris, sediment, and tumbleweeds. All irrigation gates on the Project site are no longer functional, and the connectivity between the aquatic features on the Project site and features on adjacent land parcels has been severed. See Section 4.10, Hydrology and Water Quality, for further discussion of drainage.

4.16.2.4 Electricity, Natural Gas, and Telecommunication Services

Electric services in Merced County are provided by Pacific Gas and Electric (PG&E), Merced Irrigation District, and Turlock Irrigation District. PG&E provides all the natural gas services within Merced County. Telecommunication services are primarily provided by AT&T/SBC Telecom, with a wide range of other service providers in the market for wireless and long-distance services (Merced County 2013).

4.16.2.5 Solid Waste Management

Merced County Regional Waste Management Authority owns and operates two active solid waste disposal/landfill facilities in Merced County: the Highway 59 Landfill and the Billy Wright Landfill (BWL), located approximately 50 miles from the Project site. The Highway 59 Landfill is permitted to receive 1,500 tons of waste per day and has a remaining capacity of 28,025,334 cubic yards as of 2005 and was expected to reach its permitted capacity in 2030 (CalRecycle 2023a); however, the Highway 59 Landfill Valley Fill Project, approved in 2016, expanded the capacity of the landfill by 6,857,000 cubic yards and extended the operational life to sometime between 2076 and 2080 (Merced County Association of Governments 2016). The BWL is permitted to receive 1,500 tons of waste per day and has a remaining capacity of 11,370,000 cubic yards as of 2010 and is expected to reach its permitted capacity in 2054 (CalRecycle 2023b).

4.16.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to utilities and service systems. If an impact was determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.16.3.1 Methodology

Potential impacts to utilities and service systems associated with construction, O&M, and decommissioning of the Project were evaluated qualitatively and quantitatively using multiple online sources, published documents, and the WSA prepared for the Project, provided in Appendix N of this

Draft EIR. The Project's impacts were compared to the thresholds of significance to determine whether it would result in a significant impact to utilities and service systems.

4.16.3.2 Thresholds of Significance

According to the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts to utilities and service systems would be significant:

Would the Project:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?
- 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?
- 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?
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

4.16.3.3 Project Impacts

This section discusses potential impacts to utilities and service systems associated with the Project and provides mitigation measures where necessary.

Water, Wastewater, Storm Drainage, Electric Power, Natural Gas, and Telecommunication Facilities

Impact USS-1	**The Project would not result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.**

Water

During the construction phase, the primary use of water would be for dust control, soil compaction, and other similar activities. The total water volume used during construction would be up to 150 AF over 24 months. Decommissioning of the Project would require water use for dust control at amounts similar to those used during construction, 75 AF over 12 months.

During operation of the Project, the maximum water use would be approximately 2.77 AFY or a total of 902,607 gallons per year, which would include 0.06 AFY (19,551 gallons) of potable water for the O&M office, 0.18 AFY (58,653 gallons) of non-potable water for herbicide application, and 2.53 AFY (824,403 gallons) of non-potable water for three panel cleanings per year. Non-potable water for construction and operation would be sourced from SLWD supplies or a new or existing private well located within the Delta-Mendota Subbasin, up to 25 miles from the Project area; however, groundwater also could be sourced from the Merced Subbasin and/or North San Benito Subbasin, as analyzed in the WSA. Groundwater supplies would be transported to the Project using 6,000-gallon water trucks and stored onsite. Potable water for operation could be sourced from a water supplier within the Delta-Mendota Subbasin, the adjacent Merced Subbasin, or the nearby North San Benito Subbasin.

The storage tank(s) near the O&M area would have the appropriate fire department connections to be used for fire suppression purposes. Additionally, a potable water storage tank with a total capacity of up to 5,000 gallons would be installed onsite near the O&M building to serve potable water demands such as hand washing and toilet flushing.

While the project would install new water storage tanks within the Project footprint, no new or expanded water conveyance infrastructure would be relocated or constructed. Accordingly, the impact would be less than significant.

Wastewater Treatment

Wastewater would be generated during construction, O&M, and decommissioning. During construction and decommissioning, portable sanitary facilities would be provided at the Project site. Sanitary wastes would be contained in portable facilities, collected at least weekly, and disposed of at an off-site disposal or treatment facility. An onsite septic or sewage system would not be constructed to treat sanitary waste during construction or decommissioning.

During O&M, no wastewater would be generated during panel washing, as the water would be absorbed into the surrounding soil or would evaporate. Wastewater generated by the O&M building would be disposed of through a proposed on-site private septic system consisting of a septic tank and leach field. Sanitary waste is expected to average approximately 80 gallons per day during O&M. The septic tank would have an estimated wastewater capacity of approximately 2,000 gallons. Construction and design of the septic system would be subject to the federal and state regulations and Merced County permit and design requirements. The septic system would be regularly maintained, pumped, and inspected by a qualified service provider. The on-site septic system would have no connection to the region’s wastewater treatment systems. Approval of an OWTS permit from the Merced County Division of Environmental Health for the septic system would require compliance with special requirements and measures that provide effective sewage treatment, protect water quality, and would not cause significant environmental effects (Section 9.54.60 of the Merced County Code). The Project would not require or result in the construction or relocation of new or expanded wastewater facilities that would cause an adverse environmental effect. The impact would be less than significant.

Stormwater Drainage

The amount of land converted to impervious surfaces that would affect water infiltration and potentially impact existing drainage patterns would be up to five percent, which would not be substantial enough to alter existing drainage patterns that have established across the Project site. The addition of impervious surfaces would be limited. The site experiences very low annual rainfall (an average annual precipitation of 9 to 11 inches per year [DWR 2003]); as a result, the soils are rarely saturated to the point that any measurable runoff can be generated. The Project site would be designed to control stormwater runoff and minimize erosion on site. For these reasons, the Project would have little to no impact on the available capacity of existing stormwater drainage systems or provide substantial additional sources of polluted runoff.

The Project would disturb more than one acre of land during construction; construction and decommissioning activities would minimize ground disturbance and alteration of existing drainage patterns to the extent practicable to install Project components. Thus, the Project would be required to adhere to County stormwater requirements, which include measures to address stormwater controls on both management of runoff volume and water quality, including controlling erosion and protection of water quality of stormwater runoff. The final drainage plan would demonstrate the ability of any planned on-site storm drainage to adequately collect on-site stormwater flows in accordance with all applicable standards and requirements by minimizing impervious surfaces and directing flows according to BMPs. Additionally, in compliance with NPDES General Construction Permit requirements, the Project would design and submit a site-specific SWPPP to minimize the discharge of wastewater during construction and use BMPs for runoff control. The Project would not increase or alter runoff patterns such that new or expanded stormwater drainage facilities would be required, and impacts would be less than significant.

Electric Power and Natural Gas

No electrical facilities are located on the vacant Project site. Electricity is not expected to be consumed in large quantities during project construction, as construction equipment and vehicles are not electric (but rather diesel- or gas-powered), and no electricity is expected to be consumed for water use during construction. Any electricity required for construction use would be provided by diesel generators and/or a temporary PG&E distribution line hookup which would be installed on the project site. Because construction of the project would not displace existing electrical facilities, and would tie into existing off-site facilities, relocation of electrical facilities would not be required. The Project includes construction of a new gen-tie line to the Mercy Springs Substation, and PG&E would construct various improvements, including terminal equipment and one circuit breaker, at the Mercy Springs Substation. During operation, the O&M Building and BESS would require electrical service and would be served from the point of interconnection. However, all improvements during construction would be made within areas of the project site that are proposed for disturbance and the potential impacts of such improvements are discussed within the respective sections of this EIR. Once operational, the Project would receive service power from PG&E when the Project is not powered by on-site energy generation.

No natural gas pipelines are known to be located on the Project site, nor would natural gas be required for project construction. However, Underground Service Alert would be contacted to identify locations of

buried utilities prior to construction. In addition, solar PV projects do not require the use of natural gas for the power generation process.

Project operation also would generate a total of approximately 75 MW of renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW. The generated electrical energy would help to reduce and/or offset electricity on the state-wide utility grid. Therefore, impacts related to the construction of electric power and natural gas facilities would be less than significant.

Telecommunication Facilities

No existing telecommunication facilities are located on-site. The Project would include an on-site Supervisory Control and Data Acquisition (SCADA) system that would allow for remote monitoring and control of inverters and other critical Project components. SCADA would monitor Project power output and availability and run diagnostics on the equipment. Access to the Project's SCADA system would be accomplished with wireless and/or hard-wired connections to locally available commercial service providers (e.g., a local exchange carrier). The potential impacts associated with the proposed telecommunication facilities and connections are discussed throughout this EIR. However, demand associated with the Project would be minimal and is expected to be within the planning forecasts of the affected telecommunications provider. In addition, due to the general lack of population on-site during operation, the Project would not need any additional telecommunication facilities. Therefore, impacts related to the construction of telecommunication facilities are considered less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Water Supply

Impact USS-2	**The Project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.**

The total water volume used during construction would be up to 150 AF over 24 months and would be used for dust control, soil compaction, and grading. During O&M, water would be used in the O&M building, for herbicide application, and for panel cleanings. The maximum water use during O&M would be approximately 2.77 AFY (approximately 902,607 gallons per year), of which approximately 0.06 AFY (19,551 gallons per year) would be potable water for hand washing and toilet flushing. Decommissioning

of the Project would require water use for dust control at amounts similar to those used during construction.

As described in the WSA (Appendix N) and discussed in Impact USS-1, non-potable water for construction and operation would be sourced from SLWD supplies or a new or existing private well located within the Delta-Mendota Subbasin, approximately 25 miles from the Project area; however, groundwater also could be sourced from the Merced and/or North San Benito subbasins. Groundwater supplies would be transported to the Project using 6,000-gallon water trucks and stored onsite. Potable water for operation could be sourced from a water supplier within the Delta-Mendota Subbasin, the adjacent Merced Subbasin, or the nearby North San Benito Subbasin. the Delta-Mendota and Merced Subbasins are both designated as critically overdrafted high-priority groundwater basins. The North San Benito Subbasin is designated as a medium priority basin. As discussed in Section 4.10, Hydrology and Water Quality, sufficient water supply would be available to support the project's water demand.

As a result, sufficient water supply is available to serve the Project as proposed, and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Wastewater

Impact USS-3	**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?**

During construction and decommissioning, portable restroom facilities will be provided on the Project site. Sanitary wastes would be contained in portable facilities, collected at least weekly, and disposed of at an off-site disposal or treatment facility. The Project would install an on-site septic system for O&M, and no connection to the region's wastewater treatment systems would be required. The Project would not impact the wastewater treatment capacity within Merced County and would be regulated by an on-site wastewater treatment permit. Therefore, the Project would not generate wastewater that would exceed wastewater treatment capacity of any treatment providers. All wastewater during Project O&M would be handled by the on-site septic system. The Project would not have the potential to cause impacts related to wastewater treatment capacity.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Landfill Capacity

Impact USS-4 The 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.

Solid waste generated during construction would include debris such as concrete, wood, brick, glass, plastics, and scrap metal. Soils from drilling, trenching, or excavation would be screened and separated for use as backfill at the site of origin to the maximum extent feasible. A construction waste recycling program would be implemented pursuant to the California Green Building Standards Code (California Green Building Standards Code 2016). All solid construction wastes would be disposed of or recycled by qualified service providers. To accommodate directing of construction materials to proper end-point destinations, contractors and workers would be trained on waste sorting, appropriate recycling storage areas, and measures to reduce landfill waste.

Solid waste generated during O&M would consist of paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty nonhazardous containers, food, and other miscellaneous solid wastes. During normal operation, PV panels, BESS batteries, and inverters would produce no waste. The operator would remove solid waste on a regular basis and dispose of it in local landfills in accordance with applicable regulations. At the end of the Project's life, the PV panels and remaining Project components would be resold or recycled. Poured concrete pads would be removed and recycled or reused as clean fill.

Hazardous wastes generated during construction, operation, and decommissioning would be removed from the Project site by a licensed hazardous waste recycling or disposal firm. Typical hazardous waste would include spent oil, hydraulic fluid, household batteries, and materials used in certain BESS battery technologies and PV panels. The transformers proposed to be located at the Project substation would use nonhazardous mineral oil for cooling purposes. The batteries comprising the BESS would be recycled or disposed of at a hazardous waste facility in accordance with applicable regulations for the disposal of hazardous materials. Disposal of all hazardous materials would occur in accordance with applicable regulations and as described in the Project-specific Hazardous Materials Business Plan which 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 ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to

maintenance workers and/or the public. Additionally, components would be included as part of a comprehensive spill prevention, control, and countermeasure (SPCC) plan, in accordance with all applicable federal, State, and local regulations. Discussion of hazardous waste disposal at the site is located in Section 4.9, Hazards and Hazardous Materials, of this Draft EIR.

The Highway 59 Landfill is permitted to receive 1,500 tons of waste per day and is expected to reach its permitted capacity between 2076 and 2080 (Merced County Association of Governments 2016). The BWL is permitted to receive 1,500 tons of waste per day and is expected to reach its permitted capacity in 2054. Based on the remaining landfill capacity, sufficient capacity would be available to handle disposal of nonrecyclable waste generated by the Project during construction and O&M for the duration of the Project's lifespan.

The Project is expected to have an operational lifespan of approximately 40 years. Solar PV panels contain valuable materials that would likely be recycled at the end of their useful life. PV panels would be evaluated to determine their value in a secondary market. If not resold or repurposed, they would be recycled at a PV panel manufacturing facility licensed for the recycling of PV panels. If recycling is unavailable, the broken panels would be sent to a landfill licensed to receive broken PV panels. Further, decommissioning of other Project components, including the gen-tie and substation infrastructure, would not generate substantial amounts of solid waste. Additionally, throughout the Project's lifespan, in order to comply with the California Integrated Waste Management Act, the County would continue to be required to demonstrate on a 5-year reporting cycle that it has at least 15 years of remaining landfill capacity available within the County and that waste is minimized through recycling and other diversion methods. If the Project is decommissioned after closure of the BWL, waste would be hauled to the Highway 59 Landfill. Therefore, the impact would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Solid Waste Regulatory Compliance

Impact USS-5 The Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Solid waste generated during construction would include debris such as concrete, wood, brick, glass, plastics, and scrap metal. Soils from drilling, trenching, or excavation would be screened and separated for use as backfill at the site of origin, to the maximum extent feasible. As discussed under Impact USS-4, a construction waste recycling program would be implemented pursuant to California Green Building

Standards Code. Such efforts would be consistent with the California Integrated Waste Management Act. Refer to Impact USS-4 for further discussion regarding the generation of solid waste and hazardous waste disposal.

During O&M and decommissioning, Project waste would be disposed of consistent with state and local requirements and policies. The nonrecyclable portion of waste generated would not be substantial and would be disposed of in the Highway 59 Landfill or BWL. The Project would result in a less-than-significant impact related to compliance with statutes and regulations regarding solid waste.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

4.16.3.4 PG&E Interconnection Infrastructure

As described in Chapter 2, Project Description, PG&E would construct the Project's interconnection facilities. Activities would include the installation of terminal equipment and one circuit breaker at the Mercy Springs Substation. No mitigation would be required specific to the PG&E interconnection infrastructure. The PG&E interconnection infrastructure for the Project would not result in the need for new or relocated utilities or service systems, would have little if any water demand and would not result in insufficient supplies, and would not result in substantial wastewater or solid waste generation in excess of available capacity. PG&E's best management practices include compliance with all applicable state and federal laws and regulations during construction and operation, including those regulations that relate to solid waste disposal and recycling. Impacts would be less than significant, and no mitigation would be required.

4.16.3.5 Cumulative Impacts

Cumulative impacts to utilities or service systems have the potential to occur within the utility service areas if the incremental effects of the project when combined with other past, present, or reasonably foreseeable projects would result in a significant cumulative effect on local utility services or infrastructure. Cumulative projects are identified in Chapter 4.0, Environmental Impact Analysis. The geographic scope for impacts to utilities and service systems includes projects within the service area for each of the utility providers described above, which includes demands on water supply, wastewater, stormwater drainage, and solid waste disposal.

Physical impacts to public services, utilities, and service systems are usually associated with population in-migration and growth in an area, which increase the demand for a particular service, leading to the need for expanded or new facilities. There is little to no growth associated with the project and nearby

projects, thereby limiting the potential to contribute to demand for a particular service. Further, the Project would have less-than-significant impacts to utilities and service systems during construction, O&M, and decommissioning with respect to expansion of water or wastewater treatment, stormwater drainage, electric power, natural gas, telecommunication facilities, water supply, wastewater, and landfill capacity. The Project would not require the construction or expansion of any off-site water or wastewater treatment facilities, would not increase or alter runoff patterns such that new or expanded stormwater drainage facilities would be required, and would not require the expansion of natural gas facilities. In addition, the Project would comply with all applicable statutes and regulations regarding solid waste and would not contribute to a cumulative impact for that topic.

As discussed above, during construction, it is anticipated that the total water volume used may be up to 150 AF over 24 months. Sufficient water supply is available to serve the Project as proposed, and the demand would be temporary. Expected annual water consumption during O&M would be 2.77 AF per year through the lifespan of the project. Water demand for the Project is not expected to result in adverse water supply reliability impacts. While cumulative projects identified in Chapter 4, Environmental Impact Analysis, may have incremental impacts to water supply, any related projects that meet the criteria included in SB 610 (Water Supply Assessment) would be required to complete similar WSAs, which would help ensure that sufficient water supplies would be available to meet their demands. Additionally, the Project's incremental contribution would not be cumulatively considerable, as the Project would not interfere with sustainable groundwater management or impede recovery of affected groundwater basins from overdraft conditions.

The Project is located in an area with no wastewater treatment provider or infrastructure and would not generate a significant volume of wastewater. Wastewater produced during construction would be collected in portable toilet facilities and disposed of at an approved facility. The Project would include a septic system, constructed in accordance with applicable County requirements. Therefore, the Project would not have the potential, when combined with impacts from past, present, or reasonably foreseeable projects, to result in a cumulative impact to a regional wastewater treatment facility or the capacity of said facilities.

The Project would be constructed to follow the existing topography of the Project site to limit erosion potential and maintain existing drainage patterns. The Project would be required to adhere to County stormwater requirements, which include measures to address stormwater controls on both management of runoff volume and water quality, including controlling erosion and protection of water quality of stormwater runoff. The final drainage plan would demonstrate the ability of any planned on-site storm drainage to adequately collect on-site stormwater flows in accordance with all applicable standards and requirements by minimizing impervious surfaces and directing flows according to BMPs. Additionally, in compliance with NPDES General Construction Permit requirements, the Project would design and submit a site-specific SWPPP to minimize the discharge of stormwater and use BMPs for runoff control. Other projects in the vicinity would also be required to comply with County requirements and implement BMPs, as well as comply with the NPDES General Construction Permit and their respective SWPPP as applicable. Therefore, the Project would not contribute to a cumulatively considerable impact related to stormwater drainage.

With regard to electricity, the electricity demand of the Project would be minimal during construction and O&M and would be provided by the on-site PV system, BESS, and the commercial grid if needed. This Project, as an energy producing facility, would also serve to reduce or offset electricity on the statewide utility grid and would provide a beneficial cumulative impact on electrical demand and facilities.

The Project will not use natural gas during the construction, operational, and/or decommissioning phase. Therefore, the project would not contribute to a cumulatively considerable impact related to natural gas demand and facilities.

Telecommunication facilities and connections are proposed as part of the Project. The Project, in combination with cumulative projects, would increase demand on telecommunication facilities. However, demand associated with the related projects would be minimal and is expected to be within the planning forecasts of the affected telecommunications provider. Therefore, cumulative impacts related to telecommunications facilities would be less than significant.

Local area landfills could be impacted due to the increased cumulative need for disposal of construction debris. Based on the anticipated landfill capacity described in Section 4.16.2, Environmental Setting, sufficient capacity would be available to handle disposal of waste generated by the Project during construction and the majority of the Project's lifespan. Regarding decommissioning, solar PV panels contain valuable materials that would likely be recycled at the end of their useful life. Further, decommissioning of other Project components, including the gen-tie and substation infrastructure, would not generate substantial amounts of solid waste. During decommissioning, the BWL may not be available, however, the Highway 59 Landfill is anticipated to still have capacity or new facilities developed in accordance with the County's 5-year review of remaining landfill capacity would be used. Such requirements for waste diversion and recycling that would apply to the Project also would apply to other projects in the cumulative scenario, and the total volume of waste that would be placed in a landfill under the cumulative scenario is not expected to exceed the permitted capacity of available landfills. Therefore, cumulative impacts would be less than significant, and the Project's incremental contribution to capacity concerns would not be cumulatively considerable.

4.17 WILDFIRE

This section describes potential wildfire impacts that may result from the construction and operation of the Project. It also describes the existing wildfire conditions of the Project site and surroundings, considers applicable goals and policies, analyzes potential environmental impacts, and includes mitigation measures to reduce or avoid adverse impacts where applicable. The County did not receive any scoping comments pertaining to wildfire (Appendix A).

4.17.1 Regulatory Setting

4.17.1.1 Federal

There are no federal regulations that apply to the Project pertaining to wildfire.

4.17.1.2 State

California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) protects the people of California from fires; responds to emergencies; and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens. CAL FIRE's firefighters, fire engines, and aircraft responded to an average of more than 7,477 wildfires in 2022 (CAL FIRE 2022). The Office of the State Fire Marshal supports CAL FIRE's mission to protect life and property through fire prevention engineering programs, law and code enforcement, and education. The Office of the State Fire Marshal provides for fire prevention by enforcing fire-related laws in state-owned or operated buildings, investigating arson in California, licensing those who inspect and service fire protection systems, approving "safe and sane" fireworks for use in California, regulating the use of chemical flame retardants, evaluating building materials against fire safety standards, regulating hazardous liquid pipelines, and tracking incident statistics for local and state emergency response agencies.

California Public Resources Code

Public Resources Code Sections 4201–4204

California Public Resources Code (PRC) Sections 4201–4204 and Government Code Sections 51175–89 direct CAL FIRE to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as fire hazard severity zones, were defined for the purposes of identifying measures to be taken to reduce the rate of spreading and the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property.

Public Resources Code Sections 4291-4299

California Public Resources Code Sections 4291–4299 et seq. requires that brush, flammable vegetation, or combustible growth within 100 feet of buildings be maintained. Vegetation that is more than 30 feet

from the building, less than 18 inches high, and is important for soil stability may be maintained, as may single specimens of trees or other vegetation that is maintained to manage fuels and not form a means of rapid fire transmission from other nearby vegetation to a structure. California Public Resources Code Sections 4291–4299 et seq. applies to both high fire threat districts, as determined by the California Public Utilities Commission pursuant to its rulemaking authority, and state responsibility areas. Additionally, the Public Resources Code outlines infraction fees, certification, and compliance procedures applicable with state and local building standards, including those described in Government Code Section 51189(b).

California Fire Code

The 2022 California Fire Code (Title 24, Part 9 CCR) establishes regulations to safeguard against the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The 2022 California Fire Code also establishes requirements intended to provide safety for and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas. The County has adopted the 2022 California Fire Code in its County Code as part of their building and construction regulations (Title 16, Chapter 16.30).

California Senate Bill 38

California Senate Bill 38 requires battery storage facilities to establish safety and communication protocols. It requires battery storage facilities to develop an emergency response plan in coordination with local emergency response agencies, and to establish notification and communication procedures.

4.17.1.3 Local

Merced County General Plan

The following goals and policies from the 2030 Merced County General Plan (Merced County 2013) pertain to wildfire and are applicable to the Project.

Goal HS-3: Minimize the exposure of County residents and public and private property to the effects of urban and wildland fires.

- **Policy HS-3.1: Adequate Water Supplies for Fire Suppression.** Require adequate water supplies be available for fire suppression prior to occupancy of any structure in urban areas where a public water system does not exist prior to occupancy of any structures located in the County.
- **Policy HS-3.5: Vegetation Clear Zones.** Encourage and maintain vegetation “clear zones” around new and existing residential structures in areas designated as having a high or extreme

fire hazard severity and assist property owners in identifying how the clear zones should be maintained.

- **Policy HS-3.6: Weed Abatement.** Encourage weed abatement programs throughout the County in order to promote fire safety.
- **Policy HS-3.7: Road Fire Buffers.** Encourage fire buffers along heavily traveled roads within high and extreme hazard zones by thinning, disking, or controlled burning. Plan parks, golf courses, utility corridors, roads, and open space areas so they can serve a secondary function as a fuel break.
- **Policy HS-3.9: Building Permit Review.** Require all buildings and structures to be constructed to fire safety standards prescribed in the Building Code and the County Fire Prevention Ordinance. Where minimum fire flow water pressure is not available to satisfy Fire Department standards, alternate fire protection measures shall be identified and incorporated into the development.
- **Policy HS-3.10: Emergency Equipment Access – New Development.** Require safe all-weather access for fire and other emergency equipment as part of the subdivisions and building permit application review process.
- **Policy HS-3.12: Fire-Resistant Vegetation.** Require that development 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.
- **Policy HS-3.13: Uniform Fire Code.** Require the Uniform Fire Code to be used as a guide for project-level fire prevention and suppression activities, including site access, water supply, fire protection systems, and the use of fire-resistant building materials.
- **Policy PFS-1.9: Public Safety Services.** Coordinate with cities and special districts to ensure adequate public safety services are provided countywide, and develop mechanisms to ensure financial resources are allocated for fire protection and sheriff patrol.

Merced County Office of Emergency Services Multi-Jurisdictional Hazard Mitigation Plan

The Merced County Office of Emergency Services prepared the Multi-Jurisdictional Hazard Mitigation Plan (Hazard Mitigation Plan) to serve as a guide for response to an emergency or disaster in the participating jurisdictions of the County and to coordinate and assist with the disaster response in jurisdictions within the County (Merced County 2021). This plan was also developed to make Merced County and the participating jurisdictions eligible for certain federal disaster assistance, such as the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance grants, the Hazard Mitigation Grant Program, Flood Mitigation Assistance, and Building Resilient Infrastructure and Communities program, as well as to make the County and jurisdictions more disaster resistant. The Merced County Office of Emergency Services is located at 3500 North Apron Avenue, Atwater, approximately 33 miles northeast of the Project site.

Following the General Plan Policy PFS-1.9, the Applicant would coordinate with CAL FIRE and the Merced County Fire Department (MCFD) to provide fire responders and Project staff with appropriate fire response training. The intent of this training would be to familiarize both responders and Project staff with potential fire hazards and reduction processes associated with solar power and energy storage facilities.

Merced County Code

Chapter 16.30 of the Merced County Code provides the Merced County Fire Code, which is an adoption of the 2015 International Fire Code as published by the International Code Council and amended by the California Building Standards Commission, except as amended. The purpose of the Fire Code is to regulate the safeguarding of life, property, and public welfare to a reasonable degree from hazards of fire, hazardous materials release, conditions hazardous to life, and providing for issuance of permits and collection of fees.

4.17.2 ENVIRONMENTAL SETTING

Fire protection services in the vicinity of the Project site are provided by the MCFD. The MCFD serves a population of more than 286,000 in a service area encompassing approximately 1,979 square miles in the communities of El Nido, Planada, Cressy, Le Grand, Dos Palos, Ballico, Livingston, Stevinson, Snelling, Gustine, Winton, Los Banos, Santa Neila, Dos Palos Wye, Merced, Mc Kee, Hilmar, Delhi, Franklin, Beachwood, and McSwain (Merced County 2022). In cooperation with CAL FIRE, the MCFD provides fire protection, emergency medical services, and rescue from 19 fire stations staffed by 29 firefighters who are on duty daily (Merced County 2022). While MCFD employs professionally trained firefighters, the Paid-Call Firefighter Program adds personnel to an already staffed fire apparatus to provide an augmentation of staff for each emergency response (Merced County 2022). The nearest fire station to the Project site is Los Banos Fire Station, located approximately 9 miles south of the Project site at 525 H Street in Los Banos.

The Project site consists primarily of fallow agricultural land. The Project site also includes unvegetated areas, such as unpaved roads, paved roads, and sections of riprap. Topography across the Project site is relatively flat.

As required by PRC Sections 4201–4204 and Government Code Sections 51175–89, CAL FIRE identifies fire hazard severity zones; these are typically based on factors such fuel, slope, and fire weather, to identify the degree of fire hazard throughout California (i.e., moderate, high, or very high). While fire hazard severity zones do not predict when or where a wildfire will occur, they do identify areas where wildfire hazards could be more severe and, therefore, are of greater concern. According to the CAL FIRE and Merced County FHSZ Maps for the Local Responsible Areas (LRA), the Project site is located in an unincorporated local responsibility area and is designated as “unzoned” (CAL FIRE 2007). Given this designation, the Project site is outside of areas identified by CAL FIRE as having substantial or very high risk. In addition, the Project site is not located within a state responsibility area. The Project site is not located within a very high fire hazard severity zone (CAL FIRE 2007); however, it is located near a moderate fire hazard severity zone (CAL FIRE 2023). Areas approximately 0.25 miles west of the Project site, across Interstate 5 (I-5), are identified by CAL FIRE as a state responsibility area that is designated as a moderate fire hazard severity zone.

4.17.3 Environmental Impacts

This section analyzes the Project's potential to result in significant impacts related to wildfire. If an impact was determined to be significant, mitigation measures are identified that would reduce or avoid that impact.

4.17.3.1 Methodology

The following analysis is based on a review of documents pertaining to the Project site, including the County General Plan (Merced County 2013) and CAL FIRE's maps of fire hazard severity zones in state and local responsibility areas (CAL FIRE 2007, 2023).

4.17.3.2 Thresholds of Significance

According to the CEQA Guidelines Appendix G Environmental Checklist, the following questions were analyzed and evaluated to determine whether impacts from wildfire would be significant.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

- Substantially impair an adopted emergency response plan or emergency evacuation plan?
- 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?
- 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?
- 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?

4.17.3.3 Project Impacts

This section discusses potential impacts to wildfire associated with the Project and provides mitigation measures where necessary.

Emergency Response or Evacuation Plan

Impact WF-1 The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan.

The Project site is not located in a state responsibility area, and it is designated unzoned (CAL FIRE 2007). A moderate fire hazard severity zone is located in a state responsibility area approximately 0.25 miles west of the Project site (CAL FIRE 2023), across the California Aqueduct and I-5.

The construction, operation, and decommissioning of the Project would not require the closure of public roads, and thus would not inhibit access by emergency vehicles. During construction and eventual decommissioning of the Project, heavy construction vehicles could interfere with emergency response to the site or emergency evacuation procedures (e.g., by slowing vehicles traveling behind the truck). However, given that there are no businesses, few residences, and no emergency response stations in the immediate vicinity of the Project site, construction traffic would not result in inadequate emergency access.

The Project is in a rural area with multiple access roads allowing for adequate egress and ingress to the Project site in the event of an emergency. Access to the Project site would be from a new unpaved primary access road to be constructed on the west side of the Project. The primary access road would connect to the paved Poleline Road south of the Project. The main entrance gate would be in the western portion of the Project site, about 400 feet north of Poleline Road on the primary access road, and near the O&M area. A secondary access gate would be installed on the primary access road near the Project substation. If required by local first responders and emergency services authorities, lockboxes with keys would be placed next to each gate to allow access for emergency vehicles.

The County adopted the Hazard Mitigation Plan for the years 2021–2026. The Hazard Mitigation Plan provides the framework for hazard mitigation planning to better protect the people and property of the County from the effects of hazard events. The Hazard Mitigation Plan generally identified that there is a likely probability of future occurrences of wildfires within the County. However, the Hazard Mitigation Plan indicates that the Project area is within a low fire threat area. The goals and objectives of the Hazard Mitigation Plan include reducing the potential for loss of life and injury, minimizing development in hazard areas, and ensuring protection and enhancement of key emergency access routes, among others (Merced County 2021). The Project would be consistent with and would not impair implementation of the goals and objectives within the Hazard Mitigation Plan. The Project would provide adequate access to the site in the event of emergency, and would not interfere with emergency response in the vicinity of the site. The Project site is not located along an identified emergency evacuation route and is not identified in any adopted emergency evacuation plan. The Project would comply with applicable California Fire Code and California Building Code requirements, and fire suppression equipment would be maintained onsite.

Based on the above, the Project would not impair an adopted emergency response plan or evacuation plan, and impacts would be less than significant.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

Exacerbate Fire Risks

Impact WF-2 The Project would not exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors.

The Project site is not located in a state responsibility area, and it is designated unzoned (CAL FIRE 2007). A moderate fire hazard severity zone is located approximately 0.25 miles west of the Project site (CAL FIRE 2023), across the California Aqueduct and I-5.

Slope and wind speed and can influence the spread of fires. Upslope topography eventually increases the spread rate of the fire in all fuel beds over flat conditions (International Journal of Wildland Fire 2002, 2010). As described in Chapter 2, Project Description, elevations across the Project site range from approximately 204 feet above mean sea level (amsl) to 316 feet amsl. The Project site has low topographic relief and is relatively flat and therefore does not include slopes that increase the spread of fires. According to wind rose data from Iowa State University, the winds in the area blow in a northwest direction with an average wind speed of 6 miles per hours, which is considered a light breeze (Iowa State University 2023). This average wind speed typically does not increase the spread of fires. Additionally, the Project site is designated as unzoned, which are areas considered to have low fire frequency. The potential for wildfire on the Project site is not considered high.

The Project is anticipated to require an average of 40 to 50 workers per day during construction. During the peak construction period up to approximately 150 workers per day may be on the Project site. The Project would introduce approximately 10 full-time and up to 10 part-time employees during operation. Although a wildfire occurring in the area could release pollutants, any employees occupying the site would be rapidly evacuated at the time of the event, and/or evacuated well in advance of an approaching wildfire. Such measures would ensure that the exposure of project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire would be minimized.

During construction, the Project also would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Given the low potential for fire, the Project site's flat topography, and adherence to applicable existing regulations, codes and ordinances, the Project would not exacerbate fire risks and impacts would be less than significant.

The proposed perimeter road and the existing aqueduct and freeway would act as a fire buffer between the Project site and the moderate fire hazard severity zone located 0.25 miles west. Further, as the area west of the site is only designated a moderate fire hazard severity zone, it is outside of areas identified by CAL FIRE as having substantial or very high risk.

Based on the above, the Project would not exacerbate wildfire risks or expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. While the proposed project is not anticipated to significantly increase the risk of wildfire, Mitigation Measure HAZ-1 would be implemented to ensure a fire protection plan for the construction, operation, and decommissioning of the Project. With mitigation, potential impacts from wildfire would be reduced to a less-than-significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HAZ-1: Fire Protection Plan.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Installation or Maintenance of Associated Infrastructure

Impact WF-3	**The Project would not 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.**

The Project would involve the construction, operation, and eventual decommissioning of a solar facility. The solar facility would consist of a solar array area, battery energy storage system, on-site Project substation, 1,700-foot-long gen-tie line, and various electrical systems and equipment. These electrical systems and equipment consist of solar PV modules, an underground DC collector system, electrical equipment pads with inverters and transformers, battery units, electrical equipment pads, and an underground or aboveground AC collector system.

As discussed in Section 4.9, Hazards and Hazardous Materials, there would be a potential for the Project to cause fire on-site due to malfunctioning electrical equipment that is capable of spontaneous ignition due to overheating. In addition, the Project components, coupled with on-site vegetation and undergrowth, could result in potential fire hazards if the conditions are hot and dry. However, solar panels are manufactured from fire-resistant materials, and the associated electrical equipment would be enclosed in fire-resistant material. The 1,700-foot-long gen-tie line and all project wiring would be in accordance with current electrical codes, including clear-area setbacks from utility poles. The BESS would be equipped with fire suppression systems, smoke detectors, and emergency stops. The Project's electrical systems and equipment would comply with relevant safety standards including those designed to reduce fire risks. The BESS would include appropriate fire safety systems that meet the requirements of the Local Authority Having Jurisdiction. At a minimum these safety systems would include a mix of thermal, smoke, and gas detectors along with explosion prevention per National Fire Protection Association (NFPA) standards 68 or 69. The BESS would undergo extensive testing and will be certified to UL9540, which is a safety standard for energy storage systems.

The direct current (DC) collector system would be stored underground which will lower the risk of fire compared to aboveground utilities. The perimeter road of the Project site would function as a fire buffer, accommodate Project O&M activities, and facilitate onsite circulation for emergency vehicles. The perimeter access would be constructed in conformance with the state and Merced County design requirements for fire safety. The roads providing access to the inverter equipment pads would be

acceptable for CAL FIRE to access. The perimeter roads would be constructed to provide a fire buffer and facilitate onsite circulation for emergency vehicles. As discussed in Chapter 2.0, Project Description, one or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M building with appropriate fire department connections to be used for fire suppression purposes.

Although fire safety systems and certifications are the first line of defense in the event of a failure, it is important that the local authorities understand the equipment that is being installed. Prior to commercial operation, a Fire Protection Plan would be prepared (Mitigation Measure HAZ-1), which would outline known hazards and provide information and instructions to guide site personnel and first responder to safely respond to any onsite incident. In addition to the above, local authorities would be offered site-specific emergency response training.

The Project site is not located in a state responsibility area, and it is designated unzoned (CAL FIRE 2007). The Project site is therefore outside of areas identified by CAL FIRE as having substantial or very high risk and none of the proposed electrical collector system and internal/perimeter dirt maintenance roads would be located within a high fire hazard zone. Consistent with General Plan Policy PFS-1.9, the Applicant would also coordinate with CAL FIRE and the MCFD to provide fire responders and Project staff with appropriate fire response training. The intent of this training would be to familiarize both responders and Project staff with potential fire hazards and reduction processes associated with solar power and energy storage facilities.

In construction areas, the vegetation would be cleared as needed; and the proposed project would result in a minimal increase in fire risks that could result in temporary or ongoing impacts to the environment. The Project includes the preparation of a Vegetation and Soil Management Plan through implementation of Mitigation Measure BIO-2, which includes noxious weed control measures and vegetation management practices, and would reduce the Project's susceptibility to fire.

Based on the above, installation of the Project would not exacerbate fire risk, and impacts would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HAZ-1: Fire Protection Plan.

MM BIO-2: General Measures for the Avoidance and Protection of Biological Resources.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation Incorporated.

Downstream Flooding or Landslides

Impact WF-4 The 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.

The Project site is not located in a state responsibility area, and it is designated unzoned (CAL FIRE 2007). In addition, the topography of the Project site is generally flat and is not subject to landslides. According to the FEMA Flood Map, the Project site is in an area of minimal flood hazard (Zone X) and does not lie within a 100-year flood zone or any other special flood hazard zone (FEMA 2023). The Project would be constructed to follow the existing topography of the Project site to limit erosion potential and maintain existing drainage patterns. The Project would be required to adhere to County storm water requirements, and in compliance with National Pollutant Discharge Elimination System (NPDES) General Construction Permit requirements, the Project would design and submit a site-specific Storm Water Pollution Prevention Plan (SWPPP) to minimize the discharge of wastewater during construction and use best management practices (BMPs) for runoff control. The Project site is located in a rural area with limited structures and people within the Project area and would not expose them to potential fire risk. Therefore, the 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 would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

4.17.3.4 PG&E Interconnection Infrastructure

PG&E would incorporate upgrades to Mercy Springs Substation to support interconnection of the 70-kilovolt (kV) generation-tie (gen-tie) line, which would occur within areas previously disturbed and occupied by existing electrical facilities. PG&E would construct, own, and operate the Project's interconnection facilities. Activities would include the installation of the gen-tie line terminal and fiber optic line terminal equipment and one circuit breaker at the Mercy Springs Substation.

The Mercy Springs Substation is not located in a state responsibility area, and it is designated unzoned (CAL FIRE 2007). A moderate fire hazard severity zone is located in a state responsibility area approximately 0.25 miles west of the Project site (CAL FIRE 2023), across the California Aqueduct and I-5. Construction of the PG&E improvements would not conflict with the implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The improvements

also would not exacerbate fire risks or result in temporary or ongoing impacts to the environment and would not expose people or structures to risks as a result of runoff, post-fire slope instability, or drainage changes. PG&E would comply with all applicable state laws and regulations during construction and operation, including those related to wildfire risks and fire prevention. As such, impacts associated with the PG&E interconnection upgrades would be less than significant.

4.17.3.5 Cumulative Impacts

The geographic scope of the cumulative impact analysis for wildfire is the service area for the Merced County Fire Protection District. Cumulative impacts regarding wildfire could result from other related projects being located within a state responsibility area or within a designated very high fire hazard severity zone.

The Project site is not located within a state responsibility area, or within a designated very high fire hazard severity zone. The Project would be consistent with the goals and objectives within the Hazard Mitigation Plan. Thes goals and objective include reducing the potential for loss of life and injury, minimizing development in hazard areas, and ensuring protection and enhancement of key emergency access routes, among others. The Project would developed be in compliance with County Fire Code and Building Code requirements including fire prevention and emergency response training for site personnel. The Project would provide adequate access to the site in the event of emergency, and would not interfere with emergency response in the vicinity of the site. The Project site is not located along an identified emergency evacuation route and is not identified in any adopted emergency evacuation plan. All related projects would be required to provide adequate emergency access in accordance with County Fire Code and Building Code requirements and would be reviewed for consistency with emergency evacuation plans. Thus, cumulative impacts regarding emergency response plans would be less than significant.

With regard to cumulative impacts related to exposure of project occupants to pollutant concentrations from a wildfire, the Project is not within a State Responsibility Area or High Fire Hazard Severity Zone. Although some related projects in the area may be located in those areas, related projects would be required to implement building and design features in accordance with the County Fire Code and Building Code to reduce wildfire risk and exposure of occupants to pollutant concentrations from a wildfire. Cumulative impacts would be less than significant.

Like the Project, related projects may require associated infrastructure such as roads, fuel breaks, and power lines that could exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. These projects would be reviewed by the County for land use and zoning consistency and compliance with applicable requirements, and potentially analyzed for environmental impacts. The placement of infrastructure would adhere to all fire codes to minimize the potential fire risk such as siting and design. All Project components would be constructed in accordance with applicable fire codes and safety standards and the BESS would be equipped with fire suppression systems, smoke detectors, and emergency stops. In addition, the adoption of a fire protection plan would further minimize impacts related to wildfires. Cumulative impacts related to installation or maintenance of associated infrastructure would be less than significant.

The Project would not expose people or structures to significant risks due to post-fire slope instability or drainage changes. Although related projects could be proposed in areas that could expose people or structures to risks from downslope or downstream flooding or landslides as a result of post-fire slope instability, all projects would be required to adhere to County's zoning and land use designations and codes, State and local fire codes, and regulations associated with drainage and site stability. These regulations, policies, and codes would reduce the potential for exposing people or structures to risks from downslope or downstream flooding or landslides as a result of post-fire slope instability. Cumulative impacts would be less than significant.

5 COMPARISON OF ALTERNATIVES

5.1 INTRODUCTION

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.6, this Environmental Impact Report (EIR) presents a comparative impact assessment of alternatives to the Zeta Solar and Battery Energy Storage System Project. The primary purpose of this alternatives analysis is to provide decision-makers and the public with a reasonable number of feasible project alternatives that could attain most of the basic project objectives, while avoiding or reducing any of the project's significant adverse environmental effects. Important considerations for this alternatives analysis are noted below.

- The discussion of alternatives shall focus on alternatives to the project or its site that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- The range of alternatives required in an EIR is governed by a "rule of reason." Therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.
- The no project alternative shall be evaluated, along with its impacts. The no-project analysis shall discuss the existing conditions at the time the notice of preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

Among the factors that may be taken into account when addressing the feasibility of alternatives (as described in CEQA Guidelines Section 15126.6(f)(1)) are environmental impacts, site suitability, economic viability, social and political acceptability, technological capacity, availability of infrastructure, General Plan consistency, regulatory limitations, jurisdictional boundaries, and whether the project proponent could reasonably acquire, control, or otherwise have access to an alternative site. If an alternative has effects that cannot be reasonably identified, if its implementation is remote or speculative, and if it would not achieve the basic project objectives, it need not be considered in the EIR.

5.1.1 Significant Unavoidable Impacts

CEQA requires that alternatives to a project have the potential to avoid or substantially lessen one or more significant effects of the project (CEQA Guidelines Section 15126.6). As described in Section 4, Environmental Impact Analysis, the project would have no significant and unavoidable impacts (project or cumulative).

5.1.2 Less-than-Significant Impacts with Mitigation Incorporated

The project may result in potential significant impacts at the project or cumulative level. However, all impacts would be reduced to a less-than-significant level with the implementation of mitigation measures.

The potentially significant impacts, which may occur as a result of the project are as follows:

5.1.2.1 Air Quality

- Expose sensitive receptors to substantial pollutant concentrations

5.1.2.2 Biological Resources

- Negative effects on species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the CDFW or USFWS
- 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 wildlife nursery sites

5.1.2.3 Cultural Resources

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines (California Code of Regulations [CCR] Title 14, Chapter 3, 15064.5)
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines (CCR Title 14, Chapter 3, Section 15064.5)
- Disturb human remains, including those interred outside of formal cemeteries

5.1.2.4 Geology and Soils

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction
- Substantial soil erosion or the loss of topsoil
- Located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property

- 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-site or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

5.1.2.5 Greenhouse Gas Emissions

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

5.1.2.6 Hazards and Hazardous Materials

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving a hazardous materials release into the environment
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires

5.1.2.7 Hydrology and Water Resources

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

5.1.2.8 Tribal Cultural Resources

- Substantial adverse change in the significance of a Tribal cultural resource

5.1.2.9 Wildfire

- Exacerbate wildfire risks
- Installation or maintenance of associated infrastructure (e.g., roads, fuel breaks, emergency water sources, power lines, other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment

The project would have a less than significant impact or no impact on the remaining environmental issues, as discussed in each of the resource sections in Chapter 4.

5.1.3 Alternatives to the Project

In accordance with CEQA Guidelines Section 15126.6(d), each alternative is evaluated in sufficient detail to determine whether the overall environmental impacts would be less, similar, or greater than the corresponding impacts of the project. Furthermore, each alternative is evaluated to determine whether the

project objectives would be mostly attained by the alternative. As discussed in Chapter 3, Alternatives to the Proposed Project, the three alternatives to the project analyzed in this section are as follows:

5.1.3.1 Alternative 1: No Project

Alternative 1 assumes that no development would occur on the project site. The area would likely remain fallow. According to the Merced County Zoning Code, other allowable uses that could occur in the current zone would potentially be other agriculture, ranching operations, well drilling, game preserves, public parks and recreation areas, wildlife management, equipment maintenance, on-site energy generation facilities, residence, produce stand, kennel, county or publicly-owned facilities, truck parking, and wireless communication towers.

5.1.3.2 Alternative 2: Reduced Acreage

Alternative 2 would eliminate the 462 acres of the project area that currently consists of prime farmland. The total megawatts (MW) capacity at the project site would be reduced from 75 MW to 23.4 MW, and the project footprint would be reduced from 650 acres to approximately 186 acres (Figure 3-1). Under this alternative, the other 462 acres of the project site would remain undeveloped and fallow, with periodic use of grazing sheep and goats for weed control, as it is currently used. The gen-tie interconnection would remain unchanged. In addition to the solar panels, development on the project site would still include construction of an onsite collector substation, a battery energy storage system (BESS) on approximately 15-acre portion of the Project site, and associated infrastructure, as under the proposed project. Similar to the proposed project, this alternative would require a conditional use permit (CUP) for the project.

5.1.3.3 Alternative 3: Distributed Power

Alternative 3 would involve the development of a number of geographically distributed small to medium solar photovoltaic (PV) systems (100 kilowatt-hours to 1 MW) within existing developed areas, typically on the rooftops of commercial and industrial facilities situated throughout unincorporated Merced County. Under this alternative, no undeveloped land would be developed or altered. However, depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage (i.e., greater than 650 acres of total rooftop area) would be required to attain the project's capacity of 75 MW of solar PV generating capacity. Because of space or capital cost constraints, many rooftop solar PV systems would be fixed-axis systems or would not include the same type of sun-tracking equipment that would be installed in a freestanding utility-scale solar PV project; therefore, they would not attain the same level of solar PV generation efficiency.

Alternative 3 would generate 75 MW of electricity, but it would be for on-site use only and no BESS would be available to store the unused solar energy; therefore, the solar power could only be used during daylight hours.

The distributed power alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, relatively flat roof areas necessary for efficient solar installations. Similar to the project, this alternative would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Power generated by such distributed

solar PV systems would be consumed on-site by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

5.2 PROJECT OBJECTIVES

As described in Chapter 2, Project Description, of this EIR the following objectives have been established for the project and will aid decision makers in the review of the project alternatives and associated environmental impacts.

- Construct and operate a solar PV and BESS power-generating facility capable of producing and transmitting up to 75 MW of renewable energy in a cost-competitive manner.
- Locate a power-generating facility in close proximity to existing California Independent System Operator (CAISO) high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.
- Assist the State of California in achieving or exceeding its California Renewable Portfolio Standard (RPS) under Senate Bill (SB) 350, SB 100, and the California Global Warming Solutions Act (Assembly Bill (AB] 32) by developing and constructing a new solar power generation facility.
- Assist the State of California in reducing its greenhouse gas (GHG) emissions as required by the California Global Warming Solutions Act.
- Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).
- Develop a commercially viable solar power generation and BESS facility that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to Merced County.

5.3 ALTERNATIVE 1: NO PROJECT

5.3.1 Impact Analyses

5.3.1.1 Aesthetics

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped. The visual character and quality of the project site would not change. Therefore, there would be no impact and impacts associated with aesthetics would be less than project development.

5.3.1.2 Agricultural Resources

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow. The no project alternative would result in no conversion of farmland and no physical changes in the environment that could result in the conversion of farmland to non-

agricultural use. Therefore, there would be no impact and impacts associated with agricultural resources would be less than project development.

5.3.1.3 Air Quality

If the no project alternative is implemented, the project would not be constructed or operated, and the project site likely would remain fallow. No related air quality emissions would occur as a result. Therefore, there would be no impact and impacts associated with air quality would be less than project development.

5.3.1.4 Biological Resources

If the no project alternative is implemented, the project would not be constructed or operated, the site likely would remain fallow and undeveloped, and biological resources would not be disturbed. Therefore, there would be no impact and impacts associated with biological resources would be less than project development.

5.3.1.5 Cultural Resources

If the no project alternative is implemented, the project would not be constructed or operated, the site likely would remain fallow and undeveloped, and the potential to encounter known or unknown cultural resources would not occur. Therefore, there would be no impact and impacts associated with cultural resources would be less than project development.

5.3.1.6 Energy

Under the no project alternative, the project would not be constructed or operated; and the project site would likely remain undeveloped. As a result, the fuel and energy expenditure to build and operate the project would not occur; therefore, impacts associated with energy would be less than project development. However, under the no project alternative, there would be no generation of renewable energy to help California meet its RPS Program commitments.

5.3.1.7 Geology and Soils

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped. Therefore, the potential to encounter known or unknown paleontological resources would not occur. The geological setting would not change. Therefore, there would be no impact and impacts associated with geology and soils would be less than project development.

5.3.1.8 Greenhouse Gas Emissions

If the no project alternative is implemented, the project would not be constructed or operated; and no related greenhouse gas emissions would occur as a result. Therefore, impacts associated with GHG emissions would be less than project development. However, there would be no net reduction of GHG emissions consistent with California’s goals of reducing GHG emissions.

5.3.1.9 Hazards and Hazardous Materials

If the no project alternative is implemented, the project would not be constructed or operated; therefore, there would be no potential to release hazardous materials as part of construction and operation. Therefore, there would be no impact and impacts associated with hazards or hazardous materials would be less than project development.

5.3.1.10 Hydrology and Water Quality

If the no project alternative is implemented, the project would not be constructed or operated; therefore, there would be no disturbance to existing hydrology and water quality conditions. Therefore, there would be no impact and impacts associated with hydrology and water quality would be less than project development.

5.3.1.11 Land Use and Planning

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped. Other allowable land uses that could occur in the current zone include agriculture, ranching operations, well drilling, game preserves, public parks and recreation areas, wildlife management, equipment maintenance, on-site energy generation facilities, residence, produce stand, kennel, county or publicly-owned facilities, truck parking, and wireless communication towers. The no project alternative would be a continuation of existing land uses, which would be consistent with the county land use designation and zoning for the property. Therefore, there would be no impact and impacts associated with land use and planning would be less than project development.

5.3.1.12 Noise

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped and would not result in noise impacts to sensitive receptors. Therefore, there would be no impact and impacts associated with noise would be less than project development.

5.3.1.13 Public Services

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped. There would be no new demand for fire or police protection services or other government facilities that would result in the construction of additional public service facilities. Therefore, there would be no impact and impacts associated with public services would be less than project development.

5.3.1.14 Transportation

If the no project alternative is implemented, the project would not be constructed or operated; and the project site would likely remain fallow and undeveloped. There would be no new use of existing roadways

or the need to facilitate access to the project site. Therefore, there would be no impact and impacts associated with transportation would be less than project development.

5.3.1.15 Tribal Cultural Resources

If the no project alternative is implemented, the project would not be constructed or operated; and the potential to encounter known or Tribal cultural resources would not occur. Therefore, there would be no impact and impacts associated with Tribal cultural resources would be less than project development.

5.3.1.16 Utilities and Service Systems

Under the no project alternative, the project would not be constructed, operated and maintained, or decommissioned, and the project site would likely remain fallow and undeveloped. Under the no project alternative, solar arrays and other ancillary facilities would not be constructed on the proposed site. The project site has been subject to a Water Administration Agreement and a Restrictive Covenant Prohibiting Irrigation with San Luis Water District (SLWD) since 2011. As such, surface water would continue to be unavailable for agricultural use on the project site. There would be no impact and impacts associated with utilities and service would be less than project development.

5.3.1.17 Wildfire

If the no project alternative is implemented, the project would not be constructed or operated, and the project site would likely remain fallow and undeveloped. The wildfire severity setting would continue to be the same, and the no project alternative would not exacerbate wildfire risks. Therefore, there would be no impact and impacts associated with wildfire would be less than project development.

Comparison of Impacts

As discussed above and shown in Table 5-1: Project Alternatives Impacts Comparison, the no project alternative would result in less impact to all environmental resource areas. However, there would be no net reduction of GHG emissions consistent with California's goals of reducing GHG emissions. Furthermore, there would be no generation of renewable energy to help California meet its RPS Program commitments under the no build alternative.

Relationship to Project Objectives

As shown in Table 5-2: Project Alternatives Comparison to Project Objectives, the no project alternative would not achieve any of the project objectives, including assisting California in meeting its GHG emissions reduction goals. Although this alternative would create fewer environmental impacts overall, the objectives that shape the project would not be realized under this alternative.

5.4 ALTERNATIVE 2: REDUCED ACREAGE ALTERNATIVE

5.4.1 Impact Analyses

5.4.1.1 Aesthetics

The reduced acreage alternative would result in lesser impacts related to visual character and quality of the project site because the footprint of the solar facility would be reduced by approximately 462 acres, making it a less dominant view. However, the lands surrounding the reduced acreage alternative would continue to remain the same and would consist of fallow agricultural lands, the existing Mercy Springs Substation, and the existing Vega Solar project, with minimal sensitive receptors within viewing distance of the solar facility. Similar to the project, the reduced acreage alternative would change the appearance of the site from an area that is currently fallow agricultural lands to an area that is developed with solar facilities, though to a lesser scale. This change would represent a change in the visual character of the site. However, the quality of the existing view is low or moderately low; and existing utility infrastructure is located within the vicinity. Alternative 2 would have less than significant aesthetics impacts, and impacts associated with aesthetics would be less than project development.

5.4.1.2 Agricultural Resources

The reduced acreage alternative would result in slightly lesser impacts related to agriculture than discussed for the project. The construction and operation of the proposed project would result in conversion of approximately 462 acres of land currently designated under the FMMP as prime farmland to a non-agricultural use. However, as described in Section 4.2 Agricultural Resources, this land does not meet the definition of Prime Farmland as there has not been any agricultural production on the project site for over 10 years. Additionally, the final LESA score for the Project site is 39.86, which means that the Project's conversion of agricultural land is not considered significant. By the time the project is approved for construction, it also is anticipated that no prime farmland will remain on the project site or be affected by construction. Under the reduced acreage alternative, the overall project footprint would be reduced from 650 acres to approximately 186 acres; and the 462 acres of land currently designated as prime farmland would not be impacted by the project and would remain fallow. The reduced acreage alternative final LESA score would be 33.86. Therefore, Alternative 2 would result in less than significant impacts to agricultural and forestry resources, and impacts would be similar to but less than project development.

5.4.1.3 Air Quality

The reduced acreage alternative would result in lesser air quality impacts than the project for construction, maintenance, and decommissioning. Since the reduced acreage alternative would result in a smaller overall facility with a smaller project footprint and lower MW capacity size, this would result in fewer emissions generated during project construction, maintenance, and decommissioning. However, during construction, the reduced acreage alternative could still potentially result in receptors exposed to dust containing *C. immitis* spores, which could lead to Valley Fever infection. As such, Mitigation Measures AQ-1 would still be required to implement a Valley Fever Management Plan. Therefore, air quality impacts under this alternative would be less than significant and the same mitigation measures would apply, but impacts would be less than project development.

5.4.1.4 Biological Resources

Under the reduced acreage alternative, the project footprint would be reduced from 650 acres to approximately 186 acres. This would result in lesser impacts to biological resources within the area. Similar biological resources impacts as discussed under the project development would apply to the reduced acreage alternative, including potential impacts to special-status wildlife species, such as impacts to suitable foraging habitat for Swainson's hawks, impact on burrowing owl nesting and foraging habitat, potential bird interactions with powerlines, potential bird and bat collisions, and impacts resulting from nighttime lighting from operation of the solar facility. Even with the reduced footprint of the project, impacts to special-status species could still occur within the project vicinity. Additionally, operational impacts to birds could occur from collisions with powerlines or other project components or electrocution. As such, Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, and BIO-8 would be implemented.

Similar to the project, no project-level impacts to state or federally protected waters of the U.S., including wetlands, would occur from the implementation of the reduced acreage alternative. Overall, impacts to biological resources under Alternative 2 would be less than significant and the same mitigation measures would apply, but impacts would be less than project development.

5.4.1.5 Cultural Resources

Similar to the project, there are no known historical resources, archaeological resources, or human remains within the reduced acreage alternative site. As with the project, there is still the possibility of undiscovered cultural resources to be encountered at other on-site locations during project construction. Therefore, Mitigation Measures CUL-1 and CUL-2 would be implemented and would require a qualified archaeologist in case of an inadvertent discovery of archaeological resources and Tribal resources within the project area. Further, although unlikely, it is possible that human remains could be discovered during ground-disturbing activities. Mitigation Measure CUL-3 would be required and includes measures to be followed in the event that human remains are discovered during construction of the reduced acreage alterative. Therefore, impacts would be less than significant and similar to project development.

5.4.1.6 Energy

The reduced acreage alternative would have similar but slightly lower demands on energy resources during construction, operation, and decommissioning given the reduced project footprint. Impacts to energy resources would be less than significant and comparable to the project. Although the reduced acreage alternative would contribute to meeting the goals of the RPS Program, it would not provide as much renewable energy as the project. Therefore, impacts would be similar to, but slightly less than project development; however, there would be fewer beneficial effects associated with Alternative 2 as compared to the project because there would be less generation of renewable energy to help California meet its RPS Program commitments and lower capacity for displacement of energy expenditures. Therefore, effects would be greater than the project.

5.4.1.7 Geology and Soils

Under the reduced acreage alternative, impacts related to ground shaking, landslides, soil erosion, and unstable and expansive soils would be similar; however, impacts would be lesser than the project as there would be less ground disturbance and potential for soil erosion than the project development. The reduced acreage alternative would be constructed in the same geographical area as the project, there would be the same likelihood of being subject to ground shaking, landslides, and unstable and expansive soils. A site-specific soils engineering and geologic-seismic analysis would be required for the reduced acreage alternative to determine foundation and structural design requirements.

As required for the project, a Stormwater Pollution Prevention Plan (SWPPP) and compliance with County code would also be required for the reduced acreage alternative in order to prevent erosion and loss of topsoil. The SWPPP would be implemented in accordance with the requirements under the National Pollutant Discharge Elimination Service (NPDES) General Construction Permit and would be implemented throughout construction of the reduced acreage alternative. Further, as required for the project, there is also the possibility that paleontological resources could be discovered during project construction and decommissioning. As such, Mitigation Measures GEO-1, GEO-2, GEO-3, GEO-4, and GEO-5 would be implemented. Therefore, impacts would be less than significant and less than project development.

5.4.1.8 Greenhouse Gas Emissions

The reduced acreage alternative would result in less construction and operational-related GHG emissions because of the reduced footprint of the overall facility. Less construction equipment and construction duration would be required for the reduced acreage alternative, which would mean lower construction GHG emissions from the use of heavy-duty, off-road equipment. However, similar to project development, the reduced acreage alternative would also require the use of circuit breakers that contain SF6 gas, which is a GHG with a high GWP during operation. SF6 is used as an insulator and arc suppressor in the circuit breakers. Under normal operating conditions, the SF6 gas would be contained in the equipment, and emissions to the atmosphere would only occur through a leak in the circuit breaker housing. Like the project, Mitigation Measure GHG-1 would be implemented so that all breakers would have a manufacturers' guaranteed SF6 leakage rate of 0.5 percent per year or less.

Compared to the project, the reduced acreage alternative would result in a lower capacity for displacement of GHG emissions because the total MW capacity would be reduced by 51.6 MW. Reducing the project's renewable energy contribution would offset less GHG emissions and increase the need for other projects in the region to meet demand. As such, impacts related to GHG emissions would be greater under this alternative compared to the proposed project, due to the lower output of energy produced under this alternative, but less than significant.

5.4.1.9 Hazards and Hazardous Materials

The reduced acreage alternative would result in similar but slightly reduced impacts related to hazards and hazardous materials as discussed for the project due to the reduction in the overall project footprint. Because of the reduced footprint, fewer hazardous materials would be needed for construction, operation,

and decommissioning of the project, thus resulting in a reduction in overall impacts. However, because the reduced acreage alternative would require the use of heavy machinery and equipment that could cause sparks, Mitigation Measure HAZ-1 would be implemented to require a fire safety plan for construction, operation, and decommissioning Therefore, impacts would be less than significant and similar to but less than project development.

5.4.1.10 Hydrology and Water Quality

The reduced acreage alternative would result in lesser impacts related to hydrology and water quality, including impacts to water quality standards, groundwater supplies, drainage, runoff, and flooding to that of the project, as there would be less ground disturbance than the project development. A SWPPP would be required for the reduced acreage alternative to decrease erosion and runoff resulting from construction and decommissioning. Similar to the proposed project, the reduced acreage alternative would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Additionally, according to the Federal Emergency Management Agency (FEMA) Flood Map, the reduced acreage alternative site is in an area of minimal flood hazard (Zone X) and does not lie within a 100-year flood zone or any other special flood hazard zones (FEMA 2023). Therefore, impacts would be less than significant and less than project development.

5.4.1.11 Land Use and Planning

Similar to the project, with approval of a CUP, the reduced acreage alternative would also be consistent with the applicable General Plan and Zoning Code goals and policies. Therefore, impacts would be less than significant and similar to project development.

5.4.1.12 Noise

Under the reduced acreage alternative, construction, operational, and decommissioning noise would be similar to the project. However, the reduced footprint of the reduced acreage alternative would result in less overall construction, operational, and decommissioning noise and groundborne vibrations than the project because the reduced acreage alternative would be decreased from 650 acres to approximately 186 acres, resulting in fewer facilities to construct, operate, and decommission. Therefore, impacts would be less than significant and less than project development.

5.4.1.13 Public Services

The reduced acreage alternative would result in similar fire and police protection services impacts since this alternative would be located in the same geographical area for these service providers. The reduced acreage alternative would require slightly less overall fire and police protection services because the overall project footprint would be reduced from 650 acres to approximately 186 acres. A slight reduction in construction workers and overall project duration would be anticipated for this alternative, which would reduce the likelihood that police and fire services are needed; however, the reduced acreage alternative would not require construction of new or altered public services facilities that would result in any significant impacts. Similar to the project, it is not expected that a substantial temporary increase in population would occur that would adversely affect local school populations, park facilities, or local public

facilities, such as post offices, courthouses, and library services. As a result, no significant impacts to schools, parks, or other public services are anticipated to occur as a result of project construction or operation. Therefore, impacts would be less than significant and similar to project development.

5.4.1.14 Transportation

Impacts related to transportation for the reduced acreage alternative would be similar to that of the project; however, due to the reduced overall project footprint under this alternative, there would be a slight reduction in truck trips and overall construction traffic associated with this alternative when compared to the project. The reduced acreage alternative would not result in increased traffic volumes that would significantly affect traffic flows within the local roadways. In addition, there are currently no dedicated pedestrian, bicycle facilities, or transit stops in the immediate vicinity of the reduced acreage alternative or along the surrounding roadways or highways. Therefore, impacts would be less than significant and similar to project development.

5.4.1.15 Tribal Cultural Resources

As discussed for the project, Tribal cultural resources were not identified within the project area, and consultation with Tribes pursuant to AB 52 did not further identify any important Tribal cultural resources within the project area. These results would also apply to the reduced acreage alternative because this alternative would be located within the same geographical area as the project. Further, as discussed under the project, construction activities for this alternative could result in impacts to previously undiscovered Tribal cultural resources prior to mitigation. As such, Mitigation Measures CUL-1, CUL-2, and CUL-3 would be required for this alternative to retain a qualified archaeologist on-site during construction, conduct worker awareness training for cultural Tribal resources, and implement protocols for any inadvertent discoveries of Tribal cultural resources or of unmarked burials during construction. Therefore, impacts would be less than significant and similar to project development.

5.4.1.16 Utilities and Service Systems

The reduced acreage alternative would likely result in slightly less water, wastewater, and solid waste than the project due to the reduced project footprint and MW capacity of the facility. As with the project, wastewater generated by the O&M building would be disposed of through a proposed on-site private septic system consisting of a septic tank and leach field. The on-site septic system would have no connection to the region’s wastewater treatment systems. Non-potable water and potable water for construction and operations would continue to be sourced from the same water suppliers as the proposed project. No mitigation would be required for the reduced acreage alternative, and no impacts beyond what was previously described for the project would occur to utilities and service systems. Therefore, impacts would be less than significant and less than project development.

5.4.1.17 Wildfire

The reduced acreage alternative would be constructed in the same area as the project, but on a smaller footprint and with a shorter construction period. As such, potential for a wildfire to occur would be slightly less than project development. The reduced acreage alternative also would include the gen-tie, similar to

the project. However, the project site is not within a state responsibility area or a very high fire hazard safety zone. Mitigation Measure HAZ-1 and BIO-2 would further reduce impacts. Therefore, impacts would be less than significant and less than project development.

5.4.1.18 Comparison of Impacts

As discussed above and shown in Table 5-1: Project Alternatives Impacts Comparison, the Reduced Acreage Alternative would be reduced in size compared to the project and would generate approximately 23.4 MW of solar energy, due to the proportional reduction in project size; therefore, all construction and operational methods, workforce, and timing for the Reduced Acreage Alternative would be reduced in comparison with the project. Due to the reduced footprint, the Reduced Acreage Alternative would result in less or similar impacts for the majority of environmental issue areas. However, this alternative would result in greater impacts to GHG emissions and energy given its reduced solar energy output and lower capacity for displacement of energy expenditures.

5.4.1.19 Relationship to Project Objectives

As shown in Table 5-2: Project Alternatives Comparison to Project Objectives, the Reduced Acreage Alternative would reduce the project's footprint from approximately 650 acres to 186 acres. The Reduced Acreage Alternative would meet most of the project objectives listed above, although to a lesser degree. This alternative would meet the objective of developing the facility in proximity to an available connection to the existing electrical distribution infrastructure; reducing GHG emissions; assisting the State in meeting RPS goals; and supporting the local economy through jobs and fee revenue. However, because the Reduced Acreage Alternative would be reduced in size compared to the project and would generate approximately 23.4 MW (rather than 75 MW) due to the proportional reduction in project size, it would not assist the state in achieving or exceeding its Renewable Portfolio Standard or GHG emissions reduction objectives to the same extent as the project, and would not assist the state in achieving or exceeding its energy storage mandate to the same extent as the project. Due to the reduction in size, this alternative also would not achieve the project objective of producing and transmitting electricity at a competitive cost to the same extent as the project.

5.5 ALTERNATIVE 3: DISTRIBUTED POWER

5.5.1 Impact Analyses

5.5.1.1 Aesthetics

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. Many rooftop solar PV systems would be fixed-axis systems or would not include the same type of sun-tracking equipment that would be installed for a utility-scale solar PV project and would likely result in slightly greater glare impacts. However, commercial and industrial buildings are typically over 30 feet aboveground and the rooftop solar panels would not be visible from the ground. The result would be minimal aesthetic changes. Additionally, the distributed power alternative would appear consistent with existing uses and would not substantially degrade the existing visual character or quality of public views. Therefore, while glare impacts would be slightly greater, overall, the

distributed power alternative would be less than significant and less than project development as it relates to scenic vistas, scenic resources, and existing visual character and quality.

5.5.1.2 Agricultural Resources

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities and would not impact agricultural resources. Under this alternative, no undeveloped land would be developed or altered. Therefore, there would be no impact and impacts would be less than project development.

5.5.1.3 Air Quality

Construction of the distributed power alternative would result in little or no particulate dust emissions compared to the project, as no undeveloped land would be altered. The exact locations and number of buildings where solar panels would be installed is unknown; therefore, it would be speculative to estimate the vehicle miles traveled for construction and operation when compared to the project. However, it is possible that there would be greater emissions volumes due to the distribution being spread over a larger geographic area than the project and the need for additional truck trips to transport the solar panels, racking systems and associated electrical equipment to dispersed locations. Overall, impacts would be less than significant but similar to project development.

5.5.1.4 Biological Resources

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities, and no undeveloped land would be developed or altered. Given that rooftops of existing commercial and industrial facilities would be used for solar PV system installation, these areas would be unlikely to provide habitat for special-status species. Development of this alternative would not disturb any land or remove habitat for special-status plants and wildlife. In addition, operation of the distributed power alternative would not impact special-status species due to the lack of suitable habitat on the existing rooftops. Therefore, impacts would be less than significant and less than project development.

5.5.1.5 Cultural Resources

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities or buildings, and no undeveloped land would be developed or altered. There would be no impact on unknown buried cultural resources. However, the historical status of the existing facilities or buildings would need to be confirmed and evaluated in accordance with the County policies and procedures for historical resource preservation as outlined in the Merced County Recreation and Cultural Resource Element of the General Plan. This would avoid potential cultural resource impacts and historic resources. Therefore, impacts would be less than significant and slightly greater than project development.

5.5.1.6 Energy

The exact locations and number of buildings solar panels would be installed on is unknown; therefore, the construction energy demand from equipment and vehicles is unknown. However, construction of this alternative may require a trucks trips to transport and install the solar panels on the rooftops of existing buildings in dispersed locations. Operational energy and fuel expended would be less than the project, as the facilities where the rooftop solar would be implemented would already be constructed. Overall, impacts would be less than significant. Additionally, the distributed power alternative would not contribute to meeting the goals of the RPS Program, as it would be for on-site use only and there would be lower capacity for displacement of energy expenditures. No BESS would be available to store the unused solar energy; therefore, the solar power could only be used during daylight hours.

5.5.1.7 Geology and Soils

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. Although the geologic setting would be the same as the project, the distributed power alternative would not increase seismic hazard risks to people or structures because it would be using buildings that already conform to the California Building Code and other state and local requirements. Therefore, impacts would be less than significant and less than project development.

5.5.1.8 Greenhouse Gas Emissions

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. This alternative would not generate GHG emissions from off-road equipment, but a significant number of truck trips may be required to transport solar panels to dispersed rooftop locations. Additionally, 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 proposed project. Further, this alternative would have less or no 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 proposed project. Therefore, while impacts would be less than significant, impacts would be greater than project development due to the lower efficiency of the distributed system.

5.5.1.9 Hazards and Hazardous Materials

The distributed power alternative would require small amounts of hazardous materials at each installation location, as needed, for operation or maintenance of the panels. Because of the distributed footprint, it is possible that there would be greater impacts related to hazardous materials needed for construction, operation, and decommissioning of the project due to the distribution being spread over a larger geographic area than the project and the need for additional truck trips, workers, materials, and fuel, thus resulting in an increase in overall impacts. Similar to the project, the materials would be required to be stored and handled consistent with state and local regulations designed to reduce potential impacts. Therefore, impacts would be less than significant and slightly greater than project development.

5.5.1.10 Hydrology and Water Quality

The distributed power alternative would develop small to medium solar PV systems on existing impervious surfaces of commercial and industrial facilities. No undeveloped land would be developed or altered. Therefore, this alternative would not alter drainage, stormwater volumes, disturb soil surfaces, or increase potential for pollutants into storm water runoff and it likely would require less water for construction. Therefore, impacts would be less than significant and less than project development.

5.5.1.11 Land Use and Planning

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. Discretionary approvals may be required. Construction, operation, and decommissioning of the distributed power alternative would occur in accordance with applicable plans, policies, and regulations of the local jurisdictions, similar to the project. Therefore, impacts to land use would be less than significant and similar to project development.

5.5.1.12 Noise

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities and would result in construction noise at different sites throughout Merced County. Construction would take place in accordance with Chapter 10.60, Noise Control, of the Merced County Code noise regulations. The duration of construction noise would be minimal and would not require earthmoving equipment. However, construction would result in greater impacts to sensitive receptors as it would require separate installation efforts in a wide variety of locations. Therefore, impacts would be less than significant but greater than project development.

5.5.1.13 Public Services

The distributed power alternative would develop small to medium solar PV systems on commercial or industrial building locations within urban areas. Police, fire, and emergency medical services could be provided with shorter response times as the services would likely be located closer than the project; however, the distributed power alternative would not require construction of new or altered public services facilities that would result in any significant impacts. The distributed power alternative would not impact growth and would not result in the need for additional public services. Therefore, impacts would be less than significant and similar to project development.

5.5.1.14 Transportation

The distributed power alternative would generate trips during construction and operation; however, the trips would be dispersed throughout Merced County and would not be concentrated within a singular site as with the project. Local labor would be used to the maximum extent practicable. Additionally, because the increase in VMT related to construction is short-term, temporary, and localized, project construction is not anticipated to result in long-term, permanent changes to the surrounding vehicle transportation system. Similar to the project, the distributed power alternative is not a traditional land use project; therefore, during construction it is not anticipated that it would generate VMT on a regular basis and

would not increase VMT as it would be constructed on existing buildings. Impacts would be less than significant and similar to the project.

5.5.1.15 Tribal Cultural Resources

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. No undeveloped land with potential for Tribal cultural resources would be developed or altered. Therefore, impacts would be less than significant and less than project development.

5.5.1.16 Utilities and Service Systems

The distributed power alternative would potentially require more water than the project to clean the panels during construction because they would be spread over multiple locations. However, they would not require water for dust control during construction or for the operation and maintenance (O&M) building. The distributed power alternative would not require sewer or wastewater infrastructure associated with the project ancillary facilities. The distributed power alternative would have less than significant impacts and less of an impact than the project due to reduced water, sewer, and wastewater demand.

5.5.1.17 Wildfire

The distributed power alternative would develop small to medium solar PV systems on existing commercial and industrial facilities. The exact locations and number of buildings where solar panels would be installed is unknown; however, the high fire hazard severity zones are mostly in rural areas and unlikely to include industrial or commercial facilities in urban areas (CAL FIRE 2023). Additionally, most of the local responsibility areas are not zoned or moderate (CAL FIRE 2007). During construction, the distributed power alternative would comply with existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Therefore, impacts would be less than significant.

The distributed power alternative would reduce potential risks from wildland fire compared to the project because PV systems would be placed on buildings located within urban settings where risks from wildland fire or risks of creating wildland fires would be reduced, there would be more proximity to public services, and the fire risks would be removed since there is no battery energy storage component. Therefore, impacts would be less than significant and less than project development.

5.5.1.18 Comparison of Impacts

As discussed above and shown in Table 5-1: Project Alternatives Impacts Comparison, the distributed power alternative would result in less impacts or similar impacts in most environmental issue areas. However, this alternative could result in greater impacts to noise and GHG emissions due to the potential for more construction near sensitive receptors and the lower efficiency of the distributed system. In addition, distributed power alternative would not contribute to meeting the goals of the RPS Program, as it would be for on-site use only and there would be lower capacity for displacement of energy expenditures.

5.5.1.19 Relationship to Project Objectives

As shown in Table 5-2: Project Alternatives Comparison to Project Objectives, this alternative would partially satisfy the project objective of assisting California in meeting its GHG emissions reduction goals. However, energy storage (a component of the project) would not be constructed under this alternative and would not meet the energy storage objective of the project. The alternative would not achieve other project objectives, including utilizing existing transmission infrastructure to minimize costs. It is also unlikely the alternative would have an average insolation value similar to or greater than that of the project site given the lack of efficiency of rooftop solar compared to solar tracking technology. Additionally, there are some drawbacks to this alternative that include, but are not limited to, those listed below.

- Energy storage would not be included, and the alternative would not provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate.
- The system would not likely be built out within a timeframe that would be similar to that of the project.
- Given the distributed nature of such a network of facilities, construction, management, and maintenance would not be as efficient, and total capital costs would likely be higher.
- The project proponent does not have immediate control or access to potential urban sites that could accommodate facilities to generate the solar power.
- A distributed system on the scale of the project may be cost-prohibitive to implement due to reduced cost efficiency of distributed solar.

This alternative theoretically has the potential to generate of up to 75 MW of electricity, but the electricity would be used on the sites generating the power and would not achieve the project objective of assisting California in meeting its obligations under California's RPS Program. Given the size of the project, the project objectives, and the need to arrange a suitable assemblage of participating commercial and industrial properties, it may be impractical and infeasible to propose a distributed generation project of this type and still proceed within a reasonably similar timeframe.

5.6 CONCLUSION

The qualitative environmental effects of each alternative in relation to the project are summarized in Table 5-1. Table 5-2 summarizes the consistency of each alternative with the project objectives.

Table 5-1. Project Alternatives Impacts Comparison

Environmental Resource Area	Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Distributed Power (Alternative 3)
Aesthetics	Impacts determined to be less than significant.	Less impact than the project.	Less than the project.	Less impact than the project.

Environmental Resource Area	Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Distributed Power (Alternative 3)
Agricultural Resources	Impacts determined to be less than significant.	Less impact than the project.	Less impact than the project.	Less impact than the project.
Air Quality	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Similar impact as the project.
Biological Resources	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Less impact than the project.
Cultural Resources	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Similar impact as the project.	Slightly greater impact than the project.
Energy	Impacts determined to be less than significant.	Less impact than the project, but fewer beneficial impacts.	Greater impact than the project.	Greater impact than the project.
Geology and Soils	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Less impact than the project.
Greenhouse Gas Emissions	Impacts determined to be less than significant with mitigation incorporated.	Greater impact to project.	Greater impact than the project.	Greater impact than the project.
Hazards and Hazardous Materials	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Slightly greater impact than the project.
Hydrology and Water Quality	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Less impact than the project.
Land Use	Impacts determined to be less than significant.	Less impact than the project.	Similar impact as the project.	Similar impact as the project.

Environmental Resource Area	Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Distributed Power (Alternative 3)
Noise	Impacts determined to be less than significant.	Less impact than the project.	Less impact than the project.	Greater impact than project.
Public Services	Impacts determined to be less than significant.	Less impact than the project.	Similar impact as the project.	Similar impact as the project.
Transportation	Impacts determined to be less than significant.	Less impact than the project.	Similar impact as the project.	Similar impact as the project.
Tribal Cultural Resources	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Similar impact as the project.	Less impact than the project.
Utilities	Impacts determined to be less than significant.	Less impact than the project.	Less impact than the project.	Less impact than the project.
Wildfire	Impacts determined to be less than significant with mitigation incorporated.	Less impact than the project.	Less impact than the project.	Less impact than the project.

Notes:
GHG = greenhouse gas

Table 5-2. Project Alternatives Comparison to Project Objectives

Project Objectives	Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Distributed Power (Alternative 3)
Construct and operate a solar PV power-generating and BESS facility capable of producing and transmitting up to 75 MW of renewable energy in a cost-competitive manner.	Meets objective; would generate approximately 75 MW.	Does not meet objective; no energy produced.	Does not meet objective to same degree as the project; would generate approximately 23.4 MW.	Partially meets objective; would generate approximately 75 MW. However, it would be for on-site use only, no BESS would be available to store the unused solar energy, and total costs would be higher.

Project Objectives	Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Distributed Power (Alternative 3)
Locate a power-generating and BESS facility in proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure.	Meets objective; interconnection would occur.	Does not meet objective; no interconnection would occur.	Meets objective; interconnection would occur.	Does not meet objective; no interconnection would occur.
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) by developing and constructing a new solar power generation facility.	Meets objective; would generate renewable energy.	Does not meet objective; no energy produced.	Meets objective but not to the same extent as the project; would generate renewable energy.	Does not meet objective. Would generate renewable energy, but would not contribute to the state RPS target through interconnection to the electrical grid.
Assist California in reducing its greenhouse gas (GHG) emissions as required by the California Global Warming Solutions Act.	Meets objective; would generate renewable energy and reduce greenhouse gas emissions.	Does not meet objective; no energy produced or storage capacity.	Meets objective but not to the same extent as the project; would generate renewable energy and reduce greenhouse gas emissions.	Meets objective but not to the same extent as the project; would generate renewable energy and reduce greenhouse gas emissions.
Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).	Meets objective; would construct a solar power and energy storage facility capable of generating 75 MW of electricity.	Does not meet objective; no energy produced or storage capacity.	Meets objective but not to the same extent as the project; would include up to 23.4 MW of energy storage capacity.	Does not meet objective; it would be for on-site use only and no BESS would be available to store the unused solar energy.
Develop a commercially viable solar power generation and BESS facility that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to Merced County.	Meets objective; would provide jobs during construction and operation.	Does not meet objective; no created renewable energy-related job opportunities.	Meets objective but not to the same extent as the project; would provide jobs during construction and operation.	Meets objective; would provide jobs during construction and operation.

Key:
CAISO = California Independent System Operator; MW = megawatt; RPS = Renewable Portfolio Standard

5.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) requires an EIR to identify an "environmentally superior alternative." The qualitative environmental effects of each alternative in relation to the project are summarized in Table 5-1. Alternative 1, the no project alternative, would be environmentally superior to the project on the basis of its minimization or avoidance of physical environmental impacts. However, CEQA Guidelines Section 15126.6(e)(2) indicates that "if the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify the environmentally superior alternative among the other alternatives." Because the no project alternative cannot be the Environmentally Superior Alternative under CEQA, the Environmentally Superior Alternative is considered to be Alternative 3: Distributed Power.

Identification of the "environmentally superior alternative" is an informational procedure, and the alternative selected may not be the alternative that best meets the project objectives. As shown in Table 5-2, Alternative 3 would have fewer impacts on resources than the project as it would be developed on existing commercial and industrial buildings rather than undeveloped land. However, 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 3. Further, impacts related to GHG emissions and noise would be greater under this alternative due to the potential for significant truck trips associated with solar panel delivery and the lower efficiency of the distributed systems and construction located closer to more sensitive receptors. The alternative also would not include energy storage. Alternative 3 also would not locate a power-generating and BESS facility in proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure, 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), or provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandate (AB 2514).

It is also important to note that it may be impracticable and infeasible to construct the Distributed Power Alternative within the same timeframe and/or with the same efficiency as the project because the project proponent lacks control and access to the sites required to develop 75 MW of distributed solar generated electricity. Nonetheless, because this alternative reduces impacts to a greater degree than the Reduced Acreage Alternative, the Distributed Power Alternative is considered the Environmentally Superior Alternative.

6.0 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the CEQA Guidelines requires that an EIR contain a brief statement disclosing why various possible significant effects were not discussed in detail in the EIR. The County has analyzed potential impacts in each of the resource areas identified in the CEQA Guidelines Appendix G; however, there are some resources that are not present in the relevant area, or that would not be affected by implementation of the Project. This section provides a brief description of why the Project would result in no impact to Population and Housing, Mineral Resources, and Recreation; therefore, there are no associated sections in the EIR for these resources.

6.1 POPULATION AND HOUSING

Would the project 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)?

The Project does not propose new homes that would create unplanned growth or the extension of roads or other infrastructure that could indirectly induce unplanned population growth. The Project would generate temporary construction jobs that would be expected to be filled by the local workforce. During operation, the Project would employ approximately 10 full-time employees for facility operation and up to 10 part-time employees for occasional maintenance on the site. These employees would be drawn from the local labor force and are expected to commute to the Project site from nearby urban areas, such as Fresno, Madera, and Merced, and would not induce unplanned population growth. Therefore, the Project would not induce substantial population growth in the area.

Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Project site does not contain any residential uses or existing housing, and no residential uses are included in the Project. Because there are no existing residences on the Project site, no houses or people would be displaced through the development and decommissioning of the Project. The Project would generate temporary construction jobs that would be expected to be filled by the local workforce and not require the construction of new housing. If temporary housing should be necessary, it is expected that accommodations would be available in the nearby communities. According to the 2020 US Census, housing occupancy in Merced County had a rental vacancy rate of 3.9 percent (U.S. Census Bureau 2020). Additionally, numerous hotels and RV parks are located within the region. Therefore, it is reasonable to assume that the demand for temporary accommodation needs during construction would be met by existing housing and lodging in the region, and no new housing would be needed. The Project would not have the potential to displace people or housing or require the construction of housing elsewhere.

6.2 MINERAL RESOURCES

Would the Project 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?

According to the 2030 Merced County General Plan, the mineral resources in Merced County are primarily sand and gravel mining. Six mapped mining operations are located within 10 miles of the Project site. The closest surface mine is located approximately 1 mile southwest of the Project site, across I-5 (California Department of Conservation, 2023). No Project-related impacts to mineral resources are anticipated.

Would the Project 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 installation and operation of the solar facilities would not preclude future mineral resource development (if any), nor would it result in the loss of a locally important mineral resource recovery site. Therefore, the Project would not result in a loss of a locally important mineral resource site in a general plan or other land use plan, and no Project-related impacts to mineral resources are anticipated.

6.3 RECREATION

Would the Project 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?

See Section 6.1 Population and Housing. Since no new residential housing is proposed, the Project would not result in substantial direct or indirect population growth that 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. As indicated in Section 6.1, during construction, additional workers would be on-site and would likely be sourced from nearby communities, so the usage of recreational facilities may increase slightly but not substantially. Workers are not anticipated to visit or use local parks or recreation facilities during the workday. Therefore, no Project-related impacts associated with recreational facilities are anticipated.

Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project is a solar construction project and does not include the construction or expansion of recreational facilities. As stated above, the Project would not result in substantial direct or indirect population growth that would require the construction or expansion of parks or other recreational facilities. Therefore, no Project-related impacts associated with recreational facilities are anticipated.

7.0 OTHER CEQA CONSIDERATIONS

This section describes other statutorily required topics including growth-inducing impacts, significant and unavoidable impacts, significant irreversible environmental changes, and mandatory findings of significance. It also provides a discussion of energy conservation as required by Section 15126.2 of the California Environmental Quality Act (CEQA) Guidelines in Section 7.3.

7.1 Growth-Inducing Impacts

Section 15126.2(e) of the CEQA Guidelines requires that an Environmental Impact Report (EIR) evaluate the growth-inducing impacts of a proposed action. A project is identified as growth inducing if it "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Growth-inducing impacts can occur when development of a project imposes new burdens on a community by directly inducing population growth or by leading to the construction of additional development in the project area. Also included in this category are projects that would remove physical obstacles to population growth, such as the construction of a new roadway into an undeveloped area or a wastewater treatment plant with excess capacity to serve additional new development. Construction of these types of infrastructure projects cannot be considered isolated from the immediate development that they facilitate and serve. Projects that physically remove obstacles to growth or projects that indirectly induce growth are those that may provide a catalyst for future unrelated development in the area (such as a new residential community that requires additional commercial uses to support residents). The growth-inducing potential of a project could also be considered significant if it fosters growth in excess of what is assumed in the local master plans and land use plans or in projections made by regional planning agencies.

Potential growth-inducing components of the Project addressed in this section relate to employment and population growth, increased power generation and regional population growth, and increased transmission capacity that serves renewable power development.

7.1.1 Employment and Population Growth

7.1.1.1 Construction Workforce

Construction of the Zeta Solar and Battery Energy Storage System Project (Project) is expected to require between 40 to 50 workers per day, with a maximum of 150 workers per day. An average of 40 workers per day is expected for the commissioning period of construction. These employees would be drawn from the local labor force and are expected to commute to the Project site from nearby urban areas, such as Fresno, Madera, and Merced, and would not induce unplanned population growth. The Project would generate temporary construction jobs that would be expected to be filled by the local workforce and not require the construction of new housing. If temporary housing should be necessary, it is expected that accommodations would be available in the nearby communities. According to the 2020

US Census, housing occupancy in Merced County had a rental vacancy rate of 3.9 percent (U.S. Census Bureau 2020). Additionally, numerous hotels and RV parks are located within the regional area. Therefore, it's reasonable to assume that the demand for temporary accommodations during construction would be accommodated by existing housing in the region, and no new housing would be needed.

The County had a labor force of 116,100 workers and an unemployment rate of 8.6 percent in September 2023 (EDD 2023). A maximum of 150 workers, if all hired from within the county, would represent approximately 0.001 percent of the total labor force, although the construction workers are also expected to come from the surrounding areas. The construction phase would last over 24 consecutive months and would not trigger additional population growth in the area.

7.1.1.2 Operational Workforce

Once operational, the Project would employ up to 10 full-time employees and up to 10 part-time employees for occasional maintenance on the site. The operational workforce is expected to commute to the site from local communities. Although accommodations should not be required, there is adequate housing available without necessitating the need for new housing. Therefore, Project operation would not result in new growth in the area relating to the potential population increase.

There would be no new growth in employment and housing in the area from new restaurants, mobile home parks, convenience stores, or other services that would serve the workers during Project construction, because existing facilities in the region would be adequate to accommodate both the construction and operations workforces.

7.1.2 Increased Power Generation

While the Project would contribute to energy supply, which indirectly supports population growth, the development of the Project is responding to the state's need for renewable energy to meet its Renewable Portfolio Standards (RPS) and increasing sources of renewable energy being produced locally in the County. Unlike a gas-fired power plant, the Project is not being developed as a source of base load power in response to growth in demand for electricity. The Project would not induce new growth. Power generated by the Project would be delivered directly via the California Independent System Operator (CAISO) electrical transmission system and would provide Merced County, as well as the State of California, with a renewable energy source that would assist the State of California in complying with the RPS under Senate Bill (SB) 100 and other similar renewable and reliability programs in the state.

County planning documents permit and anticipate a certain level of growth and energy use growth. The purpose of the Merced County General Plan and Zoning Ordinance is to address this anticipated growth. The anticipated growth drives energy production projects, not vice versa. The Project would supply energy to accommodate and support existing County and Pacific Gas and Electric (PG&E) customers' energy demands, but it would not foster any new growth for the following reasons: (1) the additional energy would be used to ease the burdens of meeting existing statewide energy demands within and beyond the Project area; (2) the energy would be used to support already-projected growth; and (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis.

7.1.3 Increased Transmission Capacity

The development of the Project would include an onsite substation and a new 70-kilovolt (kV) overhead gen-tie line, which would extend approximately 1,700 feet north from the Project substation to the Mercy Springs Substation, which is the Project point of interconnection to the grid. This connection is described in detail in Section 2, Project Description. The Mercy Springs Substation is owned and operated by PG&E. PG&E would incorporate upgrades to Mercy Springs Substation to support interconnection of the gen-tie line, including installation of a new circuit breaker and additional switches. PG&E's improvements would occur within areas previously disturbed and occupied by existing electrical facilities. PG&E is an investor-owned utility, regulated by the California Public Utilities Commission (CPUC). The utility's transmission system is operated by the CAISO under regulations established by the Federal Energy Regulatory Commission. When an electricity generator requests use of PG&E's transmission facilities, PG&E is required to provide access after completion of power flow and cost studies. The CPUC evaluates each PG&E project to ensure that its need and costs are justified and appropriate, and that financial effects on California electricity ratepayers are appropriate. Any transmission system upgrades that are required as a result of other solar projects would need to be evaluated by the CPUC in accordance with CEQA as a part of the CPUC permitting process. Upgrades to Mercy Springs Substation would be to support the Project interconnection and would not facilitate additional capacity. Therefore, the Project is not expected to be large enough to induce the development of other large solar projects and population growth in the region.

7.2 Significant and Unavoidable Impacts

CEQA Guidelines Section 15126.2(c) requires an EIR to "describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described."

Section 4.0, Environmental Impact Analysis, provides a description of the potential environmental impacts of the Project and recommends Mitigation Measures to reduce impacts to a less than significant level where possible. All impacts could be reduced with the implementation of mitigation measures to a less-than-significant level.

As described in Section 4.0, Environmental Impact Analysis, the Project would have no significant and unavoidable Project or cumulative impacts. Therefore, a Statement of Overriding Considerations is not required.

7.3 Significant Irreversible Environmental Changes

Section 15126.2(d) of the CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of the Project. Irretrievable commitments of resources should be evaluated to ensure that such consumption is justified. Irreversible impacts can result from loss of habitat of sensitive biological resources, change in land use, damage caused by environmental accidents associated with Project construction or operation, or damage to cultural or paleontological resources.

Construction of the Project would require a permanent commitment of natural resources from the direct consumption of fossil fuels, construction materials, and energy required for the production of materials, as well as the manufacture of new components. During operation, oil, gas, and other fossil fuels and nonrenewable resources would be consumed, primarily in the form of vehicle fuel consumption for project employees. However, as discussed in Section 4.6, Energy, the Project would consume a minimal amount of energy per year, and the Project's energy generation would more than offset the minimal amount of energy consumed to operate the Project. Therefore, the total power generation would offset the Project's total energy consumption. Additionally, at the end of the Project's life, the photovoltaic (PV) panels and remaining Project components would be resold or recycled. Poured concrete pads would be removed and recycled or reused as clean fill (see Section 2, Project Description). Thus, the Project would not result in the inefficient, wasteful, or unnecessary use of energy during Project construction or operation.

Construction and operation of the Project would require the use of a limited amount of hazardous materials, such as fuel, lubricants, and cleaning solvents. All hazardous materials would be stored, handled, and used in accordance with applicable federal, state, and local regulations. The Applicant would be required to develop and comply with a Stormwater Pollution Prevention Plan as well as Best Management Practices. Appropriate implementation of these plans and practices would reduce the potential for environmental accidents associated with the Project to less-than-significant levels. The Project is not expected to result in environmental accidents that would cause irreversible damage.

The primary objective of the Project is to construct and operate a solar PV and battery energy storage system power-generating facility capable of producing and transmitting up to 75 megawatts of renewable energy in a cost-competitive manner. Other objectives include locating a power-generating facility in close proximity to existing CAISO high-voltage electrical transmission infrastructure to reduce impacts and costs associated with building new transmission infrastructure and assisting the State of California in achieving or exceeding its RPS and assisting in reducing greenhouse gas (GHG) emissions. Assisting with the RPS would help California meet its renewable energy goals, which have been developed to reduce the effects of global climate change and GHG emissions. The Project would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. As discussed above, resources that would be consumed as a result of Project implementation include fossil fuels during construction and operations; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources over the long-term. Compliance with all applicable building codes as well as County policies and the Mitigation Measures identified in this EIR would ensure that natural resources are conserved to the extent feasible.

7.4 Significant Effects That Cannot Be Avoided

7.4.1 Significant Direct Effects

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. Potential environmental effects of the Project and proposed Mitigation Measures are discussed in detail in Section 4.0, Environmental Impact Analysis. For all resource areas, the Project would have no impact, no

significant impact, or less than significant impacts with mitigation incorporated. The Project would have no significant and unavoidable direct impacts.

7.4.2 Significant Cumulative Effects

According to Section 15355 of the State CEQA Guidelines, the term cumulative impacts "refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual impacts that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the impacts could be cumulatively considerable.

The cumulative scenario and analysis methodology are included in Section 4.0, Environmental Impact Analysis. This EIR has considered the potential cumulative impacts of the Project for each issue area in Sections 4.1 through 4.17. Impacts of the Project are cumulatively considerable when they are combined with impacts from past, present, and reasonable future projects. The Project would have no significant and unavoidable cumulative impacts.

8.0 LIST OF PREPARERS

LEAD AGENCY

County of Merced

Department of Community and Economic Development

Deputy Director of Planning ..... Tiffany Ho

CONSULTANT

Stantec Consulting Services, Inc.

Senior Environmental Planner ..... Caitlin Schroeder
Senior Environmental Planner ..... Caitlin Barns
Environmental Planner ..... Danielle Althaus
Environmental Planner ..... Jennifer Webster
Environmental Planner ..... Logan Cullums
Soil Scientist ..... James Witty
Air Quality and Climate Change Consultant ..... Briette Shea
Air Quality Specialist ..... Kaitlyn Heck
Associate Ecologist ..... Jennifer Chase
Associate Biologist ..... Scott Elder
Associate Archaeologist ..... Jenna Santy
Senior Archaeologist ..... Erin Sherlock
Senior Botanist/Wetland Specialist ..... Sheryl Creer
Environmental Planner ..... Chelsea Quintero
Senior Transportation Planner ..... Sandhya Perumalla
Principal Transportation Planner ..... Daryl Zerfass
Environmental Noise Analyst ..... Tracie Ferguson
GIS ..... Paul Glendening
Technical Editor/Word Processor ..... Sylvia Langford
Senior Environmental Planner/Scientist ..... Melanie Greene

APPLICANT TEAM

Longroad Development Company, LLC

Director of Environmental Permitting ..... Deron Lawrence
Lead Developer ..... Emily McCrorie
Project Developer ..... Laren Cyphers
Environmental Manager ..... Lindsey Kester

9.0 REFERENCES

9.1 ALTERNATIVES

NREL (National Renewable Energy Laboratory). 2017. Wind Resources of the United States – Annual Average Wind Speed at 100 Meters above Surface Level. Available online at: https://www.nrel.gov/gis/assets/images/wtk-100m-2017-01.jpg. Accessed September 2023.

9.2 ENVIRONMENTAL IMPACT ANALYSIS

Caltrans (California Department of Transportation). 2023. District 10 Current Projects. Available online at: https://dot.ca.gov/caltrans-near-me/district-10/district-10-current-projects. Accessed July 2023.

Merced County. 2023. Environmental Documents. Available online at: https://www.countyofmerced.com/414/Environmental-Documents. Accessed July 2023.

9.3 AESTHETICS

Caltrans (California Department of Transportation). 2022. California State Scenic Highways. Available online at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed October 2022.

FHWA (Federal Highway Administration). 1988. Visual Impact Assessment for Highway Projects. (FHWA-HI88-054.)

FHWA (Federal Highway Administration). 2015. Guidelines for the Visual Impact Assessment of Highway Projects. (FHWA-HEP-15-029.)

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId= . Accessed October 2022.

9.4 AGRICULTURE AND FORESTRY RESOURCES

DOC (California Department of Conservation). 1997. California Agricultural Land Evaluation and Site Assessment Model Instruction Manual. Available online at: am https://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx

DOC (California Department of Conservation). 2018. Merced County Historic Land Use Conversion. Available online at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/Merced.aspx. Accessed June 2023.

DOC (California Department of Conservation). 2023a. Williamson Act Program Overview. Available online at: https://www.conservation.ca.gov/dlrp/wa/Pages/wa_overview.aspx. Accessed May 2023.

DOC (California Department of Conservation). 2023b. Farmland Mapping and Monitoring Program – Program Overview. Available online at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/Program_Overview.aspx. Accessed May 2023.

Kisko, Michael. 2023. Personal communication with California Department of Conservation Environmental Scientist Michael Kisko, February 24, 2023

Merced County. 2013a. 2030 Merced County General Plan Update Recirculated Draft Program Environmental Impact Report. Available online at: https://web2.co.merced.ca.us/pdfs/planning/generalplan/RecirculatedDraft/complete_mcgpu_rdpeir.pdf. Accessed June 2023.

Merced County. 2013b. 2030 Merced County General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2023. Merced County GIS Information Portal. Available online at: https://geostack-mercedcounty.opendata.arcgis.com/. Accessed June 2023.

USDA (United States Department of Agriculture). 1990. Soil Conservation Services. Soil Survey of Merced County, California, Western Part. Accessed December 2023.

9.5 AIR QUALITY

CARB (California Air Resources Board). 2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available online at: http://forms.cupertino.org/inc/pdf/SR85/Exhibit%20G%20-%20CARB%20Air%20Quality%20and%20Land%20Use%20Handbook%202005.pdf. Accessed January 2023.

CARB (California Air Resources Board). 2016. Ambient Air Quality Standards. Available online at: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed September 2022.

CARB (California Air Resources Board). 2019a. On-Road Heavy-Duty Current Standards, Test Procedures and Regulatory Documents. Available online at: ww3.arb.ca.gov/msprog/onroadhd/onroadhd.htm. Accessed September 2022.

CARB (California Air Resources Board). 2019b. CARB Truck Rule Compliance Required for DMV Registration. Available online at: https://ww2.arb.ca.gov/sites/default/files/truckstop/pdfs/sb1_faqeng.pdf. Accessed September 2022.

CARB (California Air Resources Board). 2022a. iADAM: Air Quality Data Statistics. Available online at: https://www.arb.ca.gov/adam. Accessed September 2022.

CARB (California Air Resources Board). 2022b. Overview: Diesel Exhaust & Health. Available online at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed September 2022.

CDC (Centers for Disease Control and Prevention). 2020. Valley Fever (*Coccidioidomycosis*). Available online at: https://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html. Accessed September 2022.

Merced County. 2013. 2030 Merced County General Plan. Available online at: https://countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed October 2022.

PG&E (Pacific Gas and Electric Company). 2022. Pacific Gas and Electric Company Climate Goals. Available online at: https://www.pge.com/content/dam/pge/docs/about/corporate-responsibility-and-sustainability/pge-climate-goals-fact-sheet.pdf. Accessed August 2023.

SJVAPCD (San Joaquin Valley Air Pollution Control District). 2005. Final Draft Staff Report. Available online at: https://ww2.valleyair.org/media/ud3dmcok/rule_9510_staffreport.pdf. Accessed July 2023.

SJVAPCD (San Joaquin Valley Air Pollution Control District). 2015. Guidance for Assessing and Mitigating Air Quality Impacts. Available online at: https://www.valleyair.org/transportation/GAMAQI.pdf. Accessed September 2022.

SJVAPCD (San Joaquin Valley Air Pollution Control District). 2022. Ambient Air Quality Standards & Valley Attainment Status. Available online at: http://valleyair.org/aqinfo/attainment.htm. Accessed September 2022.

USEPA (U.S. Environmental Protection Agency). 2022a. Criteria Air Pollutants. Available online at: https://www.epa.gov/criteria-air-pollutants?msclkid=402121eaa62811ec9f3a5e32e281714a. Accessed September 2022.

USEPA (U.S. Environmental Protection Agency). 2022b. Lead. Available online at: https://www.epa.gov/lead. Accessed September 2022.

USEPA (U.S. Environmental Protection Agency). 2023. NAAQS Table. Available online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed March 2023.

USGS (U.S. Geological Survey). 2011. Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California. Available online at: https://pubs.usgs.gov/of/2011/1188/. Accessed July 2023.

9.6 BIOLOGICAL RESOURCES

APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C., and Sacramento, CA. Available online at: https://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf. Accessed August 2023.

APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. October 2012. Available online at: http://www.aplic.org/uploads/files/11218/Reducing_Avian_Collisions_2012watermarkLR.pdf. Accessed June 2023.

Billerman, S.M., B.K. Keeney, P.G. Rodewald, and T.S. Schulenberg, eds. 2021. *Birds of the World*. Cornell Laboratory of Ornithology, Ithaca, New York. Available online at https://birdsoftheworld.org/bow/home. Accessed October 2021.

Brattstrom and Warren. 1953. San Joaquin Coachwhip - *Coluber flagellum ruddocki.* Accessed online at: https://californiaherps.com/snakes/pages/c.f.ruddocki.html. Accessed July 2023.

CDFW (California Department of Fish and Wildlife). 2012. Staff Report on Burrowing Owl Mitigation. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843. Accessed August 2024.

CDFW (California Department of Fish and Wildlife). 2016. Five Year Status Review for Swainson's Hawk (Buteo swainsoni). Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133622&inline. Accessed August 2024.

CDFW (California Department of Fish and Wildlife). 2023a. California Natural Diversity Database. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed June 2023.

CDFW (California Department of Fish and Wildlife). 2023b. Special Animals List. CDFW, CNDDB. Periodic Publication. 66 pp. Updated July 2023. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals. Accessed July 2023.

CDFW (California Department of Fish and Wildlife). 2023c. California Sensitive Natural Communities List. Updated June 2023. Available online at: https://wildlife.ca.gov/data/VegCAMP/Natural-Communities/Background#sensitive%20natural%20communities. Accessed June 2023.

CDFW (California Department of Fish and Wildlife). 2023d. Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline. Accessed August 2023.

CDFW (California Department of Fish and Wildlife). 2023e. Special Vascular Plants, Bryophytes, and Lichens List. CDFW, CNDDB. Periodic Publication. 127 pp. Updated July 2023. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals. Accessed July 2023.

Center for Biological Diversity, Defenders of Wildlife, Burrowing Owl Preservation Society, Santa Clara Valley Audubon Society, Urban Bird Foundation, Central Valley Bird Club, and San Bernardino Valley Audubon Society. 2024. Petition to List California Populations of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as Endangered or Threatened Under the California Endangered Species Act. Available online at https://fgc.ca.gov/CESA. Accessed May 2024.

CNPS (California Native Plant Society). 2023a. Inventory of rare and endangered plants of California. Available online at: https://rareplants.cnps.org/Search/Advanced. Accessed June 2023.

CNPS (California Native Plant Society). 2023b. A Manual of California Vegetation, Online Edition. Available online at: http://vegetation.cnps.org. Accessed June 2023.

Cornell University. 2023. Loggerhead Shrike Life History. All About Birds. Available online at: https://www.allaboutbirds.org/guide/Loggerhead_Shrike/lifehistory. Accessed June 2023.

CSU Stanislaus (California State University Stanislaus). 2021. Publications and Reports. Endangered Species Recovery Program. Available online at https://esrp.csustan.edu/publications/pubhtml.php?doc=sjvrp&file=chapter02H00.html. Accessed June 2023.

eBird. 2023. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available online at http://www.ebird.org. Accessed June 2023.

Estep, J. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-1987. California Department of Fish and Game, Wildlife Management Division, Nongame Bird and Mammal Section, Sacramento, CA.

Greif, S., and B.M. Siemers. 2010. "Innate Recognition of Water Bodies in Echolocating Bats." November 2010. Available online at: https://www.nature.com/articles/ncomms1110. Accessed June 2023.

Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, S. Colla, and S. Foltz Jordan. 2015. *Bombus fervidus*. The IUCN Red List of Threatened Species 2015. Available online at: https://www.iucnredlist.org/species/21215132/21215225. Accessed November 2023.

Jones and Stokes. 2006. *Pacific Gas & Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (includes updated Chapter 4 and Tables 5-3, 5-4 and 5-5, December 2007)*. December. (J&S 02067.) Sacramento, CA.

Kosciuch, K., D. Riser-Espinoza, C. Moqtaderi, W. Erickson. 2021. Aquatic Habitat Bird Occurrences at Photovoltaic Solar Energy Development in Southern California, USA. Diversity 2021, 13, 524. Available online at: https://www.mdpi.com/1424-2818/13/11/524. Accessed August 2023.

Merced County. 2013a. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2013b. *Draft Environmental Impact Report, Vega Solar Project*. Prepared by Michael Brandman Associates.

Nafis, G. 2021. California Herps – A Guide to the Amphibians and Reptiles of California. Available online at http://www.californiaherps.com. Accessed October 2021.

NFWFL (National Fish and Wildlife Forensics Laboratory). 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. April 2014. Available online at: https://www.ourenergypolicy.org/wp-content/uploads/2014/04/avian-mortality.pdf. Accessed June 2023.

Polite, C. 2005. "Northern Harrier." California Wildlife Habitat Relationships System. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1663&inline=1. Accessed June 2023.

Randall, J.M., S.S. Parker, J. Moore, B. Cohen, L. Crane, B. Christian, D. Cameron, J. MacKenzie, K. Klausmeyer, and S. Morrison. 2010. Mojave Desert Ecoregional Assessment. Unpublished Report. The Nature Conservancy. San Francisco, California. Available online at: https://www.scienceforconservation.org/assets/downloads/Mojave_Desert_Ecoregional_Assessment_2010.pdf. Accessed July 2023.

Shuford, W.D., and T. Gardali, editors. 2008. "California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California." Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. Available online at: https://www.wildlife.ca.gov/Conservation/Planning/Connectivity/CEHC. Accessed June 2023.

Thomson, R.C., A.N. Wright, B.H. Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Fish and Wildlife and University of California Press. Available online at: https://wildlife.ca.gov/Conservation/SSC/Amphibians-Reptiles. Accessed July 2023.

University of Michigan. 2021. Animal Diversity Web. Museum of Zoology. Available online at https://animaldiversity.org/. Accessed October 2021.

USFWS (U.S. Fish and Wildlife Service). 1998. Recovery plan for the upland species of the San Joaquin Valley, California. September 30, 1998.

USFWS (U.S. Fish and Wildlife Service). 2011. *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance*. Sacramento Fish and Wildlife Office. Available online at: https://www.fws.gov/media/standardized-recommendations-protection-endangered-san-joaquin-kit-fox-prior-or-during-ground. Accessed July 2023.

USFWS (U.S. Fish and Wildlife Service). 2023. Information for Planning and Consultation (IPaC) Resource List. Available online at: https://ecos.fws.gov/ipac/. Accessed June 2023.

XSIC (Xerces Society for Invertebrate Conservation, Defenders of Wildlife, Center for Food Safety). 2018. A Petition to the State of California Fish and Game Commission to List the Crotch bumble bee (*Bombus crotchii*), Franklin's bumble bee (*Bombus franklini*), Suckley cuckoo bumble bee (*Bombus suckleyi*), and western bumble bee (*Bombus occidentalis occidentalis*) as Endangered under the California Endangered Species Act. Available online at: https://fgc.ca.gov/CESA. Accessed August 2023.

9.7 CULTURAL RESOURCES

Bettinger, R. 2015. Orderly Anarchy: Sociopolitical Evolution in Aboriginal California. University of California Press: Berkeley.

Castillo, Edward D. 1978. The Impact of Euro-American Exploration and Settlement. In Handbook of North American Indians, Vol 8, California. R. Heizer, editor. Pp. 99-127. Smithsonian Institution Press, Washington DC.

CGS (California Geologic Survey). 2002. California Geomorphic Provinces, Note 36. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf. Accessed October 2021.

CHRIS (California Historical Resources Information System). 2021. Records Search File No.: 11888I, Site Information. From Central California Information Center. September 3, 2021.

City of Los Banos. 2021. Our History: Historical Los Banos. Available online at: https://losbanos.org/for-visitors/. Accessed May 2023.

Cleveland, K. 2019. P-24-002192 Archaeological Site Survey Record. Record is available from the CCIC.

Griffith, G.E., J.M. Omernik, D.W. Smith, T.D. Cook, E. Tallyn, K. Moseley, and C.B. Johnson. 2016. Ecoregions of California: U.S. Geological Survey Open-File Report 2016–1021 with map, scale 1:1,100,000. Available online at: https://pubs.er.usgs.gov/publication/ofr20161021. Accessed October 2021.

Hess, M., M. Smith, L. Gray, and J. Panichelle. 1992. P-24-000035 Archaeological Site Survey Record. Record is available from the CCIC.

Jennings, C.W., C. Gutierrez, W. Bryant, G. Saucedo, and C. Wills. 2010. Geologic Map of California. Geologic Data Map 2. 1:750,0000 scale. California Geological Survey. Available online at: https://ngmdb.usgs.gov/Prodesc/proddesc_96750.htm. Accessed May 2023.

Kyle, Douglas E. (ed.). 2002. *Historic Spots in California.* Stanford University Press. Stanford, California.

Merced County Courthouse Museum. 2023. "Settlement of Merced County: From Homestead to Colonization." Available online at: https://experience.arcgis.com/experience/0455ea6a5c87451c8d880329670e4908/. Accessed December 2023.

Merced County Fair. 2023. "History of the Merced County Fair." Available online at: https://www.mercedcountyfair.org/history. Accessed December 2023.

Merced Irrigation District. 2023. "History of the District." Available online at: https://mercedid.org/history-of-the-district/. Accessed December 2023.

Native American Heritage Commission (NAHC). 2023. "Results of Sacred Lands File Search for Zeta Solar Project".

Reclamation (U.S. Bureau of Reclamation). 2023. "Delta Division Project." Available online at: https://www.usbr.gov/projects/index.php?id=477. Accessed December 2023.

Rogers, J. 2017. P-24-001931 Archaeological Site Survey Record. Record is available from the CCIC.

Rosenthal, J., J. Meyer, and J. King. 2004. Volume III: Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways. Volume 3, Geoarchaeological Study, Landscape Evolution, and the Archaeological Record of Central California. Prepared by Far Western Anthropological Research Group, Inc.

Rosenthal, J., G. White, and M. Sutton. 2007. The Central Valley: A View from the Catbird Seat. In *California Prehistory: Colonization, Culture, Complexity*. T Jones and K. Klar, eds. Pp. 147-164. Altamira Press: Lanham MD.

Stene, Eric A. 1994. Delta Division Central Valley Project. Available online at: https://www.usbr.gov/projects/pdf.php?id=102. Accessed December 2023.

University of California (UC) Davis, California Soil Resource Lab (CASRL). 2002. Paver series. Available online at: https://casoilresource.lawr.ucdavis.edu/sde/?series=paver. Accessed May 2023.

University of California (UC) Davis, California Soil Resource Lab (CASRL). 2003a. Woo series. Available online at: https://casoilresource.lawr.ucdavis.edu/sde/?series=woo. Accessed May 2023.

University of California (UC) Davis, California Soil Resource Lab (CASRL). 2003b. Deldota series. Available online at: https://casoilresource.lawr.ucdavis.edu/sde/?series=deldota. Accessed May 2023.

Wallace, W.J. 1978. Northern Valley Yokuts. In California, Robert F. Heizer, Volume Editor. Pp. 462-484. Handbook of North American Indians. Volume 8. Smithsonian Institution, Washington D.C.

Water Education Foundation. 2023. "California Aqueduct." Available online at: https://www.watereducation.org/aquapedia/california-aqueduct. Accessed December 2023.

9.8 ENERGY

CEC (California Energy Commission). 2016a. Electricity Consumption by County. Available online at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx. Accessed November 16, 2023.

CEC (California Energy Commission). 2016b. Gas Consumption by County. Available online at: http://www.ecdms.energy.ca.gov/gasbycounty.aspx. Accessed November 16, 2023.

CEC (California Energy Commission). 2022. 2022 Integrated Energy Policy Report Update. Available online at: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update. Accessed July 2023.

CPUC (California Public Utilities Commission). 2011. Renewables Portfolio Standard Quarterly Report. Available online at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2011-12-oga-reports/q3rpsreporttothelegislaturefinal.pdf#:~:text=In%202011%2C%20Senate%20Bill%20SB%202%20of%20the,and%20publicly-owned%20utilities%20to%20achieve%20a%2033%25%20RPS. Accessed July 2023.

EIA (U.S. Energy Information Administration). 2022. Gasoline explained, Use of gasoline. Available online at: https://www.eia.gov/energyexplained/gasoline/use-of-gasoline.php. Accessed August 2023.

Merced County. 2013. 2030 Merced County General Plan. Available online at: https://countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed October 2022.

NHTSA (National Highway Traffic Safety Administration). 2020. Final Environmental Impact Statement for The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021-2026 Passenger Cars and Light Trucks. Available online at: https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/safe_vehicles_rule_feis.pdf. Accessed July 2023.

PG&E (Pacific Gas and Electric Company). 2018. Where your electricity comes from. Available online at: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2018/10-18_PowerContent.pdf. Accessed November 16, 2023.

PG&E (Pacific Gas and Electric Company). 2021. PG&E Overview. Available online at: https://www.pgecorp.com/corp_responsibility/reports/2021/pf01_pge_overview.html. Accessed September 2023.

PG&E (Pacific Gas and Electric Company). 2023. 2022 Power Mix. Available online at: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2023/1023-Power-Content-Label.pdf. Accessed November 16, 2023.

U.S. Department of Energy. 2020. Average Annual Fuel Use by Vehicle Type. Available online at: https://afdc.energy.gov/data/10308. Accessed August 2023.

U.S. Department of Energy. 2021. 2030 Solar Cost Targets. Available online at: https://www.energy.gov/eere/solar/articles/2030-solar-cost-targets. Accessed August 2023.

9.9 GEOLOGY AND SOILS

California State Geoportal. 2022. Liquefaction Zones Map Service. Available online at: https://gis.data.ca.gov/datasets/b70a766a60ad4c0688babdd47497dbad/about?layer=0. Accessed July 2023.

CGS (California Department of Conservation, California Geological Survey). 2002. California Geomorphic Provinces. Note 36. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf. Accessed June 2023.

CGS (California Department of Conservation, California Geological Survey). 2016. Earthquake Potential in California. Available online at: https://www.conservation.ca.gov/cgs/documents/publications/map-sheets/MS_048.pdf. Accessed June 2023.

Dibblee, T.W. and J. Minch. 2007. Geologic Map of the Ortigalita Peak NW and Charleston School Quadrangles, Merced and Fresno Counties, California. Dibblee Geologic Foundation Map #DF 331. Scale 1:24,000. Accessed June 2023.

Encyclopedia Brittanica. 2023. San Francisco earthquake of 1906. Image. Available online at: https://www.britannica.com/event/San-Francisco-earthquake-of-1906. Accessed July 2023.

Hotchkiss, W.R., and G.O. Balding. 1971. Geology, Hydrology and Water Quality of the Tracy-Dos Palos Area, San Joaquin Valley, California. USGS Open-File Report. 107p. Accessed June 2023.

Merced County. 2012. Geology, Soils, and Mineral Resources. Implementation of the proposed 2030 Merced County General Plan DEIR. Available online at: https://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/10_geosoilsminerals_2012_11_23f.pdf. Accessed June 2023.

Merced County. 2013a. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2013b. *Draft Environmental Impact Report, Vega Solar Project*. Prepared by Michael Brandman Associates.

Merced County. 2023. Dos Palos Clean Power Project Initial Study/Mitigated Negative Declaration. Available online at: https://web2.co.merced.ca.us/pdfs/env_docs/initial_studies/CUP22-011_DosPalosCleanPower/CUP22-011_DosPalosCleanPower_ISMND.pdf. Accessed June 2023.

Murphey, P., G. Knauss, L. Fisk, T. Demere, and R. Reynolds. 2019. Best Practices in Mitigation Paleontology. Proceedings of the San Diego Society of Natural History 47: 1–43.

Reclamation (U.S. Bureau of Reclamation). 2019. Final EIS for the Reinitiation of Consultation on the Coordinated LTO of the CVP and SWP. Appendix X: Geology and Soils. Available online at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=39181. Accessed June 2023.

SVP (Society of Vertebrate Paleontology). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Available online at: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf. Accessed June 2023.

SWRCB (State Water Resources Control Board). 2017. RUSLE K Factor Watershed Map Methodology. Available online at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/guidance/k_factor_map.pdf. Accessed June 2023.

USDA (U.S. Department of Agriculture). 2004. Land Capability Classification. Available online at: https://efotg.sc.egov.usda.gov/references/Delete/2004-3-27/landcap.htm. Accessed August 2024.

USDA (U.S. Department of Agriculture). 2017. Hydrology Groups. Available online at: https://efotg.sc.egov.usda.gov/references/Delete/2017-11-11/hydrogroups.htm#:~:text=The%20Hydrologic%20Group%2C%20designated%20A,rains%20fall%20in%20the%20area. Accessed August 2024.

USDA-ARS (U.S. Department of Agriculture, Agricultural Research Service). 2008. Draft USER's Reference Guide - Revised Universal Soil Loss Equation Version 2 (RUSLE2).

USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2002. Wind Erodibility Groups. Available online at: https://efotg.sc.egov.usda.gov/references/Agency/SD/Archived_winderos_100415.pdf. Accessed August 2024.

USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2004. Understanding Soil Risk and Hazards - Using Soil Survey to Identify Areas with Risks and Hazards to Human Life and Property, Edited by Gary B. Muckel, National Soil Survey Center, Lincoln, Nebraska.

USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2007. National Agronomy Manual. Part 502, Exhibit 502-2, Table 1: Wind Erodibility Groups and Wind Erodibility Index.

USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). Available online at: https://www.nrcs.usda.gov/resources/guides-and-instructions/field-indicators-of-hydric-soils. Accessed June 2023.

USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2024. Web Soil Survey. Available online at: https://websoilsurvey.nrcs.usda.gov/app/. Accessed March 2024.

USGS (U.S. Geological Survey). 2022. Areas of Land Subsidence in California. Available online at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html. Accessed June 2023.

9.10 GREENHOUSE GAS EMISSIONS

CARB (California Air Resources Board). 2008. Climate Change Scoping Plan. Available online at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed October 2022.

CARB (California Air Resources Board). 2013. GHG Short-Lived Climate Pollutant Inventory. Available online at: https://ww2.arb.ca.gov/ghg-slcp-inventory. Accessed September 2022.

CARB (California Air Resources Board). 2018a. Climate Pollutants Fall Below 1990 Levels for the First Time. Available online at: https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time. Accessed October 2022.

CARB (California Air Resources Board). 2018b. Low Carbon Fuel Standard 2018 Amendments. Available online at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/fro.pdf. Accessed January 2023.

CARB (California Air Resources Board). 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed July 2023.

CARB (California Air Resources Board). 2023. Current California GHG Emission Inventory Data. Available online at: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed July 2023.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed October 2022.

MCAG (Merced County Association of Governments). 2022. Final Regional Transportation Plan Sustainable Communities Strategy for Merced County. Available online at: https://www.mcagov.org/DocumentCenter/View/3689/MCAG-2022-RTP-SCS?bidId=. Accessed August 2023.

NHTSA (National Highway Traffic Safety Administration). 2022. Corporate Average Fuel Economy. Available online at: https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy. Accessed August 2023.

San Luis Obispo County Air Pollution Control District. 2021. Interim CEQA Greenhouse Gas Guidance for the San Luis Obispo County Air Pollution Control District's 2012 CEQA Air Quality Handbook. Available online at: https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/CEQA-GHGInterimGuidance_Final2.pdf. Accessed March 2023.

Turbine Generator. 2022. California Sunlight Hours & Renewable Energy Information. Available online at: https://www.turbinegenerator.org/solar/california/. Accessed October 2022.

USEPA (U.S. Environmental Protection Agency). 2010. Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. Available online at: https://www.epa.gov/sites/default/files/2015-12/documents/20100413fs.pdf. Accessed August 2024.

USEPA (U.S. Environmental Protection Agency). 2013. Greenhouse Gases Reporting Program Implementation Fact Sheet. Available online at: https://www.epa.gov/sites/default/files/2014-09/documents/ghgfactsheet.pdf. Accessed August 2024.

USEPA (U.S. Environmental Protection Agency). 2021. Overview of Greenhouse Gases. Available online at: https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed March 2022.

USEPA (U.S. Environmental Protection Agency). 2022. Sulfur Hexafluoride (SF6) Basics. Available online at: https://www.epa.gov/eps-partnership/sulfur-hexafluoride-sf6-basics. Accessed January 2023.

USEPA (U.S. Environmental Protection Agency). 2023a. Regulations for Emissions from Heavy Equipment with Compression-Ignition (Diesel) Engines. Available online at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-heavy-equipment-compression. Accessed August 2023.

USEPA (U.S. Environmental Protection Agency). 2023b. Sources of Greenhouse Gas Emissions. Available online at: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. Accessed July 2023.

USEPA (U.S. Environmental Protection Agency). 2023c. Global Greenhouse Gas Emissions Data. Available online at: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data. Accessed July 2023.

9.11 HAZARDS AND HAZARDOUS MATERIALS

CAL FIRE (California Department of Forestry and Fire Protection). 2023. *Fire Hazard Severity Zones in State Responsibility Area*. Available online at: https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/. Accessed June 2023.

CalEPA (California Environmental Protection Agency). 2024. Cortese List Data Resources. https://calepa.ca.gov/sitecleanup/corteselist/. Accessed January 2024.

CPUC (California Public Utilities Commission). 2010. D1005006 Granting Pacific Gas and Electric Company a Permit to Construct the Cabrillo-Santa Ynez Reconditioning Project. Available online at: https://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/117584-06.htm. Accessed August 2024.

IEA (International Energy Agency). 2018. Human Health Risk Assessment Methods for PV, Part 1: Fire Risks. Available online at: https://www.nrel.gov/docs/fy19osti/72141.pdf. Accessed February 2024.

IEA (International Energy Agency). 2019. Human Health Risk Assessment Methods for PV, Part 2: Breakage Risks. Available online at: https://iea-pvps.org/wp-content/uploads/2020/01/Task_12-Human_Health_Risk_Assessment_Methods_for_PV_part_2.pdf. Accessed February 2024.

Merced County. 2013a. 2030 Merced County General Plan. Available online at: https://countyofmerced.com/100/General-Plan. Accessed June 2023.

Merced County. 2013b. *Draft Environmental Impact Report, Vega Solar Project*. Prepared by Michael Brandman Associates.

Merced County. 2021. 2021-2026 Multi-Jurisdictional Hazard Mitigation Plan. Available online at: https://www.countyofmerced.com/3781/Hazard-Mitigation-Plan. Accessed August 2024.

North Carolina State University (NCSU). 2017. Health and Safety Impacts of Solar Photovoltaics. Available online at: https://nccleantech.ncsu.edu/wp-content/uploads/2019/10/Health-and-Safety-Impacts-of-Solar-Photovoltaics-PV.pdf. Accessed August 2024.

NTP (U.S. Department of Health and Human Services, National Toxicology Program). 2021a. Report on Carcinogens, Fifteenth Edition – Diesel Exhaust Particulates. Available online at: https://ntp.niehs.nih.gov/sites/default/files/ntp/roc/content/profiles/dieselexhaustparticulates.pdf. Accessed June 2023.

NTP (U.S. Department of Health and Human Services, National Toxicology Program). 2021b. Report on Carcinogens, Fifteenth Edition – Benzene. Available online at: https://ntp.niehs.nih.gov/sites/default/files/ntp/roc/content/profiles/benzene.pdf. Accessed June 2023.

SWRCB (State Water Resources Control Board). 2023. GeoTracker. Available online at: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Search+GeoTracker. Accessed June 2023.

USEPA (U.S. Environmental Protection Agency). 1987. Federal Register Notice 27620 - 27642. Volume 52, Number 140. Available online at: https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=33cebcdfdd1b4c3a8b51d416956c41f1&query=Superfund_National_Priorities_List__NPL__Sites_with_Status_Information_7557,SITE_EPA_ID=%27CA3570024551%27. Accessed June 2023.

USEPA (U.S. Environmental Protection Agency). 2023a. EPA Region 9 (Pacific Southwest). Available online at: https://www.epa.gov/aboutepa/epa-region-9-pacific-southwest. Accessed June 2023.

USEPA (U.S. Environmental Protection Agency). 2023b. Superfund: National Priorities List (NPL). Available online at: https://www.epa.gov/superfund/superfund-national-priorities-list-npl. Accessed June 2023.

9.12 HYDROLOGY AND WATER QUALITY

California Water Boards. 2022. Sustainable Groundwater Management Act: Probationary Designation and Groundwater Regulation by the State Water Board. Available online at: https://www.waterboards.ca.gov/water_issues/programs/sgma/docs/sgma/sgma-prb.pdf. Accessed August 2024.

Central Valley RWQCB (Central Valley Regional Water Quality Control Board). 2019. The Water Quality Control Plan (Basin Plan). Fifth Edition. Available online at: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed July 2023.

Delta-Mendota Subbasin Coordination Committee. 2024. Final Delta-Mendota Subbasin Groundwater Sustainability Plan. Available online at: https://deltamendota.org/final-gsp-documents/. Accessed August 2024.

DWR (California Department of Water Resources). 2003. California Groundwater. Bulletin 118. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Statewide-Reports/Bulletin_118_Update_2003.pdf. Accessed June 2023.

DWR (California Department of Water Resources). 2004. San Joaquin Valley Groundwater Basin Merced Subbasin. Bulletin 118. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_04_MercedSubbasin.pdf. Accessed August 2024.

DWR (California Department of Water Resources). 2006. San Joaquin Valley Groundwater Basin Delta-Mendota Subbasin. Bulletin 118. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_07_Delta-MendotaSubbasin.pdf. Accessed June 2023.

DWR (California Department of Water Resources). 2023a. Approved Determination of the Revised Groundwater Sustainability Plan Submitted for the San Joaquin Valley Basin - Merced Subbasin. Available online at: https://sgma.water.ca.gov/portal/gsp/assessments/9. Accessed August 2024.

DWR (California Department of Water Resources). 2023b. Gilroy-Hollister Valley – North San Benito Subbasin Groundwater Sustainability Plan. Available online at: https://sgma.water.ca.gov/portal/gsp/assessments/105. Accessed August 2024.

FEMA (Federal Emergency Management Agency). 2023. Flood Maps. Available online at: https://www.fema.gov/flood-maps. Accessed June 2023.

Marchand, D.E. and A. Allwardt. 1981. Late Cenozoic Stratigraphic Units, Northeastern San Joaquin Valley, California. USGS Bulletin 1470. Available online at: https://pubs.usgs.gov/bul/1470/report.pdf. Accessed August 2024.

Merced County. 2012. 2030 Merced County General Plan Update Draft Program Environmental Impact Report. Available online at: https://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced_county_deir_2012_11_30.pdf. Accessed July 2024.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2014. Ordinance 1923, Section 1. Code Chapter 9.53, Regulation of Stormwater. Available online at: https://ecode360.com/43016781#43016781. Accessed August 2024.

Merced County. 2023. Flood Risk GIS Mapping Tool. Available online at: https://www.countyofmerced.com/3925/2023-Flood-Resources-and-Information. Accessed June 2023.

MIUGSA (Merced Irrigation-Urban Groundwater Sustainability Agency), Merced Subbasin Groundwater Sustainability Agency (MSGSA), and Turner Island Water District Groundwater Sustainability Agency #1 (TIWD GSA-1). 2022. Merced Groundwater Subbasin Groundwater Sustainability Plan. Available online at: https://www.mercedsgma.org/assets/pdf/gsp-sections/revised/Merced-Subbasin-GSP_July-2022-Update_without-appendices.pdf. Accessed August 2024.

NCDMR (Northern and Central Delta-Mendota Regions). 2022. Groundwater Sustainability Plan for the Northern and Central Delta-Mendota Regions. Available online at: https://www.deltamendota.org/wp-content/uploads/2022/06/2022_Draft_DMNC_GSP/DM_NorthCentral_RevisedGSP_24Jun22_clean.pdf. Accessed June 2023.

SBCWD GSA (San Benito County Water District Groundwater Sustainability Agency). 2021. North San Benito Groundwater Sustainability Plan. Available online at: https://www.sbcwd.com/wp-content/uploads/2021/11/PUBLICDRAFTNorthSanBenitoGSP_Final.pdf. Accessed August 2024.

SJREC GSP Group (San Joaquin River Exchange Contractors GSP Group). 2022. Groundwater Sustainability Plan for the San Joaquin River Exchange Contractors Group in the Delta-Mendota Subbasin. Available online at: https://www.sjrecwa.net/sgma/gsp/. Accessed August 2024.

SLWD (San Luis Water District). 2021. 2020 Water Management Plan (2020 Criteria). Available online at: https://slwdwater.com/wp-content/uploads/2021/09/2020-WMP-San-Luis-Water-District.pdf. Accessed August 2024.

SWRCB (State Water Resources Control Board). 2022. California General Permit, Attachment D.1. Available online at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022_att_d1.pdf. Accessed September 2024.

9.13 LAND USE

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2023. Merced County Zoning Code. Available online at: https://online.encodeplus.com/regs/mercedcounty-ca/doc-viewer.aspx#secid-1469. Accessed June 2023.

MCAG (Merced County Association of Governments). 2022. Final Regional Transportation Plan Sustainable Communities Strategy for Merced County. Available online at: https://www.mcagov.org/DocumentCenter/View/3689/MCAG-2022-RTP-SCS?bidId=. Accessed June 2023.

9.14 NOISE

Caltrans (California Department of Transportation). 2013. Technical Noise Supplement Traffic Noise Analysis Protocol. Available online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf. Accessed September 2023.

Caltrans (California Department of Transportation). April 2020. Transportation and Construction Vibration Guidance Manual. Available online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf. Accessed September 2023.

FHWA (Federal Highway Administration). Construction Noise Handbook. 2006. Available online at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook02.cfm. Accessed September 2023.

FTA (Federal Transit Administration). September 2018. Transit Noise and Vibration Impact Assessment Manual. Available online at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed September 2023.

Merced County. 2013. 2030 Merced County General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed September 2023.

Merced County. 2005. Merced County Code. Available online at: https://ecode360.com/ME4967. Accessed August 2024.

USEPA (U.S. Environmental Protection Agency). 1974. Information On Levels Of Environmental Noise Requisite To Protect Public Health and Welfare With An Adequate Margin Of Safety. Available online at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000L3LN.TXT. Accessed August 2024.

9.15 PUBLIC SERVICES

CAL FIRE (California Department of Forestry and Fire Protection). 2007. *Merced County Draft Fire Hazard Severity Zones in LRA.* Available online at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/upload-2/fhszl06_1_map24.pdf. Accessed June 2023.

Judicial Branch of California. 2023. The Superior Court of California – County of Merced. Available online at: https://www.merced.courts.ca.gov/. Accessed September 2023.

LBUSD (Los Banos Unified School District). 2023. Our District Overview. Available online at: https://www.losbanosusd.org/page/our-district-overview. Accessed September 2023.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2022. 2022 Annual Report – Merced County Fire. Available online at: https://www.countyofmerced.com/4010/Annual-Report. Accessed June 2023.

Rivera, M. 2023. Personal communication. Phone call from D. Althaus, Environmental Planner, Stantec Consulting Services Inc. to M. Rivera, Captain, Merced County Fire Department. September 11, 2023.

Post Locations. 2023. List of Merced County Post Offices. Available online at: https://www.postlocations.com/usps-post-office-in-merced-county-ca/. Accessed September 2023.

9.16 TRANSPORTATION

Frontiers in Built Environment. 2019. Estimating Passenger Car Equivalent of Heavy Vehicles at Roundabout Entry Using Micro-Traffic Simulation. Available online at https://www.frontiersin.org/journals/built-environment/articles/10.3389/fbuil.2019.00077/full. Accessed August 2024.

Governor's Office of Planning and Research. 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. Available online at: https://opr.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf. Accessed August 2024.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed October 2022.

MCAG (Merced County Association of Governments). 2022. Regional Transportation Plan Sustainable Communities Strategy for Merced County. Available online at: https://www.mcagov.org/364/2022-RTP. Accessed October 2022.

9.17 TRIBAL CULTURAL RESOURCES

N/A

9.18 UTILITIES AND SERVICE SYSTEMS

CALGreen. 2022. 2022 California Green Building Standards Code. Available online at: https://www.dgs.ca.gov/BSC/CALGreen. Accessed July 2023.

CalRecycle. 2023a. SWIS Facility/Site Activity Details Highway 59 Landfill (24-AA-0001). Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2908?siteID=1863. Accessed June 2023.

CalRecycle. 2023b. SWIS Facility/Site Activity Details Billy Wright Disposal Site (24-AA-0002). Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2909?siteID=1864. Accessed June 2023.

DWR (Department of Water Resources). 2003. California Groundwater. Bulletin 118. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Statewide-Reports/Bulletin_118_Update_2003.pdf. Accessed June 2023

DWR (Department of Water Resources). 2006. San Joaquin Valley Groundwater Basin Delta-Mendota Subbasin. Bulletin 118. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_07_Delta-MendotaSubbasin.pdf. Accessed June 2023.

MCAG (Merced County Association of Governments). 2016. Highway 59 Landfill Valley Fill Project. Available online at: https://www.mcagov.org/233/Valley-Fill-Project. Accessed September 2023.

Merced County. 2012. 2030 Merced County General Plan Update Draft Program Environmental Impact Report. Available online at: https://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced_county_deir_2012_11_30.pdf. Accessed June 2023.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2016a. Ordinance No. 1947 - An Ordinance Establishing the Regulation of Onsite Wastewater Treatment Systems. Available online at: https://web2.co.merced.ca.us/pdfs/EnvironmentalHealth/OWTS-MCC-9-54-Ordinance.pdf. Accessed July 2023.

Merced County. 2016b. OWTS LAMP. Available online at: https://www.countyofmerced.com/DocumentCenter/View/12618/Local-Agency-Management-Plan-LAMP?bidId=. Accessed July 2023.

Merced County. 2023. Merced County Code, Title 9, General Health and Safety. Available online at: https://ecode360.com/43014992#43014992. Accessed June 2023.

MIUGSA (Merced Irrigation-Urban Groundwater Sustainability Agency), Merced Subbasin Groundwater Sustainability Agency (MSGSA), and Turner Island Water District Groundwater Sustainability Agency #1 (TIWD GSA-1). 2022. Merced Groundwater Subbasin Groundwater Sustainability Plan. Available online at: https://www.mercedsgma.org/assets/pdf/gsp-sections/revised/Merced-Subbasin-GSP_July-2022-Update_without-appendices.pdf. Accessed July 2024.

SBCWD GSA (San Benito County Water District Groundwater Sustainability Agency). 2021. North San Benito Groundwater Sustainability Plan. Available online at: https://www.sbcwd.com/wp-content/uploads/2021/11/PUBLICDRAFTNorthSanBenitoGSP_Final.pdf. Accessed July 2024.

SJREC GSP Group et. al (San Joaquin River Exchange Contractors GSP Group, The County of Fresno, Grassland Water District, Northern and Central Delta-Mendota Region GSP Group, Aliso Water District, Farmers Water District). 2021. Consolidated WY2020 Annual Report. Available online at: https://deltamendota.org/assets/pdf/meeting-materials-archive/FINAL-DM-WY2020-AR_04012021.pdf. Accessed July 2024.

SWRCB (California State Water Resources Control Board). 2012. Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy). Available online at: https://www.waterboards.ca.gov/water_issues/programs/owts/board_adopted_policy.html. Accessed July 2023.

9.19 WILDFIRE

CAL FIRE (California Department of Forestry and Fire Protection). 2007. *Merced County Draft Fire Hazard Severity Zones in LRA*. Available online at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/upload-2/fhszl06_1_map24.pdf. Accessed June 2023.

CAL FIRE (California Department of Forestry and Fire Protection). 2022. *Incident Archive*. Available online at: https://www.fire.ca.gov/incidents/2022/. Accessed June 2023.

CAL FIRE (California Department of Forestry and Fire Protection). 2023. *Fire Hazard Severity Zones in State Responsibility Area*. Available online at: https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/. Accessed June 2023.

FEMA (Federal Emergency Management Agency). 2023. *Flood Maps.* Available online at: https://www.fema.gov/flood-maps. Accessed June 2023.

International Journal of Wildland Fire. 2010. A numerical study of slope and fuel structure effects on coupled wildfire behaviour. Available online at: https://www.fs.usda.gov/rm/pubs_other/rmrs_2010_linn_r001.pdf. Accessed August 2024.

Iowa State University. 2023. Iowa Environmental Mesonet – Windrose Plot for [MCE] Merced. Available online at: https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=MCE&network=CA_ASOS. Accessed September 2023.

Merced County. 2013. Merced County 2030 General Plan. Available online at: https://countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 2023.

Merced County. 2021. 2021-2026 Multi-Jurisdictional Hazard Mitigation Plan. Available online at: https://web2.co.merced.ca.us/pdfs/oes/MercedCounty-MJHMP-2021-2016.pdf. Accessed June 2023.

Merced County. 2022. 2022 Annual Report – Merced County Fire. Available online at: https://www.countyofmerced.com/4010/Annual-Report. Accessed June 2023.

9.20 COMPARISON OF ALTERNATIVES

CAL FIRE (California Department of Forestry and Fire Protection). 2007. *Merced County Draft Fire Hazard Severity Zones in LRA*. Available online at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/upload-2/fhszl06_1_map24.pdf. Accessed December 2023.

CAL FIRE (California Department of Forestry and Fire Protection). 2023. *Fire Hazard Severity Zones in State Responsibility Area*. Available online at: https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/. Accessed December 2023.

FEMA (Federal Emergency Management Agency). 2023. *Flood Maps.* Available online at: https://www.fema.gov/flood-maps. Accessed December 2023.

9.21 EFFECTS FOUND NOT TO BE SIGNIFICANT

California Department of Conservation (DOC). 2023. *Mines Online*. Available online at: https://maps.conservation.ca.gov/mol/index.html. Accessed November 2023.

U.S. Census Bureau. 2020. Table DP1: PROFILE OF GENERAL POPULATION AND HOUSING CHARACTERISTICS. Available online at: https://data.census.gov/table?q=dp1&g=040XX00US06_050XX00US06047&tid=DECENNIALDP2020.DP1. Accessed September 2023.

9.22 OTHER CEQA

EDD (State of California Employment Development Department). 2023. Merced County Industry Employment & Labor Force. Available online at: https://labormarketinfo.edd.ca.gov/file/lfmonth/merc$pds.pdf. Accessed September 2023.

U.S. Census Bureau. 2020. Table DP1: PROFILE OF GENERAL POPULATION AND HOUSING CHARACTERISTICS. Available online at: https://data.census.gov/table?q=dp1&g=040XX00US06_050XX00US06047&tid=DECENNIALDP2020.DP1. Accessed September 2023.