Initial Study/Mitigated Negative Declaration for the West II Clean Power LLC Project, Merced County, California

JANUARY 2023

PREPARED FOR

Merced County
Community and Economic Development Department

PREPARED BY

SWCA Environmental Consultants

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR THE LIVINGSTON SOLAR ENERGY AND BATTERY STORAGE PROJECT, MERCED COUNTY, CALIFORNIA

Prepared for

Merced County
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SWCA Project No. 76430

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Acronyms and Abbreviations

A-1	General Agriculture
AB	Assembly Bill
AC	alternating current
ACM	asbestos-containing material
ADL	aerially deposited lead
AMBIENT	AMBIENT Air Quality & Noise Consulting
APN	Assessor's Parcel Number
Applicant	Renewable America, LLC
ASR	Archaeological Survey Report
BMP	best management practice
BPS	Best Performance Standard
BUOW	burrowing owl
BWL	Billy Wright Landfill
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCIC	Central California Information Center
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CDOF	California Department of Finance
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent

County	Merced County
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CUP	Conditional Use Permit
dB	decibels
DC	direct current
DPM	diesel particulate matter
DTSC	California Department of Toxics Substances Control
ECP	Erosion Control Plan
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
GHG	greenhouse gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
H_2S	hydrogen sulfide
hp	horsepower
I-	Interstate
in/sec	inches per second
IPaC	Information Planning and Consultation
ITP	Incidental Take Permit
kV	kilovolt
kVA	kilovolt-ampere
kWh	kilowatt hour
LCFS	Low Carbon Fuel Standard
LOS	Level of Service
LRA	Local Responsibility Area
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MCAG	Merced County Association of Governments
MCFD	Merced County Fire Department
MCRWMA	Merced County Regional Waste Management Authority
MIUGSA	Merced Irrigation-Urban Groundwater Sustainability Agency
MLRA	Major Land Resource Area
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
mpg	miles per gallon
MPO	metropolitan planning organization

MRZ	Mineral Resource Zone
MSGSA	Merced Subbasin Groundwater Sustainability Agency
MW	megawatt
MWac	megawatt alternating current
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	California Native American Heritage Commission
NAIP	National Agriculture Imagery Program
NHD	National Hydrography Dataset
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_3	nitrates
NOA	naturally occurring asbestos
NO_X	nitrogen oxides
NPPA	California Native Plant Protection Act
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NWI	National Wetlands Inventory
O_3	ozone
OPR	California Governor's Office of Planning and Research
PG&E	Pacific Gas and Electric Company
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
PPV	peak particle velocity
PRC	California Public Resources Code
project	West II Clean Power LLC Project
PV	photovoltaic
RNA	Renewable America, LLC (Applicant)
ROG	reactive organic gases
RTP	Regional Transportation Plans
RWQCB	Central Valley Regional Water Quality Control Board
SB	Senate Bill
SCS	Sustainable Communities Strategy
SHTAC	Swainson's Hawk Technical Advisory Committee
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	California Surface Mining and Reclamation Act
SO	sulfur monoxide
SO_2	sulfur dioxides
SO_3, SO_4, SO_4^{-2}	sulfates
SO_X	sulfur oxides
SR	State Route
SSC	California Species of Special Concern

SWCA	SWCA Environmental Consultants
SWHA	Swainson's hawk
SWRCB	State Water Resources Control Board
TPY	tons per year
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	velocity in decibels
VMT	vehicle miles traveled

CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY AND CHECKLIST

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "potentially significant impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Public Services
☒ Agriculture and Forestry Resources	☐ Hazards and Hazardous Materials	☐ Recreation
☒ Air Quality	☐ Hydrology and Water Quality	☐ Transportation
☒ Biological Resources	☒ Land Use and Planning	☐ Tribal Cultural Resources
☒ Cultural Resources	☐ Mineral Resources	☒ Utilities and Service Systems
☐ Energy	☒ Noise	☐ Wildfire
☐ Geology and Soils	☐ Population and Housing	☒ Mandatory Findings of Significance

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

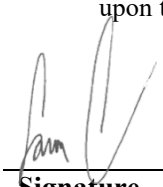
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature — 01/23/2023 **Date**

Cameron Christie – Planner I **Printed Name**

1 INTRODUCTION

Project Title:	West II Clean Power LLC Project Initial Study/Mitigated Negative Declaration
Lead Agency:	Merced County Community and Economic Development Department 2222 M Street, 2nd Floor, Merced, CA 95340
Lead Agency Staff Contact:	Cameron Christie Planner I (209) 385-7654 x 4587
Project Applicant:	Renewable America LLC

1.1 CEQA Statute and Guidelines

According to California Environmental Quality Act (CEQA) Statute Section 21064.5:

> MITIGATED NEGATIVE DECLARATION
>
> "Mitigated negative declaration" means a negative declaration prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

According to State CEQA Guidelines Article 6. Negative Declaration Process:

> 15070. DECISION TO PREPARE A NEGATIVE OR MITIGATED NEGATIVE DECLARATION
>
> A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:
>
> (a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
>
> (b) The initial study identifies potentially significant effects, but:
>
> (1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

15071. CONTENTS

A Negative Declaration circulated for public review shall include:

(a) A brief description of the project, including a commonly used name for the project, if any;

(b) The location of the project, preferably shown on a map, and the name of the project proponent;

(c) A proposed finding that the project will not have a significant effect on the environment;

(d) An attached copy of the Initial Study documenting reasons to support the finding; and

(e) Mitigation measures, if any, included in the project to avoid potentially significant effects.

1.2 Project Location

The West II Clean Power LLC Project (project) would be constructed, operate, and be decommissioned within an 8.5-acre portion of a 36.9-acre parcel (identified as Assessor's Parcel Number [APN] 047-290-002) located approximately 0.7 mile south of the city of Livingston in unincorporated Merced County, California (herein referred to as the project site; Figure 1). The project site is situated at the northeast corner of Lincoln and Westside Boulevards at 5056 Lincoln Boulevard and would be accessed via an existing on-site 15-foot-wide and 1,990-foot-long access driveway from Lincoln Boulevard.

1.3 Environmental Setting

The project site is located on land designated Agricultural in the 2030 Merced County General Plan and is zoned A-1 (General Agricultural). There is an existing single-family residence, accessory structures, an orchard located in the western portion of the project site and an orchard located in the eastern portion of the project site. Additionally, there is an existing unpaved 15-foot-wide access road off Lincoln Boulevard from the west that extends approximately 1,990 feet east to the central portion of the project site. The 8.5-acre project site is characterized by relatively flat topography and consists of exposed dirt with highly disturbed areas as a result of previous agricultural crop production. A concrete irrigation ditch channel runs in an east-to-west direction outside of the project site, along the southern boundary of the project site. Surrounding land uses include agricultural row crops and scattered rural residences in all directions.

1.4 Project Description

The project includes a request by Renewable America LLC (RNA; Applicant) for a Conditional Use Permit (CUP; CUP22-009) to allow for the development of a 2-megawatt alternating current (MWac) photovoltaic (PV) solar power generation facility, a 600-square-foot equipment pad, PV system equipment and a mounted transformer, and various associated site improvements (Figures 2 and 3). The project would include the construction of an 8-acre solar PV power generation facility that would

generate 2 MWac of solar energy with associated inverters, fencing, and an internal access road and driveway. The project would deliver power to the Pacific Gas and Electric Company (PG&E) existing distribution network through a primary service interconnection located on Westside Boulevard. The purpose of the project is to implement a renewable energy generation facility that would provide renewable energy to the surrounding region. The project site plan is included in Appendix A.

1.4.1 *Solar Generation and Battery Storage*

Rows of solar arrays would be constructed within an 8.5-acre development area located on the southern portion of the project site (see Figures 2 and 3). Each solar array would have a maximum height of approximately 15.16 feet and a minimum ground clearance of 1 foot. Rows of solar arrays would be spaced approximately 14 feet apart. Solar arrays in the proposed development area would be oriented in a north-to-south direction and would be installed on a single-axis tracking system that would rotate from east to west throughout the day (approximately 60 degrees in each direction). The tracking system would be installed on 5.57-foot-wide posts driven directly into the ground to a depth of approximately 6 feet and 10 inches. Power collection cables would be suspended from the tracking system in racks and would not require trenching.

The project would include installation and operation of electrical equipment used to support the solar PV generation facility (i.e., inverters, transformers, alternating current [AC] switchgear, and PV system disconnect) on an approximately 600-square-foot concrete equipment pad, which would be located in the central portion of the 8.5-acre project site. The electrical equipment would be stored in containers anchored to the concrete foundation. Transformers stored on the proposed equipment pad would have a kilovolt-ampere (kVA) rating of 2,000 and be expected to generate a new noise level of 64 decibels (dB) at a distance of 50 feet.

The project would connect to PG&E's existing 12-kilovolt (kV) Livingston 1104 distribution electrical circuit, located immediately south of the project site on Westside Boulevard. The Livingston 1104 distribution electrical circuit connects to Livingston Substation Bank 1, located at the intersection of Washington Boulevard and Legion Avenue, approximately 2 miles west of the project site. The project would require the installation of approximately three overhead power poles to reach Livingston 1104 distribution electrical circuit on Westside Boulevard. Power poles would be installed from the proposed equipment pad to the southern boundary of the project site, along the north side of Westside Boulevard, and finally to the existing circuit connection point. The total length of this overhead electrical line would be approximately 418 feet. The poles are expected to be either wood or light-duty steel and a similar height to existing distribution poles in the area (up to 75 feet). No other distribution upgrades are required.

1.4.2 *Site Improvements*

Access to the project site would occur from Lincoln Boulevard via the existing on-site unpaved 15-foot-wide and 1,990-foot-long access road, which would be improved to an unpaved aggregate-based road. The project includes the installation of an approximately 6-foot-tall chain-link perimeter fence with three strands of barbed wire at the top around the development area. Posts for the fence would be installed to a depth of approximately 3 feet. The fence would be equipped with two approximately 15-foot-wide access gates, which would be installed where the existing driveway and access road meet the perimeter fencing. Permanent lighting fixtures for the project would be limited to those required by federal, state, and County building guidelines. Any lighting fixtures installed at the project site would be installed in a downward-facing direction and shielded. No tree removal is anticipated; however, if and where necessary, trees along the existing access road would be trimmed or removed to facilitate construction access.

1.4.3 *Construction*

The project has been designed to conform to the project site's existing topography and surface drainage patterns and would be constructed in a manner that minimizes overall ground disturbance. In total, the project would require approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill. Where necessary, loose and/or unstable soils would be compacted and flattened at the start of construction in order to stabilize the ground surface. Construction is anticipated to occur over a period of 3 months. Construction activities would be limited to occur between 8:00 a.m. and 6:00 p.m. Monday through Friday, unless otherwise authorized by the County. Access to the project development area during construction would be provided via the existing on-site access road located off Lincoln Boulevard. During peak construction activities, it is anticipated that up to 50 construction workers would be on-site and no more than 50 daily truck trips to transport material and equipment would occur. All areas of temporary ground disturbance would be restored and stabilized following the completion of construction activities. Disturbed areas within unoccupied areas of the project site will be planted with drought tolerant native seed mixes to stabilize the site and reduce soil erosion.

1.4.4 *Operation*

The proposed solar facility would operate year-round, 7 days a week, 24 hours a day, with the exception of down times for scheduled maintenance. Staff would be on-site periodically to inspect and maintain the project facilities and maintain vegetation; however, regular staff presence would not be required. It is anticipated that approximately two staff members would visit the project site approximately four times per year for regularly scheduled inspections and maintenance. The site is expected to have deliveries for equipment replacement once every 10 years. The solar PV panels would be dry cleaned once a year using a smart robot dry-cleaning system and would not require the use of water. The dry-cleaning system automatically tracks and self-adapts to the height and inclination of solar panels for smooth operation.

1.4.5 *Decommissioning*

The project would operate for 35 years. When the project reaches the end of its service life, the project would be decommissioned. Decommissioning and reclamation of the project site would include removal of the PV modules and recycling them or otherwise ensuring removal, removal of all ancillary facilities, and reclamation, revegetation, restoration, and soil stabilization to return the site to its preconstruction conditions.

A Decommissioning Plan would be developed for the project to ensure that the facility would be completely decommissioned and removed using industry standards and best practices at the time of decommissioning. The Decommissioning Plan would be submitted to the Merced County Community and Economic Development Department prior to the issuance of building permits. The Decommissioning Plan would include the following:

- Removal of all above and below ground improvements.
- Restoration of the surface grade, placement of topsoil over all removed structures, revegetation and erosion control as deemed necessary.
- A timeframe for improvement removal and site restoration; an engineer's cost estimate for all aspects of the removal and restoration plan.
- An agreement signed by the property owner and operator that they take full responsibility to implement the Decommissioning Plan.

- A plan to comply with all state and federal requirements for reuse, recycling and/or disposal of potentially hazardous waste.

1.5 Potential Authorizations, Permits, and Approvals

The potential authorizations, permits, reviews, and approvals from federal, state, and local agencies that would be required for the project are listed in Table 1.

Table 1. Potential Authorizations, Permits, Reviews, and Approvals

Permit / Approval / Consultation	Authorizing Agency
State	
CEQA Environmental Compliance	Merced County Community and Economic Development Department
National Pollutant Discharge System Storm Water Permit for Construction Activities	Regional Water Quality Control Board
Oversized/Heavy Load Permit	California Department of Transportation
California Endangered Species Act Compliance	California Department of Fish and Wildlife
Authority to Construct/Permit to Operate	San Joaquin Valley Air Pollution Control District
Local	
Hazardous Materials Business Plan	Merced County Community and Economic Development Department
Conditional Use Permit	Merced County Community and Economic Development Department
Building Permit	Merced County Department of Public Works

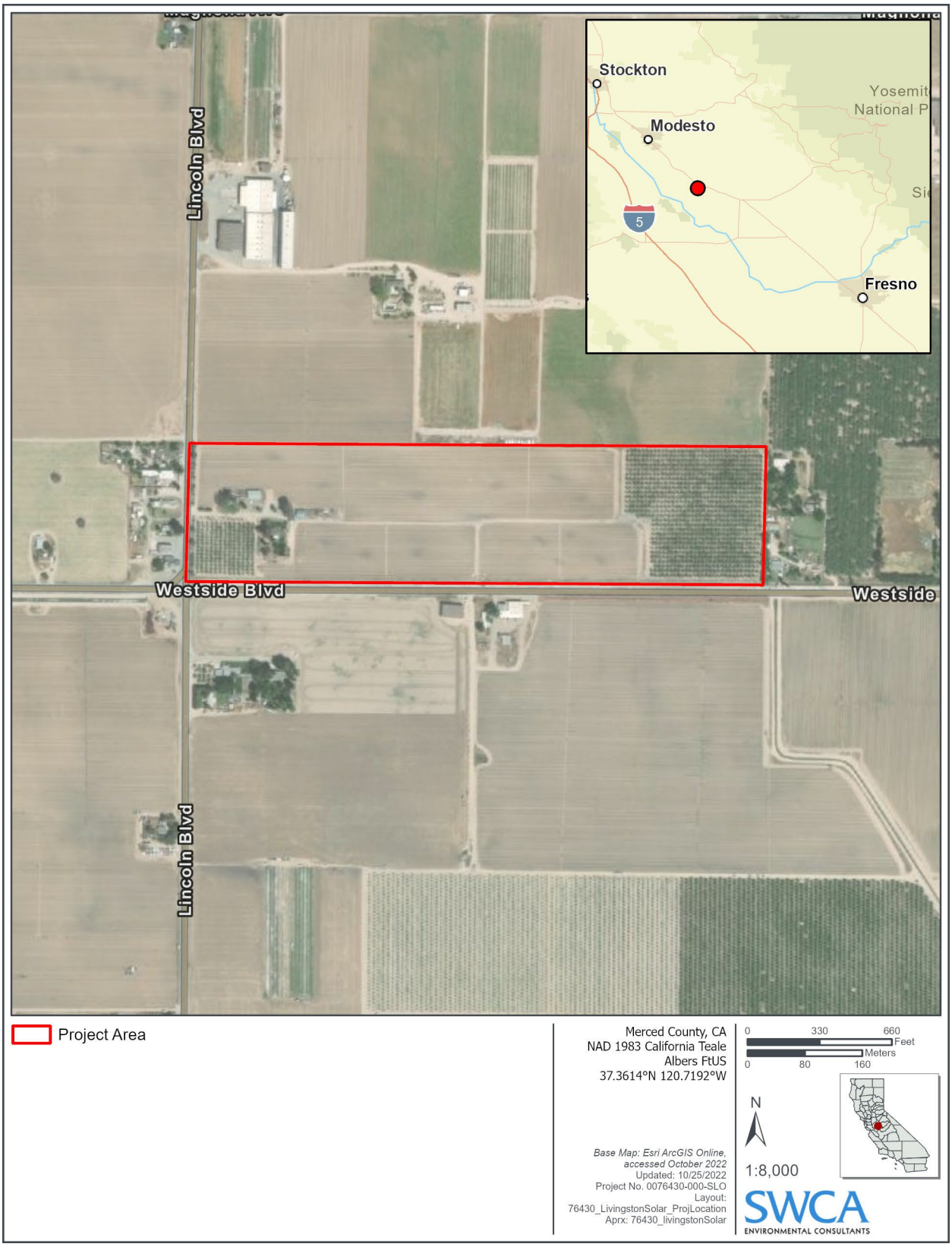
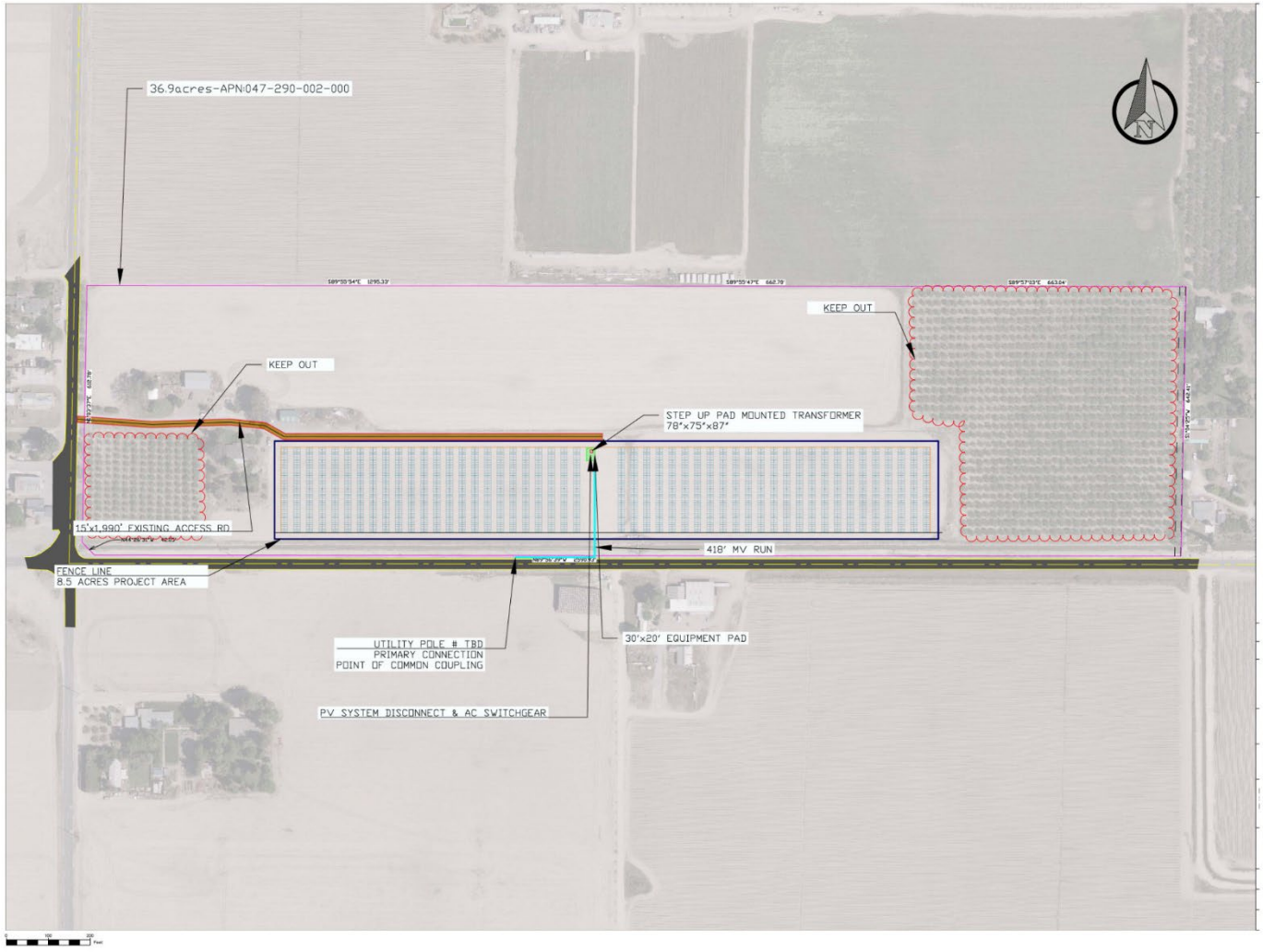


Figure 1. Project Location Map.



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Source: Renewable America LLC, January 2023

Figure 2. Project Site Plan.

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2 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

I. Aesthetics

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
(a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
(b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
(c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
(d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Setting

CEQA establishes that it is the policy of the state to take all action necessary to provide people of the state "with . . . enjoyment of aesthetic, natural, scenic and historic environmental qualities" (California Public Resources Code [PRC] Section 21001(b)). A scenic vista is generally defined as a high-quality view displaying good aesthetic and compositional values that can be seen from public viewpoints. Some scenic vistas are officially or informally designated by public agencies or other organizations. A substantial adverse effect on a scenic vista would occur if the project would significantly degrade the scenic landscape as viewed from public roads or other public areas. A proposed project's potential effect on a scenic vista is largely dependent on the degree to which it would complement or contrast with the natural setting, the degree to which it would be noticeable in the existing environment, and whether it detracts from or complements the scenic vista.

The California Scenic Highway Program was created by the State Legislature in 1963 with the intention of protecting and enhancing the natural scenic beauty of California highways and adjacent corridors. A highway may be designated scenic depending on 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. According to the California Department of Transportation (Caltrans) State Scenic Highway System Map, there are no designated state scenic highways within or in the immediate vicinity of the project site. The nearest designated scenic highway is Interstate (I-) 5, located approximately 20 miles west of the project site (Caltrans 2018).

The *2030 Merced County General Plan Natural Resources Element* provides context for the existing visual character of the county and identifies policies to protect scenic resources in the county. The

existing visual character of Merced County primarily consists of rural and agricultural landscapes, and scenic vistas include the Coastal and Sierra Nevada mountain ranges and the Los Banos, Merced, San Joaquin, and Bear Creek River corridors. In addition, State Route (SR) 152 and I-5 are designated scenic routes in parts of the county (Merced County 2013a). The following goal and policies would be applicable to the proposed project:

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.

Policy NR-4.5: **Light Pollution Reduction.** Require good lighting practices, such as the use of specific light fixtures that reduce light pollution, minimize light impacts, and preserve views of the night sky.

Environmental Evaluation

a) Would the project have a substantial adverse effect on a scenic vista?

Scenic vistas in the county include the Coastal and Sierra Nevada mountain ranges and the Los Banos, Merced, San Joaquin, and Bear Creek River corridors (Merced County 2013a). The project site is not located within the viewshed of a scenic vista; therefore, the project would not have a substantial adverse effect on a scenic vista, and *no impacts* would occur.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The nearest designated scenic highway is I-5, located approximately 20 miles west of the project site (Caltrans 2018). Due to the distance, the project site would not be visible from I-5; therefore, the project would not damage scenic resources within the viewshed of a state scenic highway, and *no impacts* would occur.

c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The project site is in a rural area, approximately 0.7 mile south of the city of Livingston. Existing development on the project site includes a single-family residence, accessory structures, an orchard located in the western portion of the project site, and an orchard located in the eastern portion of the project site. Surrounding land uses include agricultural row crops and scattered rural residences in all directions. The project would establish an 8-acre PV solar power generation facility, which would consist of 15.16-foot-tall solar arrays and electrical equipment constructed within an 8.5-acre project site. The Merced County Code does not establish a maximum allowable height requirement for ground-mounted solar panels (Section 18.30.030). Each development area would be surrounded by an approximately 6-foot-tall chain-link perimeter fence with three strands of barbed wire at the top, which would impede views of the project from Westside and Lincoln Boulevards and other surrounding areas. If and where necessary, trees along the existing access road would be trimmed or removed to facilitate construction

access; however, most of the existing trees would remain and would not substantially alter the existing visual character of the site. Following the 35-year lifespan of the proposed project, the project site would be returned to preconstruction conditions. The project may require the installation of one or more overhead power poles to reach Livingston Substation; however, installation of power poles would be consistent with the height, design, and scale of existing power poles in the area. Therefore, the project would not degrade the existing visual character or quality of public views in the project area, and potential impacts would be *less than significant*.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The project would include the installation of lighting fixtures as required by federal, state, and County building guidelines. Any lighting fixtures installed at the project site would be installed in a downward-facing direction and shielded. The project would be required to comply with Section 18.40.070 of the Merced County Code, which requires outdoor lighting to be designed and maintained to contain glare and reflection within the boundaries of the project site; be hooded, directed downward, and away from adjacent properties and public areas; avoid blinking, flashing, or unusually high intensity; and be similar in scale, intensity, and height to surrounding uses. Based on required compliance with the Merced County Code, the project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area; therefore, impacts would be *less than significant.*

Conclusion

The project would not substantially affect a scenic vista, damage a scenic resource, conflict with zoning, or create a source of new light or glare; therefore, impacts related to aesthetics would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

II. Agriculture and Forestry Resources

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
(b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☒	☐	☐
(d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
(e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Setting

The California Department of Conservation (CDOC) Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and current land use. For environmental review purposes under CEQA, the FMMP categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land are considered "agricultural land." Other non-agricultural designations include, but are not limited to, Urban and Built-up Land, Other Land, and Water. According to the FMMP, the project site is located on land that is designated as Prime Farmland and Farmland of Statewide Importance (CDOC 2016).

According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey, the project site is underlain by the following soil types (NRCS 2022):

- **Delhi sand, 0 to 3 percent slopes, Major Land Resource Area (MLRA) 17 (DfA):** This somewhat excessively drained soil has a negligible runoff class and a depth to restrictive feature of more than 80 inches. The typical soil profile consists of sand. This soil is considered Farmland of Statewide Importance.
- **Delhi sand, silty substratum, 0 to 3 percent slopes (DgA):** This somewhat excessively drained soil has a negligible runoff class and a depth to restrictive feature of more than 80 inches. The typical soil profile consists of sand and fine sandy loam. This soil is considered Prime Farmland if irrigated.

The Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agriculture or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based on farming and open space uses as opposed to full market value. The project site is not subject to a Williamson Act contract.

According to PRC Section 12220(g), forest land is defined as land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Timberland is defined as land, other than land owned by the federal government and land designated by the California Board of Forestry and Fire Protection 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. The project site and surrounding area is not considered forestland by PRC Section 12220(g).

The *2030 Merced County General Plan Agricultural Element* provides context for existing agricultural uses in the county and identifies goals and policies to protect, preserve, and enhance agricultural resources in the county. The following policy would be applicable to the proposed project:

> **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, or do not require cancellation of Williamson Act contracts. In addition, these facilities should include dedications of agricultural land and habitat mitigation, measures to control erosion, and assurances for financing decommissioning activities.

In addition, Policy LU-2.7 of the *2030 Merced County General Plan Land Use Element* identifies solar generation facilities as an allowable use within the Agriculture land use designation (Merced County 2013a).

Title 9 of the Merced County Code includes standards for implementation of the agricultural land conservation policies contained in the Merced County general plan related to permanently protecting agricultural land within the county. These standards include requiring mitigation for projects that include any of the following criteria:

1. A general plan amendment that changes the designation of any land from agricultural designation to a non-agricultural land use designation;
2. Rezoning of land in an agricultural zone to any other zone other than an agricultural zone;
3. 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; or
4. Conversion of agricultural land within the boundary of a community plan where the county previously required mitigation through a certified environmental impact report.

Required mitigation includes arrangement 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 (Merced County Code 9.30.030). Exemptions from these standards are identified for legal parcels less than 5 acres in area, public uses, and habitat conservation projects. Mitigation alternatives are identified in County Code Section 9.30.040, which include, but are not limited to, payment of an in-lieu fee to a qualified entity.

Environmental Evaluation

a) 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?

The project site is located on land that is designated as Prime Farmland and Farmland of Statewide Importance, with the majority of the proposed project footprint being located on land designated as Farmland of Statewide Importance (CDOC 2016). The project includes the construction and operation of

a 8.5-acre PV solar power generation facility on a 36.9-acre parcel on land designated Agricultural in the 2030 Merced County General Plan and is zoned A-1 (General Agricultural).

The project would result in the conversion of approximately 8.5 acres of Prime Farmland and Farmland of Statewide Importance to non-agricultural uses for 35 years. The project has been designed to minimize ground disturbance, which includes using piles as foundations for the PV solar panel tracking systems and using above-ground cables to the tracking systems rather than digging trenches. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Following decommissioning, the site would be returned to preconstruction conditions, which would allow for long-term agricultural activities to occur on the project site. Existing orchards on the project site would not be removed or otherwise disturbed.

Due to the project resulting in the conversion greater than 5 acres of Prime Farmland to non-agricultural uses, the project would be subject to the standards set forth in Merced County Code Section 9.30 – Agricultural Mitigation. In compliance with the County Code, Mitigation Measures MM AG-1 and MM AG-2 have been identified to require the project applicant to establish an agricultural conservation easement of no less than 1 acre of mitigation land for each acre of land proposed for conversion, or pay an in-lieu fee in accordance with the criteria set forth in the County Code. With implementation of Mitigation Measures MM AG-1 and MM AG-2, potential impacts associated with conversion of Farmland pursuant to the FMMP to non-agricultural use would be *less than significant with mitigation*.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The project site is located within the County's Agriculture land use designation but is not subject to a Williamson Act contract. According to Policy LU-2.7 of the County Land Use Element, solar generation facilities are an allowable use within the Agriculture land use designation; therefore, the project would be consistent with allowable uses for the County's Agriculture land use designation, and *no impacts* would occur.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The project site and surrounding area is not within forest land, timberland, or timberland production land use or zoning designations; therefore, the proposed project would not conflict with the zoning, or cause rezoning of, designated forest land, timberland, or timberland production, and *no impacts* would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The project site and surrounding area is not designated or zoned for forest land uses and does not meet the definition of forest land established in PRC Section 12220(g). Since the project site does not support forest land, any tree removal required for the project would not result in the loss or conversion of forest land; therefore, *no impacts* would occur.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The project includes the construction and operation of an 8.5-acre PV solar generation facility and would not result in new land uses that could reduce the availability of water for existing agricultural uses in the vicinity of the project site. The existing access road would be improved to an unpaved aggregate-based road; however, the project would require minimal vehicle trips along the driveway and would not generate substantial dust emissions that could inadvertently damage crops in the vicinity of the project site. Therefore, the project would not indirectly result in the conversion of farmland or forest land, and *no impacts* would occur.

Conclusion

The proposed project would not result in the conversion of forest land and would not interfere with zoning for agricultural or forest land uses. Impacts associated with the conversion of Farmland to non-agricultural uses would be reduced to less than significant with implementation of Mitigation Measures MM AG-1 and MM AG-2. Therefore, impacts related to agriculture and forestry resources would be less than significant with mitigation.

Mitigation Measures

MM AG-1 At the time of application for building and construction permits, the project applicant shall offset impacts associated with conversion of productive agricultural land (defined as 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) to non-agricultural uses by implementing one of the options described below:

Option 1. Agricultural Land Easement. If Option 1 is selected, the project Applicant shall offset impacts associated with conversion of productive agricultural land to non-agricultural uses by arranging for the imposition of an agricultural conservation easement on no less than 1 acre of mitigation land for each acre of land proposed for conversion. The agricultural easement on mitigation land shall be held in perpetuity by a qualified entity that operates in Merced County, or by Merced County on a temporary basis until transferred to a qualified entity, and shall meet the following criteria (as detailed in Merced County Code Section 9.30.050):

a. **Location.** The mitigation land shall be located within Merced County.

b. **Land Uses.** The mitigation land is subject to an agricultural designation in the General Plan and zoned for agricultural use and is located outside a city sphere of influence as adopted by the Local Agency Formation Commission of Merced County. The type of agricultural-related activity allowed on the mitigation land shall be specified in the easement and is at least as restrictive as the requirements of the agricultural zoning district. The agricultural easement shall prohibit all residential, commercial, or industrial development and any land uses or activities that substantially impair or diminish the agricultural productive capacity of the mitigation land or that are otherwise inconsistent with the conservation purposes of this chapter. Any legal nonconforming use of the mitigation land shall be abandoned prior to execution of the agricultural easement, or if maintained, will not interfere with agricultural use of the mitigation land.

c. **Soil Quality.** The soil quality of the mitigation land shall have the agricultural productive capacity equivalent to or better than that of the land proposed for conversion.

d. **Water Supply.** The available water supply for the mitigation land shall be at least equal to that of the land proposed for conversion in terms of quantity, quality, and security. The water supply on the agricultural mitigation land shall be protected in the farmland conservation easement or other document evidencing the agricultural mitigation.

e. **Existing Interests and Encumbrances.** The mitigation land shall not be already subject to an encumbrance or interest that would legally or practicably prevent converting the land, in whole or in part, to a nonagricultural use, such as a conservation easement, open space easement, flowage easement, avigation easement, long-term agricultural lease, profit, or an interest in the subsurface estate that would preclude development of the surface estate. A contract entered pursuant to the Williamson Act shall not constitute an encumbrance for purposes of this section.

f. **Physical Limitations.** There shall be no physical conditions or contamination on the mitigation land that would legally or practicably prevent converting the land, in whole or in part, to a nonagricultural use.

g. **Existing Home.** The mitigation land shall have no existing home, unless the land proposed for conversion includes an existing home.

h. **Public Ownership.** The mitigation land may be owned by a public agency if it is managed for compatible agricultural use in perpetuity similar to an agricultural easement placed on privately owned land.

i. **Permanently Preserve.** The mitigation land shall conform to the perpetuity requirements contained in Internal Revenue Service Code Section 170(h) to ensure the land will satisfy the intent of this ordinance to permanently preserve the agricultural land placed under easement.

Option 2. Payment of an In-Lieu Fee. As an alternative to Option 1 as detailed above, the applicant may choose to seek approval to implement the following alternative mitigation option, as detailed in Merced County Code Section 9.30.040:

a. **In-Lieu Fee.** An applicant for conversion may satisfy the mitigation obligation set forth in Merced County Code Section 9.30.030(B) by paying to a qualified entity a fee in lieu of conveying an agricultural easement. If a qualified entity is unwilling or unable to accept the in-lieu fee and acquire an agricultural easement, the in-lieu fee may be paid to Merced County.

   Merced County shall establish the amount of in-lieu fees on a case-by-case basis unless the applicant for conversion has reached agreement on the fee amount with a qualified entity, or unless Merced County has previously adopted the resolution provided for in Merced County Code Section 9.30.040(B)(5).

Option 3. Applicant-Designed Mitigation Options. The applicant proposing conversion may propose an alternative method of mitigation for review and approval by Merced County subject to the requirements of the Merced County Code. Proposed alternative mitigation must satisfy all of the following criteria:

1. The proposed mitigation must result in permanent protection of mitigation land;

2. The applicant must bear all costs of reviewing, approving, managing, and enforcing the mitigation;
3. The proposed mitigation must be in substantial compliance with the requirements for mitigation land and agricultural easements set forth in Merced County Code Section 9.30.050; and
4. The proposed mitigation must be in all respects at least as protective of agricultural land as the mitigation required by the Merced County Code.

III. Air Quality

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
(a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
(b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
(c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
(d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). National and state standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$)—lead (Pb), and sulfur dioxide (SO_2). In addition, state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and California Ambient Air Quality Standards (CAAQS) are set at levels that protect public health with a margin of safety and are subject to periodic review and revision.

Merced County is located within the San Joaquin Valley Air Basin (SJVAB) and under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The San Joaquin Valley is prone to one of the most challenging air quality problems in the nation, as it is home to over 4,000,000 residents and includes several major metropolitan areas, vast expanses of agricultural land, industrial sources, highways, and schools. Under the NAAQS, the SJVAB is designated as Nonattainment-Extreme for the 8-hour O_3 standard, Maintenance-Serious for the PM_{10} standard, and Nonattainment-Moderate for the

$PM_{2.5}$ standard. Under the CAAQS, the SJVAB is designated Nonattainment for the 1-hour O_3 standard, 8-hour O_3 standard, PM_{10} standards, and $PM_{2.5}$ standards.

The SJVAPCD has established air quality thresholds of significance for CO, nitrogen oxides (NO_X), reactive organic gases (ROG), sulfur oxides (SO_X), PM_{10}, and $PM_{2.5}$, as shown in Table 2.

Table 2. SJVAPCD Thresholds

Pollutant/Precursor	Construction Emissions (TPY[1])	Operational Emissions (TPY[1])	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
CO	100	100	100
NO_X	10	10	10
ROG	10	10	10
SO_X	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Source: SJVAPCD (2015)

[1] TPY = tons per year

Ozone

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

"Bad" ozone is what is known as a photochemical pollutant. It needs ROG, NO_X, and sunlight to form. ROG and NO_X are emitted from various sources throughout Merced County. Significant ozone formation generally requires an adequate number of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

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

Combustion Emissions

Combustion emissions (ROG and NO_X) are most significant when using large diesel-fueled scrapers, loaders, bulldozers, haul trucks, compressors, generators, and other heavy equipment. Emissions can vary substantially from day to day, depending on the level of activity and the specific type of operation. ROG and NO_X are the critical pollutants caused by construction work because of the high output of these pollutants by the heavy diesel equipment normally used in grading operations.

Carbon Monoxide

CO, an odorless, colorless, poisonous gas that is highly reactive, is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is a byproduct of motor vehicle exhaust, which contributes more than 66% of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95% of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources, such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Sulfates

Sulfates (SO_4^{-2}) are particulate products that come from the combustion of sulfur-containing fossil fuels. When sulfur monoxide (SO) or SO_2 is exposed to oxygen, it precipitates out into sulfates (SO_3 or SO_4). Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline, diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features.

Particulate Matter

Particulate matter (PM_{10} and $PM_{2.5}$) pollution consists of very small liquid and solid particles floating in the air. Some particles are large and dark enough to be seen as soot or smoke, and others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals and can form when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. Particulate matter or airborne dusts are the small particles that remain suspended in the air for long periods of time. Particulates of concern are PM_{10} and $PM_{2.5}$, which are small enough to be inhaled, pass through the respiratory system, and lodge in the lungs, possibly leading to adverse health effects; $PM_{2.5}$ is a subset of PM_{10}.

The composition of PM_{10} and $PM_{2.5}$ can vary greatly with time, location, the sources of the material, and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM_{10} and $PM_{2.5}$. In addition to those listed previously, secondary particles can also be formed as precipitates from photochemical reactions of gaseous SO_2 and NO_X in the atmosphere to create sulfates (SO_4) and nitrates (NO_3), respectively. Secondary particles are of greatest concern during the winter months when low inversion layers tend to trap the precursors of secondary particulates.

In the western United States, there are sources of PM_{10} in both urban and rural areas. PM_{10} and $PM_{2.5}$ are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. Because particles originate from a variety of sources, their chemical and physical compositions vary widely.

The *2030 Merced County General Plan Air Quality Element* provides the following goals and policies related to the reduction of air pollutants and greenhouse gas (GHG) emissions that would be applicable to the proposed project:

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

Goal AQ-4. Reduce traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs.

Policy AQ-4.1. **Decrease Vehicle Miles Traveled.** Require diverse, higher-density land uses (e.g., mixed-use and infill development) to decrease vehicle miles traveled.

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

Policy AQ-6.1. **Particulate Emissions from Construction.** Support the San Joaquin Valley Air Pollution Control District'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-6.2. **Emissions from County Roads.** Require PM_{10} emission reductions on County-maintained roads 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.

Environmental Evaluation

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The SJVAPCD developed a Clean Air Plan (CAP) that utilizes extensive science and research, state of the art air quality management, and the best available information in developing a strategy to attain the federal health-based 1997, 2006, and 2012 NAAQS for $PM_{2.5}$ as expeditiously as possible (SJVAPCD 2018). The San Joaquin Valley is one of the fastest growing regions in the state, and the California Department of Finance (CDOF) projects that the population of the valley will increase by 19.3% between 2015 and 2030, while the state of California is only projected to increase by 12.5% in that same period

(SJVAPCD 2018). An increase in population generally means there will be an increase in air pollutant emissions and vehicle miles traveled (VMT) (SJVAPCD 2018).

Operation of the project would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, the project would not contribute a cumulatively considerable amount of VMT or associated vehicle emissions within the region, which would be consistent with the SJVAPCD CAP, and impacts would be *less than significant*.

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

The SJVAB is designated as Nonattainment-Extreme for the 8-hour O_3 standard, Maintenance-Serious for the PM_{10} standard, and Nonattainment-Moderate for the $PM_{2.5}$ standard under the NAAQS and as Nonattainment for the 1-hour O_3 standard, 8-hour O_3 standard, PM_{10} standards, and $PM_{2.5}$ standards under the CAAQS. The project would primarily generate emissions during construction of the proposed roadway improvements.

SHORT-TERM EMISSIONS

Heavy equipment and earth-moving construction activities generate fugitive dust and combustion emissions; these may have substantial temporary impacts on local air quality. Fugitive dust emissions would result from land clearing, demolition, excavation, trenching, grading activities, and trip generation. Combustion emissions, such as NO_X and PM_{10}, are most significant when using large diesel-fueled scrapers, loaders, bulldozers, haul trucks, compressors, generators, and other types of equipment.

Estimated construction air emissions were calculated for the proposed project by AMBIENT Air Quality & Noise Consulting (AMBIENT) using the California Emissions Estimator Model (CalEEMod). The CalEEMod results are included in Appendix B, and the results of the unmitigated estimated construction emission calculations for the proposed project are shown in Table 3. It is important to note that the values shown in Table 3 represent estimated emissions at a time at which the project design included development of a 5-MWac PV solar power generation facility and a battery energy storage system on a 20.5-acre project site. Because the currently proposed project design is reduced in scale and scope, the values calculated below represent a very conservative estimate of project emissions levels.

Table 3. Annual Construction Emissions for the Proposed Project

	Criteria Pollutant (TPY[1])					
Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Project Construction	0.09	0.79	0.96	0.002	0.17	0.07
SJVAPCD Threshold	**10**	**10**	**100**	**27**	**15**	**15**
Exceed threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Source: AMBIENT (2022)

[1] TPY = tons per year

Based on the results shown in Table 3, construction air emissions would be in compliance with the SJVAPCD thresholds for all pollutants; therefore, construction-related impacts would be *less than significant*.

LONG-TERM EMISSIONS

The project would result in the establishment of an 8.5-acre PV solar power generation facility and does not include the establishment of new land uses or activities that could generate long-term air pollutant emissions in the region. The project would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years. The existing access road would be improved to an unpaved aggregate-based road; however, the project would require minimal vehicle trips along the driveway. Estimated operational air emissions were calculated for the proposed project using CalEEMod. The CalEEMod results are included in Appendix B, and the results of the unmitigated estimated operational emission calculations for the proposed project are shown in Table 4.

Table 4. Annual Operational Emissions for the Proposed Project

	Criteria Pollutant (TPY[1])					
Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Project Construction	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SJVAPCD Threshold	**10**	**10**	**100**	**27**	**15**	**15**
Exceed threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Source: AMBIENT (2022)

[1] TPY = tons per year

Based on the results shown in Table 4, the project would not be expected to exceed SJVAPCD operational thresholds; therefore, operational impacts would be *less than significant*.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

There are several single-family residences located within 1,000 feet of the project site. The nearest off-site sensitive receptors are located approximately 60 feet west and 100 feet south of the project site. In addition, there is an existing single-family residence in the western portion of the project site. Based on the close proximity of the nearest sensitive receptors, the proposed project has the potential to expose nearby residents to adverse levels of short-term construction-related emissions. As discussed in Impact Discussion III(b), construction of the project would generate emissions, including diesel particulate matter (DPM) and fugitive dust. Construction and operational emissions would not exceed SJVAPCD thresholds; however, due to the proximity of sensitive receptors, compliance with the SJVAPCD Standard Regulation VIII Control Measures and Mitigation Measures MM AQ-1 through MM AQ-3 would be required to reduce the potential for a nuisance and exposure of sensitive receptors to adverse levels of DPM and fugitive dust. Therefore, potential impacts would be *less than significant with mitigation*.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction activities generally have the potential to emit odors from diesel equipment, paints, solvents, fugitive dust, and adhesives. Any odors generated by construction activities would be intermittent and temporary, and generally would not extend beyond the construction area. Any construction odors would be temporary and limited to the construction phase of the proposed project. The project does not include the establishment of new land uses or other activities that could generate long-term odors within the project area.

The project is not located in an area with known potential for naturally occurring asbestos (NOA) (California Geologic Survey [CGS] 2011). Therefore, construction activities would not have the potential to expose workers or surrounding land uses to harmful levels of NOA. The project does not require the demolition or removal of any existing structures that could disturb asbestos-containing material (ACM) or lead-based paint. Therefore, the project would not result in adverse odors or other emissions with the potential to adversely affect a substantial number of people, and impacts would be *less than significant*.

Conclusion

The project would result in negligible air pollutant emissions during operation and would be consistent with the goals intended to reduce regional VMT outlined in the SJVAPCD CAP. The project would not generate construction-related or operational air pollutant emissions above SJVAPCD thresholds of significance. The project would not result in adverse odors or other emissions with the potential to adversely affect a substantial number of people. With compliance with SJVAPCD Standard Regulation VIII Control Measures and implementation of Mitigation Measures MM AQ-1 through MM AQ-3, the project would not expose sensitive receptors to substantial pollutant concentrations, and residual impacts related to air quality would be less than significant.

Mitigation Measures

MM AQ-1 **Permit Requirements.** Prior to ground disturbance and construction, the Construction Contractor shall obtain all required permits for dust control and the use of portable equipment, 50 horsepower or greater, from the San Joaquin Valley Air Pollution Control District. Upon application for construction permits, all required mitigation measures shall be shown on all applicable grading or construction plans and implemented during all applicable grading and construction activities.

MM AQ-2 **Dust Control Measures.** No person shall perform any construction, demolition, excavation, extraction, or other earth-moving activities unless measures are sufficiently implemented to limit visible dust emissions (VDE) to 20 percent opacity and comply with the conditions for a stabilized surface area when applicable. In addition to the requirements of this rule, a person shall comply with all other applicable requirements of San Joaquin Valley Air Pollution Control District Regulation VIII. An individual shall monitor the fugitive dust emissions to ensure the following requirements are met:

a. Pre-Activity:
    1. Pre-water site sufficient to limit VDE to 20 percent opacity, and
    2. Phase work to reduce the amount of disturbed surface area at any one time.

b. During Active Operations:
    1. Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20 percent opacity;
    2. Construct and maintain wind barriers sufficient to limit VDE to 20 percent opacity. If utilizing wind barriers, control measure 2.a above shall also be implemented; and
    3. Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.

c. Temporary Stabilization During Periods of Inactivity:

1. Restrict vehicular access to the area; and
2. Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for 7 or more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.

MM AQ-3 **Construction Emissions.** The project shall utilize clean off-road construction equipment, including the latest tier equipment, where feasible.

IV. Biological Resources

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
(c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
(d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Setting

The federal Endangered Species Act (FESA) of 1973 provides legislation to protect federally listed plant and wildlife species and requires that the responsible agency or individual consult with the U.S. Fish and Wildlife Service (USFWS) to determine the extent of impact to a particular species. If the USFWS determines that impacts to a species would likely occur, alternatives and measures to avoid or reduce impacts must be identified.

The Migratory Bird Treaty Act (MBTA) of 1918 protects all migratory birds, including their eggs, nests, and feathers. The MBTA was originally drafted to put an end to the commercial trade of bird feathers, popular in the latter part of the 1800s. The MBTA is enforced by the USFWS, and potential impacts to species protected under the MBTA are evaluated by the USFWS in consultation with other federal agencies.

The California Endangered Species Act (CESA) of 1970 ensures legal protection for plants and wildlife formally listed as endangered or threatened by the State of California. California Fish and Game Code (CFGC) Sections 2080 and 2081 prohibits the take (defined as hunting, pursuing, catching, capturing, or killing) of endangered, threatened, or candidate species unless otherwise authorized by permit. The California Department of Fish and Wildlife (CDFW) regulates activities that may result in the "take" of such species. The CESA has a much less inclusive definition of "take" (limited to direct take such as hunting, shooting, capturing, etc.) that does not include the broad "harm" and "harassment" definitions in federal law.

CFGC Sections 3511, 4700, 5050, and 5515 include provisions to protect Fully Protected species, such as: (1) prohibiting take or possession "at any time" of the species listed in the statute, with few exceptions; (2) stating that "no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to "take" the species;" and (3) stating that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession. The CDFW is unable to authorize incidental take of Fully Protected species when activities are proposed in areas inhabited by those species; therefore, project-related activities must avoid take of Fully Protected species.

The CDFW also maintains a list of California Species of Special Concern (SSC). Species are given this designation based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. Under state law, the CDFW is empowered to review projects for their potential to impact state-listed and SSC species and their habitats.

CFGC Section 3503, Protections of Bird's Nests, includes provisions to protect the nests and eggs of birds. CFGC Section 3503 states: "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." In addition, CFGC Section 3513 states that it is unlawful to take or possess any migratory bird as designated in the MBTA or any part of such migratory birds except as provided by rules and regulations under provisions of the MBTA.

Methods

The following impact analysis for biological resources is based on a desktop review, including a review of Google Earth and other publicly available aerial imagery, and a reconnaissance-level field survey of the project site. Soil types in the vicinity of the project site were reviewed using the NRCS Web Soil Survey (NRCS 2022). The USFWS National Wetlands Inventory (NWI) and U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) were reviewed to determine the potential for wetlands, riparian habitat, or other jurisdictional features to occur in the study area (USFWS 2022; USGS 2022).

Three databases were queried to assess the potential for special-status species to occur in the project vicinity. The first was a query of the CDFW California Natural Diversity Database (CNDDB) (CNDDB 2022) to identify special-status plant and wildlife species that have reported occurrences and/or are considered to have potential to occur within the Arena, California USGS 7.5-minute quadrangle and the adjacent quadrangles: Cressey, Winton, Atwater, Sandy Mush, Turner Ranch, San Luis Ranch, Stevinson, and Turlock. Second, the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Plants of California (CNPS 2022) was reviewed for the same quadrangles to provide

additional information on rare plants that are known to occur in the area. Finally, the USFWS Information Planning and Consultation (IPaC) tool (USFWS 2022) was queried to identify any other federally listed resources that need to be addressed in relation to the project.

A reconnaissance-level field survey of the project parcel was conducted by SWCA Environmental Consultants (SWCA) Senior Biologist Rebecca Doubledee on October 21, 2022, to assess the habitat types present and the suitability of the site to support special-status species.

Site Conditions

The 36.9-acre project parcel (also referred to as study area) is relatively flat, with elevation ranging from 125 to 138 feet (38 to 42 meters) above mean sea level. Two soil types occur within the study area: Delhi sand, 0 to 3 percent slopes, MLRA 17 and Delhi sand, silty substratum, 0 to 3 percent slopes. They are both well-drained, non-hydric soils and considered either Farmland of Statewide Importance or Prime Farmland, respectively. Being Prime Farmland, the project site has been used for active agricultural activities for several decades (Google Earth 2022) and only recently (within the last 2 years) has been taken out of production (fallowed). Based on assessment of aerial imagery and information from the landowner, the majority of the project site was planted in almond orchard until 2017 (Google Earth 2022). After that, a portion of the project site was put into row crops (specifically sweet potatoes) for a few years.

Current vegetation consists of almond orchards along the eastern edge and southwest corner of the project site (Figure 4). Adjacent to the almond orchard on the western side of the project site is a homestead consisting of a main residential house and accessory structures (barns). Landscaped vegetation occurs in the area immediately surrounding the main residence and the barns. Tree species in this area include eucalyptus (*Eucalyptus* spp.), tree of heaven (*Ailanthus altissima*), California sycamore (*Platanus racemose*), and Mediterranean cypress (*Cupressus sempervirens*). Other vegetation in the landscaped area around the house include scarlet firethorn (*Pyracantha coccinea*), American sweetgum (*Liquidambar styraciflua*), red bottlebrush (*Melaleuca citrina*), and oleander shrubs (*Nerium oleander*). A row of oleander shrubs lines the western edge of the project site along Lincoln Boulevard. The center of the project site consists of a fallow agricultural field, which was mostly devoid of vegetation except for a few weedy species, such as Russian thistle (*Salsola tragus*) and flax-leaf fleabane (*Erigeron bonariensis*).

A concrete irrigation ditch runs in an east-to-west direction just outside of the project site, along the southern boundary of the project site. The irrigation ditch is mostly clear of vegetation, except for patches of bearded sprangletop (*Diplachne fusca*) growing along water line. There is a berm along the southern edge of project site leading up to the irrigation ditch that is dominated by ruderal species, such as bromes (*Bromus* spp.), flax-leaf fleabane, telegraph weed (*Heterotheca grandiflora*), and horseweed (*Erigeron canadensis*). There was a slight drop between the fallowed agricultural field and the almond orchard that was populated with similar ruderal species, but also included patches of dead goosegrass (*Eleusine indica*) and salt grass (*Distichlis spicata*). There was also a small berm along the northern boundary of the project parcel that was dominated by non-native grasses and other ruderal species, including ripgut brome (*Bromus diandrus*) and cheatgrass (*Bromus tectorum*).

The landscaped vegetation and almond orchard provide suitable habitat for nesting birds. Bird species observed on the project site included white crowned sparrows (*Zonotrichia leucophrys*), American crows (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), California scrub jays (*Aphelocoma californica*), and Anna's hummingbird (*Calypte anna*). Two Swainson's hawks (*Buteo swainsoni*) were observed flying immediately north of the project site along Magnolia Avenue and then perched in trees at an adjacent homestead approximately 0.46 mile northwest of the project site. A red-tailed hawk (*Buteo*

jamaicensis) was also observed flying just north of the project site at the intersection of Magnolia Avenue and Lincoln Boulevard.

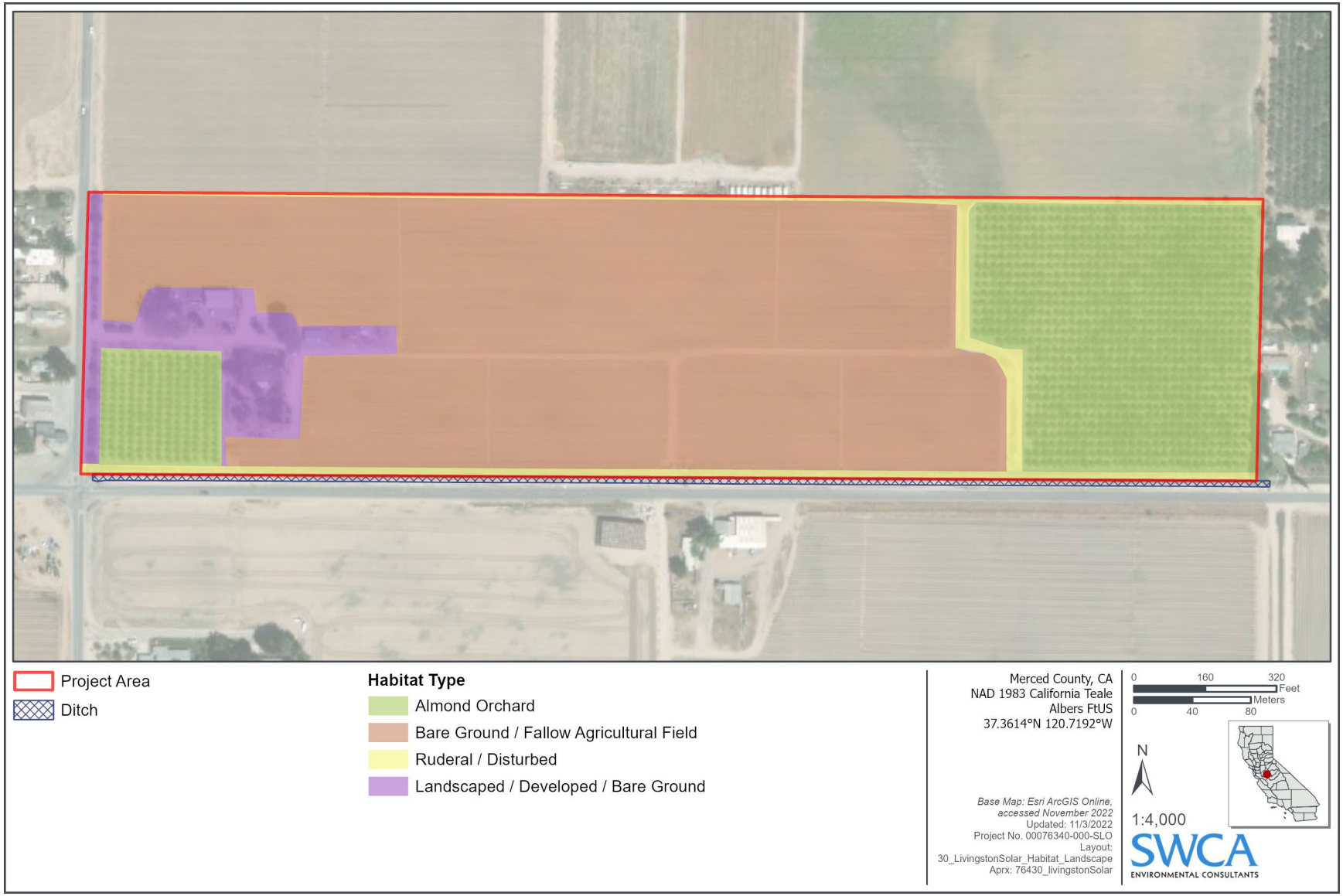

Figure 3. Vegetation and Land Cover Types.

Environmental Evaluation

a) 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 California Department of Fish and Game or U.S. Fish and Wildlife Service?

Special Status Plant Species

For the purposes of this analysis, special-status plant species are defined as the following:

- Plants listed or proposed for listing as threatened or endangered under the FESA (Code of Federal Regulations [CFR] Title 50, Section 17.12 for listed plants and various notices in the *Federal Register* for proposed species).
- Plants that are candidates for possible future listing as threatened or endangered under the FESA.
- Plants that meet the definitions of rare or endangered species under CEQA (State CEQA Guidelines Section 15380).
- Plants considered by the CNPS to be "rare, threatened, or endangered" in California (California Rare Plant Ranks [CRPR] 1, 2, and 3).
- Plants listed by the CNPS as plants about which we need more information and plants of limited distribution (CRPR 4).
- Plants listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] Section 670.5).
- Plants listed as rare under the California Native Plant Protection Act (NPPA; CFGC Section 1900 et seq.).

The background review identified 30 special-status plant species that have the potential to occur in the vicinity of the project site (i.e., within the nine USGS quadrangles searched; see Appendix C). The project site has been heavily modified by agricultural land uses for several decades and no longer contains any native vegetation. The majority of the special-status plant species from the database searches occur in areas with vernal pool wetlands, alkaline soils, serpentine soils, valley and foothill grassland habitat, riparian areas, seeps, and vernally mesic areas (see Appendix C). Several of the CNDDB records are from vernal pool regions south of SR 140 on and in the vicinity of Great Valley Grasslands State Park (approximately 8 miles southwest) and east of the city of Merced around the University of California, Merced, approximately 14 miles east. These areas comprise portions of the Central Valley vernal pool region based on 2005 National Agriculture Imagery Program (NAIP) imagery as mapped by Witham, Holland, and Vollmar (2013). The closest CNDDB occurrence of a special-status plant species to the project site is Merced monardella (*Monardella leucocephala*), which is located north of the Merced River approximately 4 miles north of the project site and presumed extirpated. The CNPS designated this as a CRPR 1A species, which is presumed extirpated in California. Given the lack of native vegetation within the project site and previous land use disturbance, the project site does not provide suitable habitat for any special-status plant species. Therefore, the project would not result in impacts to any special-status plant species, and *no impacts* would occur.

Special Status Wildlife Species

For the purposes of this analysis, special-status wildlife species are defined as the following:

- Wildlife listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.11 for listed wildlife and various notices in the *Federal Register* for proposed species).
- Wildlife that are candidates for possible future listing as threatened or endangered under the FESA.
- Wildlife that meet the definitions of rare or endangered species under CEQA (State CEQA Guidelines Section 15380).
- Wildlife listed or proposed for listing by the State of California as threatened and endangered under the CESA (14 CCR Section 670.5).
- Wildlife SSC to the CDFW.
- Wildlife species that are fully protected in California (CFGC Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

The background review identified 33 special-status wildlife species that have the potential to occur within the project region (i.e., within the nine USGS quadrangles searched and the USFWS IPaC query; see Appendix C). The list of special-status wildlife species is considered regional; therefore, an analysis of the range and habitat preferences of those species was conducted to identify which sensitive wildlife species have the potential to occur within or near the project site. Based on this analysis, it was determined that the project site supports suitable foraging and nesting habitat for Swainson's hawks and marginally suitable habitat for northern California legless lizard (*Anniella pulchra*), Cooper's hawk (*Accipiter cooperii*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), white-tailed kite (*Elanus leucurus*), and loggerhead shrike (*Lanius ludovicianus*). All the vegetation on the project site also provides suitable nesting habitat for migratory bird species. These species are discussed in further detail below.

NORTHERN CALIFORNIA LEGLESS LIZARD

Northern California legless lizard is listed as an SSC by CDFW. This species occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to Ventura County. It prefers sandy or loose loamy soils with high moisture content under sparse vegetation. While the project site contains suitable sandy soil, overall, it has been heavily disturbed by decades of agricultural practices, making the presence of this species unlikely and the habitat only marginally suitable. If present, they would most likely occur in the strips of ruderal vegetation along the perimeter of the project site. The closest CNDDB occurrences are approximately 3.4 miles north on the other side of the Merced River (#13) and 5.4 miles south (#14), south of SR 140. Ground-disturbing impacts are limited to 0.7 acre within the existing agricultural field. All impacts would be located outside of the existing ruderal strips of vegetation; therefore, no direct impacts are anticipated during construction. If individuals are still present along the perimeter of the parcel, their population may actually benefit from the area not being disturbed annually and the extensive cover provided by the solar panels. Therefore, it was determined that the project would not result in a significant impact to this species, and *no impacts* would occur.

SWAINSON'S HAWK

Swainson's hawk (SWHA) is a state threatened species protected under the CESA. Historically, SWHA foraged over open stands of grassland, but as open stands of grassland have vanished throughout most of their range, they have shifted their foraging strategy to rely more heavily on agricultural crops. So much

so, that they have become almost entirely dependent on a diverse matrix of crops to provide multiple foraging opportunities over time. Suitability of foraging habitat is highly dependent on the amount and distribution of different crop types and the small mammal communities associated with them. In the Central Valley, Estep (1989) ranked the following agricultural habitats in terms of their relative importance to foraging hawks: alfalfa, disked fields, fallow fields, dry-land pasture, beets, tomatoes, irrigated pasture, grains, other row crops, and other habitats. Estep (1989) found that SWHA use disked fields for foraging on insects, a small, but readily available and easily obtainable food source. In addition to insects, several small mammal (their primary food source) burrows were observed along the berms surrounding the project site in the areas mapped ruderal (see Figure 4).

The project site contains suitable foraging habitat and several of the trees around the homestead provide suitable nesting habitat for SWHA. The closest CNDDB occurrence (#1108) is a nest recorded approximately 3.6 miles north of project site along the Merced River. The second closest occurrence (#1761) is another nest recorded approximately 5.6 miles east of the project site. The nest was in a black willow tree (*Salix nigra*) along a well-traveled levee road. In addition to these CNDDB occurrences, two SWHA were observed in flight immediately north of the project site along Magnolia Avenue during SWCA's survey of the site and were then observed perched in trees at an adjacent homestead approximately 0.46 mile northwest of the project site.

The CDFW requires consultation if project activities would occur within a 0.5-mile radius of a known nest. There are no known nest records within 0.5 mile of the project site, but there is suitable nesting habitat on-site and in the immediate vicinity. Furthermore, SWHA was observed less than 0.5 mile from the project site. Therefore, Mitigation Measures MM BIO-5 and MM BIO-6 have been included and would require SWHA nesting surveys to be conducted following CDFW's recommended protocol (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). If a nest is found within 0.5 mile of the project site, the applicants would be required to consult with CDFW to determine if an Incidental Take Permit (ITP) is required and implement measures to avoid take of SWHA. Such measures may include but may not be limited to implementation of avoidance buffers, seasonal restrictions of project activities during the nesting season; and acquisition of SWHA conservation lands and/or bank credits. With the incorporation of Mitigation Measures MM BIO-5 and MM BIO-6, impacts would be *less than significant with mitigation.*

BURROWING OWL

Burrowing owl (BUOW) is considered an SSC by the CDFW and is known to occur in agricultural areas in the Central Valley if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (CDFW 2012). The closest CNDDB occurrences are in Atwater (#876 and #877) and on Castle Airport (#2012 and #2013) approximately 8.5 and 8.25 miles away, respectively. CNDDB occurrence #877 occurs on a low-density agricultural property and a ruderal field. The berm adjacent to the irrigation canal on the south side of the project site could potentially provide suitable habitat for BUOW, but no large burrows or California ground squirrel (*Spermophilus beecheyi*) were observed during the site visit; only smaller mammal burrows were observed. BUOW prefers short sparse vegetation, and the disked field provides suitable foraging habitat for this species if suitable nesting habitat is present. The limiting factor making the site only marginally suitable is the lack of ground squirrel and evidence of large burrows suitable for nesting. BUOW is not anticipated to occur within the proposed project site, but preconstruction surveys are recommended to reverify absence (MM BIO-2); if BUOW is observed during preconstruction surveys or during construction, mitigation has been recommended to avoid impacts (MM BIO-3 and MM BIO-4) per the methods outlined in the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Therefore, impacts to BUOW would be *less than significant with mitigation.*

OTHER SPECIAL-STATUS BIRD SPECIES AND NESTING MIGRATORY BIRDS

Cooper's hawk and loggerhead shrike are both considered SSC by the CDFW, and the white-tailed kite is listed as a Fully Protected species in California under CFGC Section 3511. The larger trees on the project site may potentially provide suitable nesting habitat for Cooper's hawk and white-tailed kite, and the trees and shrubs in the landscaped areas could potentially provide suitable nesting habitat for loggerhead shrike. There were no CNDDB occurrences recorded in the vicinity of the project site, but these species are widespread in California and generally under reported in the CNDDB.

Ferruginous hawk is designated a Watch List species by the CDFW and does not breed in California. While the project site may provide marginally suitable foraging habitat for this species, the loss of 8.5 acres of agricultural land will not have an impact on the species. All the vegetation on the project site has the potential to provide nesting habitat for migratory birds. To avoid impacts to these special-status species and to migratory birds, Mitigation Measure MM BIO-1, which would require nesting bird surveys, has been included. Therefore, impacts would be *less than significant with mitigation.*

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Five different sensitive natural communities were identified in the CNDDB search for the Arena, California USGS 7.5-minute quadrangle and surrounding quadrangles. These are northern claypan vernal pools, northern hardpan vernal pools, valley sacaton grassland, cismontane alkali marsh, and coastal and valley freshwater marsh. None of these sensitive natural communities were observed within the project site. The project site does not support any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations. Therefore, the project would not result in disturbance to these resources, and *no impacts* would occur.

c) Would the project 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?

The project site is adjacent to a concrete irrigation channel. This channel is listed in the NWI and NHD as excavated by humans. A formal jurisdictional delineation was not conducted during the site visit, but no wetland vegetation was observed along the banks of the channel, nor was it observed growing in the channel. No other wetlands were observed or mapped on the project site. The channel is located outside of the project area and would not be impacted by project activities, and *no impacts* would occur.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The project site is located in an agricultural area 0.7 mile south of the city of Livingston and does not support any corridors of natural habitat that facilitate wildlife movement. The solar panels would be elevated off the ground; therefore, it would not substantially block the movement of reptiles or small mammals across the project site. The project site does not support fish movement corridors or wildlife nursery sites. The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species and there would be no impact on established native resident or migratory wildlife corridors or native wildlife nursery sites; therefore, *no impacts* would occur.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project site does not contain any sensitive tree resources, such as oak woodlands or riparian areas. Therefore, it would not conflict with any local policies or ordinances, and *no impacts* would occur.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Based on the records and literature research conducted for the project, the project site does not overlap with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other conservation plans. Therefore, the project would not conflict with any approved local, regional, or state habitat conservation plans, and *no impacts* would occur.

Conclusion

The project site supports suitable foraging and nesting habitat for SWHA and marginally suitable habitat for northern California legless lizard, Cooper's hawk, BUOW, ferruginous hawk, white-tailed kite, and loggerhead shrike. All the vegetation on the project site also provides suitable nesting habitat for migratory bird species. The project would not have significant impacts on northern California legless lizard or ferruginous hawk, if present, and lizard populations may in fact benefit from the lack of regular ground disturbance. Preconstruction nesting bird surveys are required by Mitigation Measure MM BIO-1 to prevent potential impacts to Cooper's hawk, white-tailed kite, loggerhead shrike, and other nesting migratory bird species. There is marginal habitat for BUOW due to the lack of suitable nest burrows and ground squirrels. Nevertheless, preconstruction surveys for BUOW are required by Mitigation Measure MM BIO-2 and, if present, Mitigation Measures MM BIO-3 and MM BIO-4 are designed to avoid and mitigate take if present. There is a high potential for SWHA to nest within 0.5 mile of the project site; therefore, Mitigation Measures MM BIO-5 and MM BIO-6 require protocol-level nest surveys for SWHA within 0.5 mile of the project site and consultation with the CDFW if hawks are found within 0.5 mile of the project site. Therefore, impacts on biological resources would be *less than significant with mitigation*.

Mitigation Measures

MM BIO-1 **Nesting Bird Surveys.** If construction activities involving ground disturbance or vegetation removal are proposed during the typical nesting bird season (February 15–September 15), a nesting bird survey shall be conducted by a qualified biologist no more than 2 weeks prior to construction to determine presence/absence of nesting birds. If absence of nesting birds is verified, construction can proceed. If nesting activity is detected, the following measures shall be implemented:

a. Buffer Establishment. If an active bird nest is observed during preconstruction surveys or during construction, a 500-foot avoidance buffer surrounding the nest shall be implemented for nesting raptors and a 100-foot avoidance buffer shall be implemented for other nesting avian species until chicks have fledged.

b. Buffer Reductions. The project biologist may recommend a buffer decrease depending on site conditions (such as line-of-sight to the nest) and the birds' level of tolerance for construction activities, or specific exceptions for work activities on a case-by-case basis when the potential for nesting disturbance is low (such as vehicle access or the use of handheld tools and equipment). If buffer reductions are recommended, the biologist shall collect data on the birds' baseline behavior and their tolerance to disturbance by observing the birds at the

nest prior to construction activities. If the birds are incubating, the biologist shall record how long they stay in the nest. If nestlings are present, the biologist shall record how frequently adults deliver food and visit the nest. The biologist shall also record the birds' reaction to the biologist and how close the biologist can get to the nest before the birds' behavior is altered or they show signs of stress or disturbance. The biologist shall set the reduced buffer distance based on these data.

c. Nesting Monitoring. If nest buffers are reduced, the biologist shall monitor any construction activities that take place within 100 feet of nesting birds and 500 feet of raptor nests. If nesting birds show any signs of disturbance, including changes in behavior, significantly reducing frequency of nests visits, or refusal to visit the nest, the biologist will stop work and increase the nest buffer. If appropriate on a case-by-case basis, as determined by the qualified biologist, nest monitoring may be reduced to weekly spot-check monitoring, at a minimum, if the biologist determines that the nesting birds have shown no signs of disturbance from construction activities and a continuation of the same types of construction activities are unlikely to disturb the nesting birds.

d. Nest Removal. Nests, eggs, or young of birds covered by the Migratory Bird Treaty Act and California Fish and Game Code shall not be moved or disturbed until a qualified biologist has determined that the nest has become inactive or young have fledged and become independent of the nest.

e. Reporting. A qualified biologist shall document all active nests and submit a letter report to Merced County documenting project compliance with the Migratory Bird Treaty Act, California Fish and Game Code, and applicable project mitigation measures.

MM BIO-2 **Burrowing Owl Preconstruction Surveys.** A qualified biologist shall conduct preconstruction surveys of all areas of potential habitat that will be permanently or temporarily impacted, plus a 150-meter (approximately 492 feet) buffer in areas subject to legal access, to locate active breeding or wintering burrowing owl burrows. The survey(s) shall occur no more than 14 days prior to ground-disturbing activities (e.g., vegetation clearance, grading). The survey methodology shall be consistent with the take avoidance survey methods outlined in the California Department of Fish and Wildlife *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Wildlife 2012). Because burrowing owl may re-colonize a site after periods of inactivity, time lapses of 7 days during the breeding season or 14 days during the non-breeding season between project activities shall trigger subsequent surveys, including, but not limited to, a final survey conducted within 24 hours prior to ground disturbance to identify any additional burrowing owl or burrows necessitating avoidance, minimization, or mitigation measures. The need for additional surveys will be at the final discretion of the biologist.

MM BIO-3 **Burrowing Owl Avoidance.** If burrowing owl(s) are detected on-site during preconstruction surveys or during construction, no ground-disturbing activities within a minimum 200-meter (approximately 656 feet) avoidance buffer shall occur around occupied burrows during the breeding season (February 1–August 31), unless authorized by the California Department of Fish and Wildlife. During the non-breeding season (September 1–January 31), no ground-disturbing activities within a minimum 50-meter (approximately 164 feet) avoidance buffer shall occur around occupied burrows, unless authorized by the California Department of Fish and Wildlife.

MM BIO-4 **Burrowing Owl Mitigation.** If occupied burrow avoidance is infeasible during the non-breeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juveniles are foraging independently and capable of independent survival, the applicant shall coordinate with the California Department of Fish and Wildlife to develop a Burrowing Owl Exclusion and Mitigation Plan. The plan shall differentiate strategies for active burrows found on the project site vs. active burrows found adjacent to the project site. For example, an Exclusion and Mitigation Plan strategy may include:

a. Passive exclusion of burrowing owl from burrows within the project site using one-way doors.

b. Excavation of potential burrowing owl burrows within the project site that are confirmed to be empty of burrowing owl adults and/or young.

c. Creation of artificial burrowing owl burrows within the project site to offset the loss of known occupied burrowing owl burrows.

d. Acquisition of burrowing owl conservation lands and/or bank credits.

MM BIO-5 **Swainson's Hawk Surveys.** To meet California Department of Fish and Wildlife recommendations for mitigation and protection of Swainson's hawk, surveys shall be conducted for a 0.5-mile radius around all project activities. Surveys shall be conducted by a qualified biologist and follow the *Recommended timing and methodology for Swainson's hawk nesting surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). At a minimum, a qualified biologist shall conduct 3 surveys during two of the three recommended survey periods (Survey Periods II, III and V) totaling a minimum of six surveys prior to project initiation as outlined in the Swainson's Hawk Technical Advisory Committee's (2000) recommended methodology. Surveys shall be completed in Survey Periods II (March 20–April 5), III (April 5–April 20), and V (June 10–July 30). **Surveys should not be conducted in Period IV (April 21–June 10).** The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawk; however, the best times to survey will vary depending on seasonal factors. Known nest locations should be visited during surveys to verify nesting activity in the area. If Swainson's hawk absence is verified with 0.5 mile of the project site, project activities can proceed providing acceptance by the California Department of Fish and Wildlife of the survey results. Verification of acceptance of survey results by the California Department of Fish and Wildlife shall be submitted to Merced County prior to the start of construction.

MM BIO-6 If a Swainson's hawk nest is observed within 0.5 mile of the project site during the protocol surveys outlined in Mitigation Measure MM BIO-5 or during construction, the applicant shall coordinate with the California Department of Fish and Wildlife to determine if an Incidental Take Permit is required and implement measures to avoid take of Swainson's hawk. Such measures may include but may not be limited to:

a. Implementation of avoidance buffers;

b. When possible, seasonal restrictions of project activities during the nesting season; and

c. Acquisition of Swainson's hawk conservation lands and/or bank credits.

V. Cultural Resources

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☒	☐
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
(c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

Setting

PRC Section 5024.1 requires that any properties that can be expected to be directly or indirectly affected by a proposed project be evaluated for California Register of Historical Resources (CRHR) eligibility. The purpose of the CRHR is to maintain listings of the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change.

As defined by CEQA, a historical resource includes:

1. A resource listed in or determined to be eligible for listing in the CRHR.
2. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant. The architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural records of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence.

Resources are evaluated for eligibility for the CRHR under the following four criteria:

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

An Archaeological Survey Report (ASR) was prepared for the proposed project to determine the presence and likelihood of presence of cultural resources within the project area (SWCA 2022). The ASR includes the results and findings of background review and a pedestrian survey of the project area. A records search was conducted at the Central California Information Center (CCIC) located at California State University, Stanislaus to identify any previously recorded cultural resources within the project area. The records search was negative for previously recorded resources within the project site; however, a

previously unrecorded segment of P-24-001909, known as the Lehner Lateral, is located just south of Development Area 1. In addition, SWCA contacted the California Native American Heritage Commission (NAHC) to request a search of their Sacred Lands File. No response has been received as of the date of this Initial Study. A pedestrian field survey was conducted within the project area on October 25, 2022. With the exception of Lehner Lateral, no other cultural resources or evidence of cultural resources were observed (SWCA 2022).

Environmental Evaluation

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

The project site does not contain any buildings or structures; therefore, implementation of the project would not require the removal or demolition of any on-site structures that could be eligible for listing as a cultural resource. However, one previously unrecorded segment of historic district P-24-001909, known as the Lehner Lateral, was identified just south of Development Area 1, adjacent to Westside Boulevard (SWCA 2022). Proposed activities would be conducted a minimum of 11 feet from Lehner Lateral and would not result in any modification to the historical resource. Further, Lehner Lateral does not consist of aboveground buildings or structures that could be adversely affected by proposed pile-driving activities. Therefore, impacts would be *less than significant*.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Construction activities would result in approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill activity. Based on a records search conducted at the CCIC and of the NAHC Sacred Lands File, there are no previously recorded archaeological resources within the project area. Additionally, except for Lehner Lateral, no other archaeological resources or evidence of archaeological resources were observed during a field survey of the project area. Based on the findings of the records search and pedestrian field survey, the project area is considered to have low sensitivity for the presence of unidentified prehistoric or historic archaeological resources; therefore, proposed ground-disturbing activities are not anticipated to adversely affect any known or unknown cultural resource sites within the project area (SWCA 2022). Further, Mitigation Measure MM CR-1 has been included in the unlikely event that previously unidentified cultural resources are uncovered during proposed ground-disturbing activities. Based on the low potential to uncover archaeological resources within the project area and implementation of Mitigation Measure MM CR-1, the project would not result in adverse impacts to known or unknown cultural resources; therefore, impacts would be *less than significant with mitigation*.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

There are no known human remains or cemeteries located within or in the immediate vicinity of the project site, and the project area is considered to have low sensitivity for the presence of unidentified human resources (SWCA 2022). The project would be required to comply with California Health and Safety Code Section 7050.5, which outlines the protocol for unanticipated discovery of human remains. Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Based

on required compliance with California Health and Safety Code Section 7050.5, impacts related to disturbance of human remains would be *less than significant.*

Conclusion

Project activities would not adversely affect Lehner Lateral. With implementation of Mitigation Measure MM CR-1 and required compliance with California Health and Safety Code 7050.5, the proposed project would not adversely affect archaeological resources or human remains, and impacts related to cultural resources would be less than significant.

Mitigation Measures

MM CR-1 In the event that cultural resources are encountered during project activities, all ground-disturbing activities within a 25-foot radius of the find shall cease and Merced County shall be notified immediately. Work shall not continue until a qualified archaeologist assesses the find and determines the need for further study. If the find includes Native American-affiliated materials, a local Native American tribal representative will be contacted to work in conjunction with the approved archaeologist to determine the need for further study. A standard inadvertent discovery clause shall be included in every grading and construction contract to inform contractors of this requirement.

VI. Energy

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
(b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Setting

The project site is located in the PG&E service area. The 2021 PG&E electric power mix consisted of 50% renewable energy sources and 43% GHG-free energy sources (PG&E 2021).

Vehicle Fuel Economy Standards

In October 2012, the USEPA and National Highway Traffic Safety Administration (NHTSA), on behalf of the U.S. Department of Transportation (USDOT), issued final rules to further reduce GHG emissions and improve corporate average fuel economy (I) standards for light-duty vehicles for model years 2017 and beyond. The NHTSA's I standards have been enacted under the Energy Policy and Conservation Act since 1978. This national program requires automobile manufacturers to build a single light-duty national fleet that meets all requirements under both federal programs and the standards of California and other states. This program would increase fuel economy to the equivalent of 54.5 miles per gallon (mpg),

limiting vehicle emissions to 163 grams of carbon dioxide (CO_2) per mile for the fleet of cars and light-duty trucks by the model year 2025.

In January 2017, USEPA Administrator Gina McCarthy signed a Final Determination to maintain the current GHG emissions standards for the model years 2022 through 2025 vehicles. However, on March 15, 2017, USEPA Administrator Scott Pruitt and USDOT Secretary Elaine Chao announced that the USEPA intends to reconsider the Final Determination. On April 2, 2018, USEPA Administrator Pruitt officially withdrew the January 2017 Final Determination, citing information that suggests that these current standards may be too stringent due to changes in key assumptions since the January 2017 Determination. According to the USEPA, these key assumptions include gasoline prices and overly optimistic consumer acceptance of advanced technology vehicles. The April 2nd notice is not USEPA's final agency action, and the USEPA intends to initiate rulemaking to adopt new standards. Until that rulemaking has been completed, the current standards remain in effect.

As part of California's overall approach to reducing pollution from all vehicles, the CARB has established standards for clean gasoline and diesel fuels and fuel economies of new vehicles. The CARB has also put in place innovative programs to drive the development of low-carbon, renewable, and alternative fuels, such as their Low Carbon Fuel Standard (LCFS) Program pursuant to California Assembly Bill (AB) 32 and the Governor's Executive Order S-01-07.

In January 2012, the CARB approved the Advanced Clean Cars Program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15% of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34% fewer global warming gases and 75% fewer smog-forming emissions than the statewide fleet in 2016 (CARB 2022).

All self-propelled off-road diesel vehicles 25 horsepower (hp) or greater used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to the CARB's Regulation for In-Use Off-Road Diesel Fueled Fleets (Off-Road regulation). This includes vehicles that are rented or leased (rental or leased fleets). The overall purpose of the Off-Road regulation is to reduce emissions of NO_X and particulate matter from off-road diesel vehicles operating within California through the implementation of standards, including, but not limited to, limits on idling, reporting and labeling of off-road vehicles, limitations on use of old engines, and performance requirements.

The *2030 Merced County General Plan Natural Resources Element* provides the following goal and policies related to the energy resources that would be applicable to the proposed project:

Goal NR-2. Provide adequate and efficient energy supplies by increasing renewable energy production and energy conservation.

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).

Environmental Evaluation

a) Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

During construction, fossil fuels, electricity, and natural gas would be used by construction vehicles and equipment. The energy consumed during construction would be temporary in nature and typical of other similar construction activities in the county. Federal and state regulations in place require the use of fuel-efficient equipment and vehicles and require wasteful activities, such as diesel idling, to be limited. Construction contractors, in an effort to ensure cost efficiency, would not be expected to engage in wasteful or unnecessary energy and fuel practices. Operation of the project would not require regular staff presence and electricity use for the project would be limited to outdoor lighting installed for illumination purposes only. Electricity would be provided by PG&E, which consists of 50% renewable energy sources and 43% GHG-free energy sources (PG&E 2021). By using electricity from PG&E, the project would reduce the long-term use of non-renewable energy resources. The project does not include the establishment of new land uses or activities that could generate a significant increase in vehicle trips to or from the project site or otherwise increase the use of fossil fuels.

Following construction, the project would operate a 2-MWac PV solar power generation facility and associated electrical equipment that would deliver power to PG&E's existing distribution network. As such, implementation of the proposed project would reduce the consumption of non-renewable energy resources by delivering additional solar energy to PG&E's existing distribution network. Based on the limited amount of energy use required for construction of the project and its generation of solar energy during operation, the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources; therefore, impacts would be *less than significant*.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

As previously evaluated, the energy consumed during construction and operation of the project would not represent a significant or wasteful demand on available resources, which is consistent with applicable state and local energy efficiency objectives. The County Natural Resources Element identifies goals and policies to increase the use of renewable and clean energy resources in the county. The project would result in construction and operation of an 8.5-acre PV solar power generation facility that would deliver solar energy to PG&E's existing distribution network, ultimately reducing the consumption of non-renewable energy resources; therefore, the proposed project would be consistent with the goals and policies of the County General Plan related to the use of renewable and clean energy resources in the county. Although not required to reduce construction-related energy consumption, Mitigation Measure MM AQ-3 requires the use of clean off-road construction equipment, including the latest tier equipment, where feasible during project construction, which would be consistent with County General Plan goals related to the use of alternative energy sources. The project would be consistent with renewable energy goals included in the County Natural Resources Element; therefore, impacts would be *less than significant*.

Conclusion

The project would not result in excessive energy use during construction or operation and would be consistent with applicable energy efficiency plans; therefore, impacts related to energy would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

VII. Geology and Soils

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
(ii) Strong seismic ground shaking?	☐	☐	☐	☒
(iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
(iv) Landslides?	☐	☐	☐	☒
(b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
(f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Setting

Ground shaking refers to the motion that occurs in response to regional and local earthquakes. Seismic ground shaking is influenced by the proximity of the site to an earthquake fault, the intensity of the

seismic event, and the underlying soil composition. Ground shaking can endanger life and safety due to damage or collapse of structures or lifeline facilities. Liquefaction is the sudden loss of soil strength due to a rapid increase in soil pore water pressure resulting from ground shaking during an earthquake. Landslides and slope instability can occur as a result of wet weather, weak soils, improper grading, improper drainage, steep slopes, adverse geologic structure, earthquakes, or a combination of these factors.

According to the *Merced County Multi-Jurisdictional Hazard Mitigation Plan*, the nearest faults of major significance are the San Andreas Fault, approximately 15 miles west from the western county line; Hayward and Calaveras Faults, approximately 50 miles northwest; White Wolf, Garlock, and Sierra Nevada Faults to the south; and Bear Mountain Fault zone approximately 5 miles east of the respective county lines (Merced County 2021). According to the CDOC Fault Activity map of California, there are no active faults within 50 miles of the project site and the nearest fault to the project site is the late quaternary San Joaquin Fault, located approximately 20 miles northeast of the project site (CDOC 2015b). According to the *Final Program Environmental Impact Report for the 2030 Merced County General Plan*, overall seismic-related risk, including the risk of liquefaction and landslide, in the county is low (Merced County 2013b).

Highly erodible soils are those that are easily carried by water and, to a lesser extent, by wind. Surface erosion is more commonly visible, but subsurface erosion can lead to damage to pipes, roads, foundations, and other structural elements. Expansive soils are largely comprised of clays, which expand in volume when water is absorbed and shrink as the soil dries. Expansion is measured by shrink-swell potential, which is the volume change in soil with an increase in moisture. If the shrink-swell potential is rated moderate to high, then damage to buildings, roads, structural foundations, and pipes can occur. In the northern portion of the county, there are some areas of expansive clay soil that require special construction standards for foundations and infrastructure. Expansive clay problems can be surmounted by appropriate engineering design and construction techniques.

The project site is underlain by Quaternary extensive marine and nonmarine sand deposits (Qs), which has a low paleontological sensitivity because it is typically too young to yield scientifically significant paleontological specimens (CDOC 2015a).

Environmental Evaluation

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

a-i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

There are no active faults located within 50 miles of the project site (CDOC 2015a). Because the project site is not underlain by an Alquist-Priolo or other active fault zone, rupture of a known Alquist-Priolo fault would not occur within the project site; therefore, *no impacts* would occur.

a-ii) Strong seismic ground shaking?

Overall seismic-related risk, including the risk of seismic ground shaking, in the county is low (Merced County 2013b). In addition, the nearest fault to the project site is the late quaternary San Joaquin Fault, located approximately 20 miles northeast of the project site (CDOC 2015b). The project does not include the construction of any occupiable buildings or structures that would be subject to seismic design

standards included in the most recent California Building Code (CBC) or result in the risk of loss, injury, or death as a result of seismic-induced hazards, including seismic ground shaking; therefore, *no impacts* would occur.

a-iii) Seismic-related ground failure, including liquefaction?

According to the *Final Program Environmental Impact Report for the 2030 Merced County General Plan*, the risk of liquefaction in the county is low (Merced County 2013b). In addition, the project does not include the construction of any occupiable buildings or structures that would be subject to seismic design standards included in the most recent CBC or that could result in the risk of loss, injury, or death as a result of seismic-induced hazards, including liquefaction; therefore, *no impacts* would occur.

a-iv) Landslides?

According to the *Final Program Environmental Impact Report for the 2030 Merced County General Plan*, the risk of landslide in the county is low (Merced County 2013b). The project site and surrounding area consists of relatively flat topography, which further reduces the risk of landslide at the project site. The project does not include the construction of any occupiable buildings or structures that would be subject to design standards included in the most recent CBC or that could result in the risk of loss, injury, or death as a result of seismic-induced hazards, including landslide; therefore, *no impacts* would occur.

b) Result in substantial soil erosion or the loss of topsoil?

Construction activities would result in approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill activity. Proposed ground-disturbing activities would have the potential to increase erosion or loss of topsoil at the project site. The project would disturb less than 1 acre of soils and would not be required to comply with the County's Stormwater Ordinance (Merced County Code Section 9.53.010), which requires preparation and implementation of an Erosion Control Plan (ECP). The project has been designed to minimize ground disturbance at the project site, such as conforming to the existing topography of the project site, maintaining existing drainage patterns at the project site, and attaching cables to the tracking system rather than digging trenches, which would reduce the potential for the project to result in substantial erosion or loss of topsoil. Areas of the project site that were temporarily disturbed during construction activities would be restored and stabilized to reduce the potential for long-term erosion at the project site. Operation of the project would not result in long-term activities that could increase erosion or loss of topsoil at the project site. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Following decommissioning, the site would be returned to preconstruction conditions; therefore, long-term erosion potential would be consistent with existing conditions. Based on the limited amount of proposed ground disturbance, implementation of the proposed project would not result in substantial soil erosion or the loss of topsoil; therefore, impacts would be *less than significant*.

c) Would the project 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?

According to the *Final Program Environmental Impact Report for the 2030 Merced County General Plan*, there is a low risk of landslide and liquefaction within the county (Merced County 2013b). The project site is not located in an area with known land subsidence (USGS 2022a). The project does not include the construction of any occupiable buildings or structures that would be subject to design standards included in the most recent CBC or that could result in the risk of loss, injury, or death as a result of seismic-induced hazards, including landslide; therefore, *no impacts* would occur.

d) Would the project 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?

Expansive soils are typically comprised of clay. Soils at the project site primarily consist of sand with components of fine sandy loam; therefore, the risk of soil expansion at the project site is low (NRCS 2022). The project does not include the construction of any occupiable structures that could result in risk to life or property. Based on existing site conditions, the project would not result in risk to life or property as a result of development on expansive soils; therefore, *no impacts* would occur.

e) Would the project 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?

The project does not include the installation of septic tanks or alternative wastewater disposal systems; therefore, *no impacts* would occur.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The project site is underlain by Quaternary extensive marine and nonmarine sand deposits (Qs), which has a low paleontological sensitivity because it is typically too young to yield scientifically significant paleontological specimens (CDOC 2015a). Construction activities would result in approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill activity. The PV solar panel tracking systems would be installed on 5.57-foot-wide posts driven directly into the ground to a depth of approximately 6 feet 10 inches. Based on the low paleontological sensitivity of the underlying geologic unit and the limited area of disturbance associated with installation of the PV solar panels, the proposed project would not adversely affect paleontological resources; therefore, impacts would be *less than significant*.

Conclusion

The project does not include the construction of any occupiable buildings or structures that would be subject to design standards included in the most recent CBC or that could result in the risk of loss, injury, or death as a result of ground-failure events or seismic-induced hazards, including ground shaking, liquefaction, or landslide. Based on the limited amount of proposed ground disturbance, the proposed project would not result in substantial soil erosion or the loss of topsoil. The project does not include the installation of septic tanks or alternative wastewater disposal systems. The project would not adversely affect paleontological resources. Therefore, impacts related to geology and soils would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

VIII. Greenhouse Gas Emissions

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
(b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Setting

GHGs are any gases that absorb infrared radiation in the atmosphere and are different from the criteria pollutants discussed in Section III, *Air Quality*. The primary GHGs that are emitted into the atmosphere as a result of human activities are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated gases.

California Global Warming Solutions Act

Under the California Global Warming Solutions Act, also known as AB 32, the CARB established statewide GHG emissions cap for 2020, adopted mandatory reporting cards for significant sources of GHG, and adopted a comprehensive plan, known as the Climate Change Scoping Plan, identifying how emission reductions would be achieved from significant GHG sources.

In 2016 Senate Bill (SB) 32 was signed into law, amending the California Global Warming Solutions Act. SB 32, and accompanying Executive Order B-30-15, which requires CARB to ensure that statewide GHG emissions are reduced to 40% below the 1990 level by 2030. The CARB updated its Climate Change Scoping Plan in December 2017 to express the 2030 statewide target in terms of million metric tons of CO_2 equivalent ($MMTCO_2e$). Based on the emissions reductions directed by SB 32, the annual 2030 statewide target emissions level for California is 260 $MMTCO_2e$.

Sustainable Communities Strategy and Climate Protection Act

The Sustainable Communities Strategy and Climate Protection Act (SB 375) was signed into law in September 2008. SB 375 builds upon AB 32 by requiring CARB to develop regional GHG reduction targets for automobile and light-duty truck sectors for 2020 and 2035, as compared to 2005 emissions levels. Regional metropolitan planning organizations (MPOs) will be responsible for preparing a Sustainable Communities Strategy (SCS) with their Regional Transportation Plans (RTPs).

Merced County Association of Governments 2022 Regional Transportation Plan/ Sustainable Communities Strategy

The Merced County Association of Governments (MCAG) *2022 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) includes a long-range plan for transportation and mixed-use planning in the county and identifies goals and objectives to reduce transportation-related GHG emissions, including the creation of bicycle and pedestrian facilities, congestion relief, and mixed-use design (MCAG 2022).

San Joaquin Valley Climate Change Action Plan

The SJVAPCD released the *San Joaquin Valley Climate Change Action Plan* in December 2009. The Climate Change Action Plan established goals and policies to address reductions in GHGs and improvement to regional air quality. The plan also includes Best Performance Standards (BPSs), which are mitigation measures intended to achieve GHG reductions. BPSs include building design elements that reduce energy consumption, project designs that promote pedestrian access, and land use planning decisions that reduce VMT.

2030 Merced County General Plan

The *2030 Merced County General Plan Air Quality Element* provides the following goals and policy related to the reduction of air pollutants and GHG emissions that would be applicable to the proposed project:

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

Goal AQ-4. Reduce traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs.

Policy AQ-4.1. **Decrease Vehicle Miles Traveled.** Require diverse, higher-density land uses (e.g., mixed-use and infill development) to decrease vehicle miles traveled.

Environmental Evaluation

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

During construction, fossil fuels, electricity, and natural gas would be used by construction vehicles and equipment. Federal and state regulations in place require fuel-efficient equipment and vehicles and prohibit wasteful activities, such as diesel idling. Construction contractors, in an effort to ensure cost efficiency, would not be expected to engage in wasteful or unnecessary energy and fuel practices. Although not required to reduce construction-related GHG emissions, Mitigation Measure MM AQ-3 requires the use of clean off-road construction equipment, including the latest tier equipment, where feasible during project construction, which would further reduce GHG emissions during construction. Operation of the project has the potential to generate GHG emissions from electricity and fossil fuel use. Electricity use for the project would be limited to the installation of outdoor lighting for illumination purposes, which would be provided by PG&E. The PG&E power mix consists of 50% renewable energy sources and 43% GHG-free energy sources (PG&E 2021). By using electricity from PG&E, the project would reduce the long-term use of non-renewable energy resources and associated GHG emissions. Operation of the project would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, long-term fossil fuel use would be negligible. Following construction, the project would operate a 2-MWac PV solar power generation facility that would deliver power to PG&E's existing distribution network. As such, the project would reduce the consumption of non-renewable energy resources by delivering solar energy to PG&E's existing distribution network. Based on the limited amount of electricity use required for the project and generation of solar energy, the project would not generate a substantial amount of GHG emissions; therefore, impacts would be *less than significant*.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The project is within the jurisdiction of the SJVAPCD and would be subject to the Climate Change Action Plan, which established BPSs to reduce VMT. Additionally, the RTP/SCS identifies goals and objectives to reduce transportation-related GHG emissions, including the creation of bicycle and pedestrian facilities, congestion relief, and mixed-use design (MCAG 2022). The project does not include the establishment of new residential, commercial, or other land uses that would be applicable to mixed-use planning efforts identified in the RTP/SCS. Operation of the project would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, the project would not significantly increase VMT or associated vehicle emissions within the region, which would be consistent with the Climate Change Action Plan and RTP/SCS; therefore, impacts would be *less than significant*.

Conclusion

The project would be consistent with the goals of the Climate Change Action Plan and RTP/SCS and would not generate a substantial amount of short- or long-term GHG emissions; therefore, impacts related to GHG emissions would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

IX. Hazards and Hazardous Materials

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
(d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Setting

The Hazardous Waste and Substances Site (Cortese) List is a planning tool used by the state, local agencies, and developers to comply with CEQA requirements related to the disclosure of information about the location of hazardous materials release sites. California Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to develop an updated Cortese List at least annually. Various state and local government agencies are required to track and document hazardous material release information for the Cortese List. The California Department of Toxic Substance Control (DTSC) EnviroStor database tracks DTSC cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination, such as federal superfund, state response, voluntary cleanup, school cleanup, school investigation, and military evaluation sites (DTSC 2022). The State Water Resources Control Board (SWRCB) GeoTracker database contains records for sites that impact, or have the potential to impact, water in California, such as Leaking Underground Storage Tank (LUST), Department of Defense, and Cleanup Program Sites (SWRCB 2022). The remaining data regarding facilities or sites identified as meeting the "Cortese List" requirements can be located on the CalEPA website.

Based on a query of the DTSC EnviroStor and SWRCB GeoTracker databases, there are no hazardous materials sites located within or adjacent to the project site (DTSC 2022; SWRCB 2022). The nearest mapped hazardous materials site is a school cleanup site located approximately 0.9 mile north of the project site (SWRCB 2022).

Environmental Evaluation

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The proposed project would require limited quantities of hazardous substances, including gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, etc. during construction, which has the potential to result in an accidental spill or release. Construction contractors would be required to comply with applicable federal and state environmental and workplace safety laws for the handling, transport, and storage of hazardous materials, including 22 CCR Division 4.5.

Operation of the project would include approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, the solar panels would be properly maintained throughout the 35-year lifespan, which would reduce the potential for long-term risk associated with hazards at the project-site. Further, operational maintenance and delivery trips would also be conducted in accordance with relevant federal and state environmental and workplace safety laws for the handling, transport, and storage of hazardous materials. Electrical equipment used for the solar PV generation facility (i.e., inverters, transformers, AC

switchgear, and PV system disconnect) would be consolidated on an approximately 600-square-foot concrete equipment pad and stored within secure, fully enclosed containers anchored to the concrete pad. The operation and condition of the batteries and other electrical equipment would be regularly inspected by employees on a quarterly basis. At the end of the project life, all project materials would be removed from the site and recycled or disposed of in accordance with applicable State and local regulations regarding disposal of electrical equipment in place at that time. Therefore, impacts associated with the routine transport, use, or disposal of hazardous materials would be *less than significant.*

b) Would the project 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?

As previously discussed, temporary construction activities would include the use of construction equipment, vehicles, and commonly used hazardous substances, including, but not limited to, paint, solvents, oils, fuel, and gasoline. Commonly used hazardous substances within the project site would be transported, stored, and used according to regulatory requirements and existing procedures for the handling of hazardous materials. The project includes improvements to the existing driveway off Lincoln Boulevard and may require the installation of three utility poles along Westside Boulevard. However, the project would not require ground-disturbing activities within either roadway; therefore, the project is not expected to disturb aerially deposited lead (ADL) during proposed improvements. The project site is not located in an area with the potential for NOA to occur and would not require the demolition of existing on-site structures that could release ACM or lead-based paint if present within the building materials (CGS 2011). Operation of the project would include approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years, which would be conducted in accordance with relevant federal and state environmental and workplace safety laws for the handling, transport, and storage of hazardous materials. Based on required compliance with CCR Title 22, the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment; therefore, impacts would be *less than significant.*

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The nearest school is Longview Mennonite School, approximately 0.5 mile south of the project site. Therefore, the proposed project would not emit hazardous emissions or handle acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school; therefore, *no impacts* would occur.

d) Would the project 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?

Based on a query of the DTSC EnviroStor and SWRCB GeoTracker databases, there are no previously recorded hazardous materials sites located within or adjacent to the project site (DTSC 2022; SWRCB 2022). The project site is not located on or adjacent to a site that is on a list of hazardous materials sites pursuant to California Government Code Section 65962.5; therefore, the project would not create a significant hazard to the public or the environment related to disturbance of a known hazardous materials site, and *no impacts* would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The nearest airport is the Merced County Castle Airport, located approximately 8 miles east of the project site. The project site is not located within an airport land use plan or within 2 miles of an airport; therefore, the proposed project would not result in a safety hazard or excessive noise for people residing or working in the project area, and *no impacts* would occur.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The project site would be accessed via an existing 15-foot-wide driveway that would be improved to an unpaved aggregate-based road. The proposed driveway and access road improvements would be required to comply with requirements included in the most recent California Fire Code (CFC) and Merced County Department of Public Works Improvement Standards and Specifications for access roads to ensure adequate emergency access to and from the project site. The project would be limited to periodic maintenance and inspection activities up to four times per year and would not generate a substantial number of people or vehicle trips within the area that could otherwise impede emergency response or evacuation efforts within the project area. Based on required compliance with the most recent CFC and Merced County Public Works requirements, the project would not substantially impair an adopted emergency response plan or emergency evacuation plan; therefore, impacts would be *less than significant*.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The project site is located approximately 0.7 mile south of the city of Livingston and characterized by relatively flat topography with a low potential for wildfire occurrence. The project includes the construction of an 8.5-acre PV solar generation facility on a previously undeveloped portion of the project site. The proposed PV solar generation facility would be required to comply with CFC Section 1204.4, which identifies requirements for solar panel installation to reduce the potential for wildfire ignition at the project site. In addition, vegetation maintenance would occur during periodic maintenance and inspection activities at the project site, which would further reduce the potential for wildfire ignition at the project site. The proposed project would be sited in an area with low risk of wildfire and would be required to comply with requirements of the most recent CFC; therefore, implementation of the proposed project would not increase risk of wildfire at the project site, and impacts would be *less than significant.*

Conclusion

Based on required compliance with the CCR, the project would not result in significant hazards related to the routine transport, use, or disposal of hazardous materials. The project is not located within 0.25 mile of a school, within 2 miles of an airport, or within or adjacent to a previously recorded hazardous materials site. The project would not impair implementation of an adopted emergency response plan or emergency evacuation plan and would not expose people or structures to a significant risk involving wildfires. Therefore, impacts related to hazards and hazardous materials would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

X. Hydrology and Water Quality

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or 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?	☐	☐	☒	☐
(d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
(e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Setting

The project site is located in the Merced Subbasin of the San Joaquin Valley Groundwater Basin. The Merced Subbasin encompasses approximately 801 square miles of Merced County and key municipalities within the subbasin include Merced County and the cities of Merced, Livingston, and Atwater. The subbasin consists of lands south of the Merced River, between the San Joaquin River to the west and the crystalline basement rock of the Sierra Nevada foothills to the east. The southern subbasin boundary extends west along the Chowchilla River (Merced–Madera County boundary) and along the northern edge of the sphere of influence boundary of Chowchilla Water District. Geologic units in the Merced Subbasin consist of consolidated rocks and unconsolidated deposits. The Merced Subbasin is heavily reliant on groundwater, and users recognize the subbasin has been in overdraft for a long period of time. The subbasin is under the jurisdiction of three Groundwater Sustainability Agencies (GSAs), including the Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA), the Merced Subbasin Groundwater Sustainability Agency (MSGSA), and the Turner Island Water District Groundwater Sustainability Agency #1 (TIWD GSA-1). The *Merced Groundwater Subbasin Groundwater Sustainability Plan* (GSP) identifies sustainable management goals and practices to achieve sustainable

groundwater management on a long-term average basis by increasing recharge and/or reducing groundwater pumping, while avoiding undesirable results (Woodard & Curran 2022).

A concrete irrigation ditch channel runs in an east-to-west direction outside of the project site, along the southern boundary of the project site.

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 06047C0400G (effective date 12/2/2008), the project site is within Zone X, an area of minimal flood hazard (FEMA 2022).

Environmental Evaluation

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

There are no mapped drainages or wetland features located within the project area; however, there is a concrete irrigation ditch channel that runs in an east-to-west direction outside of the project site, along the southern boundary of the project site. The project would not result in direct disturbance to the drainage ditch or any other surface water features. However, the project would require ground-disturbing activities and equipment and vehicle use during project construction, which has the potential to result in erosion or other pollutants that could run off from the site to surrounding areas. Construction of the proposed project would result in approximately 0.7 acre of site disturbance, including approximately 150 cubic yards of cut and fill. The project would disturb less than 1 acre of soils and would not be required to comply with the County's Stormwater Ordinance (Merced County Code Section 9.53.010), which requires implementation of best management practices (BMPs) during project construction, preparation of an ECP, and implementation of post-construction stormwater control measures. The project has been designed to minimize ground disturbance and impervious surfaces at the project site, such as conforming to the existing topography of the project site, maintaining existing drainage patterns at the project site, and attaching cables to the tracking system rather than digging trenches, which would reduce the potential for the project to result in substantial erosion or loss of topsoil. In addition, construction contractors would be required to comply with applicable federal and state environmental and workplace safety laws for the handling, transport, and storage of hazardous materials, which would reduce the potential for accidental spill of hazardous substances to occur. Based on the limited amount of proposed ground disturbance, implementation of the proposed project would not result in substantial soil erosion or the loss of topsoil; therefore, impacts would be *less than significant*.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The project would result in the construction of an 8.5-acre PV solar generation facility on a 36.9-acre project site. The project would create approximately 8.5 acres of new impervious surface; however, PV solar panels would be installed on a tracking system lifted 1 foot from the ground, which would maintain pervious areas beneath the panels and allow for groundwater infiltration at the project site. In addition, the project would be designed to maintain existing drainage patterns at the project site, which would allow for continued groundwater recharge at the project site. Further, the project does not require any connections to groundwater supply and would not require any long-term operational water use; therefore, the project would not decrease groundwater supply. The project would not interfere with groundwater recharge at the project site or decrease groundwater supplies; therefore, impacts would be *less than significant*.

c) Would the project 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:

c-i) Result in substantial erosion or siltation on- or off-site?

Construction activities would result in approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill activity. The project would disturb less than 1 acre of soils and would not be required to comply with the County's Stormwater Ordinance (Merced County Code Section 9.53.010), which requires preparation and implementation of an ECP. Proposed ground-disturbing activities would have the potential to increase erosion or loss of topsoil at the project site. The project has been designed to minimize ground disturbance at the project site, such as conforming to the existing topography of the project site, maintaining existing drainage patterns at the project site, and attaching cables to the tracking system rather than digging trenches, which would reduce the potential for the project to result in substantial erosion or loss of topsoil. Areas of the project site that would be temporarily disturbed during construction activities would be restored and stabilized to reduce the potential for long-term erosion at the project site. Operation of the project would not result in long-term activities that could increase erosion or loss of topsoil at the project site. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Following decommissioning, the site would be returned to preconstruction conditions; therefore, long-term erosion potential would be consistent with existing conditions. Based on the limited amount of proposed ground disturbance, the project would not result in substantial soil erosion or the loss of topsoil; therefore, impacts would be *less than significant*.

c-ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The project would result in the construction of an 8.5-acre PV solar generation facility on a 36.9-acre project site. The project has been designed to minimize the creation of impervious surfaces at the project site, such as conforming to the existing topography and maintaining existing drainage patterns at the project site, which would reduce the potential for the project to increase the rate or amount of surface runoff. The project would result in less than 1 acre of ground disturbance and would not be required to comply with the County's Stormwater Ordinance (Merced County Code Section 9.53.010), which requires the implementation of post-construction stormwater control measures. In addition, PV solar panels would be installed on a tracking system lifted 1 foot from the ground; therefore, pervious areas beneath the panels would be maintained to allow on-site infiltration. Based on proposed project design intended to minimize the creation of impervious surfaces at the project site, the proposed project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; therefore, impacts would be *less than significant*.

c-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?

The proposed project has been designed to minimize ground disturbance and impervious surfaces at the project site. Proposed design measures include conforming to the existing topography of the project site, maintaining existing drainage patterns at the project site, and attaching cables to the tracking system rather than digging trenches. The proposed design would reduce the potential for the project to increase erosion at the project site and contribute to additional sources of polluted runoff. Additionally, PV solar panels would be installed on a tracking system lifted 1 foot from the ground; therefore, pervious areas beneath the panels would be maintained to allow on-site infiltration. The project would result in less than 1 acre of site disturbance and would not be required to comply with the County's Stormwater Ordinance (Merced County Code Section 9.53.010), which requires the implementation of post-construction

stormwater control measures. Based on the proposed project design and associated ground disturbance, the proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; therefore, impacts would be *less than significant*.

c-iv) Impede or redirect flood flows?

According to FEMA FIRM 06047C0400G (effective date 12/2/2008), the project site is within Zone X, an area of minimal flood hazard (FEMA 2022). The project does not include alteration or other direct impacts to any drainages or surface water features. As previously identified, the project has been designed to minimize impervious surface areas on-site and maintain existing drainage patterns to be consistent with existing conditions. Based on the low potential for flood flows and proposed project design features, the project would not impede or redirect flood flows; therefore, impacts would be *less than significant*.

d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

According to FEMA FIRM 06047C0400G (effective date 12/2/2008), the project site is within Zone X, an area of minimal flood hazard (FEMA 2022). Additionally, the project site is not located in an area that would be subject to tsunami risk and is not located in proximity to any impounded body of water that would be subject to seiche. The project is not within a flood hazard, tsunami, or seiche zone and would not risk release of pollutants due to project inundation; therefore, *no impacts* would occur.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The project site is in the Merced Subbasin of the San Joaquin Valley Groundwater Basin, which is subject to the sustainable management goals and practices included in the Merced Groundwater Subbasin GSP to achieve long-term sustainable groundwater management. As evaluated in Impact Discussion X(b), the project would not decrease groundwater supply or interfere with groundwater recharge in a manner that would impede sustainable management of the groundwater basin, which is consistent with sustainable management goals of the Merced Groundwater Subbasin GSP, including increasing recharge and reducing groundwater pumping.

The project site is under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB) and would be subject to the *Water Quality Control Plan for the Central Valley Region* (RWQCB 2019), which establishes water quality objectives for beneficial uses of water resources within the Sacramento and San Joaquin River Basins. The project would disturb less than 1 acre of the project site and would not be required to comply with the Central Valley RWQCB General Construction Permit requirements, which are codified in the County's Stormwater Ordinance (Merced County Code Section 9.53.010). The project has been designed to minimize ground disturbance and impervious surfaces at the project site, such as conforming to the existing topography of the project site, maintaining existing drainage patterns at the project site, and attaching cables to the tracking system rather than digging trenches, which would reduce the potential for the project to result in substantial erosion or loss of topsoil. PV solar panels would be installed on a tracking system lifted 1 foot from the ground; therefore, pervious areas beneath the panels would be maintained to allow on-site infiltration. In addition, construction contractors would be required to comply with CCR Title 22 for the handling of hazardous materials, which would reduce the potential for construction-related polluted runoff.

Based on proposed project design and required compliance with CCR Title 22, the project would not adversely affect water quality, which is consistent with the Water Quality Control Plan. The project

would be consistent with sustainable management of the San Joaquin Valley groundwater basin and the Water Quality Control Plan; therefore, impacts would be *less than significant*.

Conclusion

The project would not result in adverse impacts related to water quality, groundwater quality, or stormwater runoff. The project would not require groundwater resources and would not be located in an area that would be subject to inundation. The project would be consistent with sustainable management of the San Joaquin Valley groundwater basin and the Water Quality Control Plan. Therefore, impacts related to hydrology and water quality would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XI. Land Use and Planning

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Physically divide an established community?	☐	☐	☐	☒
(b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐

Setting

The *2030 Merced County General Plan* consists of 11 elements that serves as the County's "blueprint" or "constitution" for all future land use, development, preservation, and resource conservation decisions. The County Land Use Element identifies goals, policies, and standards for future land use, development, community design, energy efficiency, and agriculture/resource protection in the county. The Land Use Element also describes standards for land use designations within the county. The project site is located within the County's Agriculture land use designation, which provides for cultivated agricultural practices which rely on good soil quality, adequate water availability, and minimal slopes. This is the largest County land use designation by area in the county and is typically applied to areas on the valley floor. As identified in Section II, *Agriculture and Forestry Resources*, Policy LU-2.7 of the Land Use Element identifies solar generation facilities as an allowable use within the Agriculture land use designation (Merced County 2013a).

Environmental Evaluation

a) Would the project physically divide an established community?

Implementation of the project would result in construction and operation of a new PV solar power generation facility. The proposed project would be limited to development on a single parcel and would not result in the removal or blockage of existing public roadways or other circulation paths and would not

otherwise include any features that would physically divide an established community; therefore, *no impacts* would occur.

b) Would the 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?

As evaluated throughout this Initial Study, the project would be consistent with standards and policies set forth in the County General Plan and RTP/SCS. The project would be required to implement Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 through MM BIO-6, MM CR-1, and MM N-1 and MM N-2 to mitigate potential impacts associated with Agricultural Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, and Noise, which is consistent with the identified plans and policies intended to avoid or mitigate adverse environmental effects. Upon implementation of the identified mitigation, the project would not conflict with other local policies or regulations adopted for the purpose of avoiding or mitigating environmental effects; therefore, impacts would be *less than significant with mitigation*.

Conclusion

The project would not physically divide an established community. Upon implementation of mitigation measures identified throughout this Initial Study, the project would be consistent with the County General Plan, CAP, Climate Change Action Plan, RTP/SCS, and other applicable documents. Therefore, with implementation of Mitigation Measures MM AG-1 and AG-2, MM AQ-1 through MM AQ-3, MM BIO-1 through MM BIO-6, MM CR-1, and MM N-1 and MM N-2, impacts related to land use and planning would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM AG-1 and AG-2, MM AQ-1 through MM AQ-3, MM BIO-1 through MM BIO-6, MM CR-1, and MM N-1 and MM N-2.

XII. Mineral Resources

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
(b) Result in the loss of availability of a locally- important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Setting

The California Surface Mining and Reclamation Act (SMARA) of 1975 requires that the State Geologist classifies land into mineral resource zones (MRZ) according to the known or inferred mineral potential of

the land (PRC Sections 2710–2796). The five MRZs used in the SMARA classification designation process for Merced County are defined below (CGS 2021):

- **MRZ-1:** Areas where available geologic information indicates that little likelihood exists for the presence of significant concrete aggregate resources.
- **MRZ-2:** Areas where geologic information indicates the presence of significant concrete aggregate resources.
- **MRZ-3 cs:** Areas containing known or inferred concrete aggregate resources of undetermined mineral resource significance (crushed stone).
- **MRZ-3 sg:** Areas containing known or inferred concrete aggregate resources of undetermined mineral resource significance (sand and gravel).
- **MRZ-4:** Areas where available geologic information is inadequate to assign to any other mineral resource zone category.

The project site is located in an MRZ-4 area and is not located near any existing mining operations (CGS 2021).

Environmental Evaluation

a) 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?

b) 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 project site is located in an MRZ-4 area and is not located near any existing mining operations (CGS 2021). The project site is not located in an area with known mineral resources. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Following decommissioning, the site would be returned to preconstruction conditions; therefore, no permanent loss of mineral resources would occur. The project would not result in the loss of availability of known or locally important mineral resources, and *no impacts* would occur.

Conclusion

No impacts to mineral resources would occur as a result of the project, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XIII. Noise

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
(b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
(c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting

The *2030 Merced County General Plan Health and Safety Element* identifies the policies to reduce or eliminate existing and future conflicts between land uses and noise. Table 5 outlines the County's noise level standards for noise-sensitive areas affected by non-transportation noise sources in the county.

Table 5. Non-Transportation Noise Standards

	Outdoor Areas Median (L50) / Maximum (Lmax)[1]		Interior Median (L50)/ Maximum (Lmax)[1]
Receiving Land Use	Daytime	Nighttime	Day or Night
All Residential	55 / 75	50 / 70	35 / 55
Transient Lodging	55 / 75	---	35 / 55
Hospitals & Nursing Homes	55 / 75	---	35 / 55
Theaters and Auditoriums	---	---	30 / 50
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60
Office Buildings	60 / 75	---	45 /65
Commercial Buildings	55 / 75	---	45 /60
Playgrounds, Parks, etc.	65 / 75	---	---
Industry	60 / 80	---	50 / 70

Source: Merced County (2013a)

[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 includes 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. 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.

Notes:

- Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
- 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.
- The outdoor activity areas of these uses (if any) are not typically used during nighttime hours.
- Where median (L_{50}) 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.

In addition to the standards outlined in Table 5, the following noise policies would be applicable to the proposed project:

Policy HS-7.1. **Noise Standards for New Land Uses.** Require new development projects to meet the standards shown in [Table 5], at the property line of the proposed use, through either project design or other noise mitigation techniques.

Policy HS-7.3. **Existing Rural Sources.** Discourage new noise sensitive land uses in rural areas with authorized existing noise generating land uses.

Policy HS-7.4. **New Noise or Groundborne Vibration 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 sensitive land uses on adjacent lands that 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-7.12. **New Project Noise Mitigation Requirements.** Require new projects to include appropriate noise mitigation measures to reduce noise levels in compliance with the [Table 5] 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 5] 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 5] at the property line of the generating use in anticipation of the future residential development.

Section 10.60 (Noise Control) of the Merced County Code establishes regulations to avoid excessive noise in the county and Section 10.48.050 establishes standards and specifications for noise in the county. Section 10.48.050 (Noise) limits construction hours between 7:00 a.m. and 6:00 p.m. daily and prohibits construction noise between 6:00 p.m. and 7:00 a.m. on weekdays or at any time on a weekend day or legal holiday, except for emergency work.

Environmental Evaluation

a) 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?

Existing ambient noise levels in the project area are primarily dominated by vehicle noise along Westside and Lincoln Boulevards and surrounding agricultural cultivation operations and scattered rural residential land uses. During project construction, noise from construction activities may intermittently dominate the noise environment in the immediate project area. The project would require the use of typical construction equipment (e.g., dozers, excavators, etc.) during proposed construction activities. According to the Federal Highway Administration (FWHA), typical noise levels from standard construction equipment generally range from 80 dBA to 85 dBA at 50 feet from the source, as shown in Table 6.

Table 6. Construction Equipment Noise Emission Levels

Equipment Type	Typical Noise Level (dBA) 50 Feet from Source
Concrete Mixer, Dozer, Excavator, Jackhammer, Man Lift, Paver, Scraper	85
Heavy Truck	84
Pneumatic Tools (i.e., pile driving equipment)	85
Concrete Pump	82
Backhoe, Compactor	80

Source: FHWA (2018)

There is an existing residential dwelling on the project site and there are several off-site residences located within 1,000 feet of the project site. The nearest off-site noise-sensitive land uses are single-family residences located approximately 60 feet to the west and approximately 100 feet south of the project site. In addition, there is an existing single-family residence located in the western portion of the project site.

Pile driving is proposed during construction and may exceed noise levels outlined in the County General Plan. However, Chapter 10.60, Noise Control, of the Merced County Code exempts construction activity between 7:00 a.m. and 6:00 p.m. if all construction equipment is properly muffled and maintained. Based on the close proximity of noise-sensitive residential uses, Mitigation Measures MM N-1 and MM N-2 have been identified to ensure construction equipment is properly muffled and maintained to reduce noise during construction activities, including use of "quiet" pile-driving technology (e.g., pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration) where feasible. If impact pile driving is unavoidable, Mitigation Measure MM N-2 requires fitting impact pile-driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer. With implementation of Mitigation Measures MM N-1 and MM N-2, construction-related noise generated by the project would be consistent with the County's noise standards; therefore, impacts related to construction-related noise would be *less than significant with mitigation*.

The project would establish a 2-MWac PV solar power generation facility. The primary source of operational noise includes the installation of transformers, which would be stored on the proposed equipment pad. Based on the manufacturer's specifications, the transformers would be expected to generate a noise level of 62 dB at 50 feet from the source and would run 24 hours a day, 7 days a week.

The property line of the nearest off-site noise-sensitive land use to the proposed equipment pad is located approximately 100 feet south of the project site. Noise attenuates at a rate of approximately 6 dB per doubling of distance; therefore, at the nearest noise sensitive land use approximately 100 feet from the project site, noise from the transformers would be approximately 56 dB, which would exceed the County's daytime exterior noise standards for residential uses by approximately 1 dB and nighttime exterior standards for residential uses by approximately 6 dB. The transformers would be fully enclosed within metal containers, which would reduce sound levels from the transformer. Transformer enclosures made of materials with a high mass/weight ratio, such as brick, concrete, or steel, can have the potential to reduce noise levels by 25 to 30 dB (eNoise Control 2022). Mitigation Measure N-3 has been identified to require the transformers to be enclosed and/or located in a manner to not result in an increase in ambient noise levels above 56 dB during daytime hours or 50 dB during nighttime hours as measured from the property line of the nearest off-site noise-sensitive land use. Therefore, with implementation of Mitigation Measure MM N-3, operational noise levels would not exceed applicable County exterior noise standards.

Operation of the project would not require regular staff presence at the site; therefore, the project would not be expected to generate a permanent increase in noise from operational vehicle trips or other operational activities. Therefore, impacts related to operational noise would be *less than significant with mitigation*.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Installation of the proposed tracking systems would require pile driving, which would generate a temporary increase in groundborne vibration. The Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment (FTA 2018) provides guidance for assessing vibration levels associated with construction activities. This guidance was used to assess potential impacts as the County has not established construction vibration standards. The nearest off-site noise-sensitive land uses are single-family residences located approximately 60 feet to the west and approximately 100 feet to the south of the project site. In addition, there is an existing single-family residence located in the western portion of the project property. Table 7 shows the Federal Transit Administration (FTA) criteria for construction vibration damage.

Table 7. Construction Vibration Damage Criteria

Building/Structural Category	PPV (in/sec)[1]
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA (2018)

[1] Peak Particle Velocity in inches per seconds

According to the FTA's *Transit Noise and Vibration Impact Assessment Manual*, an impact pile driver has an average peak particle velocity (PPV) of 0.644 inches per second (in/sec) at 25 feet from the source and can reach a PPV of 1.518 in/sec at 25 feet from the source. A sonic pile driver has an average PPV of 0.17 in/sec at 25 feet from the source and can reach a PPV of 0.734 in/sec at 25 feet from the source. Using the highest potential PPV that may be generated by pile driving (1.518 in/sec), at 60 feet from the source, pile driving would have an approximate PPV of 0.41 in/sec. Human annoyance to vibration levels is measured in velocity in decibels (VdB). A vibration level that causes annoyance is well below the damage risk threshold for typical buildings (100 VdB). Therefore, temporary pile-driving activities would

have the potential to result in annoyance and damage to nearby single-family residences. Mitigation Measures MM N-1 and MM N-2 have been identified to reduce groundborne vibration during construction activities. With implementation of Mitigation Measures MM N-1 and MM N-2, the project would not generate excessive groundborne vibration or groundborne noise levels; therefore, impacts would be *less than significant with mitigation*.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The nearest airport is the Merced County Castle Airport, approximately 8 miles east of the project site. The project site is not located within an airport land use plan or within 2 miles of an airport; therefore, the proposed project would not result in excessive noise levels for people residing or working in the project area, and *no impacts* would occur.

Conclusion

With implementation of Mitigation Measures MM N-1, MM N-2, and MM N-3, the project would not result in substantial construction-related or operational noise or groundborne vibration. In addition, the project would not result in excessive noise levels for people residing or working in the project area. Therefore, upon implementation of the identified mitigation, impacts related to noise would be less than significant.

Mitigation Measures

MM N-1 **Construction Noise Control Best Management Practices.** During construction, the following construction noise best management practices shall be shown on all construction plans and implemented on-site:

a. Construction work hours shall be limited to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday. No construction shall be permitted on Saturdays, Sundays, or federal or state holidays.

b. Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.

c. Stationary equipment such as compressors, generators, and welder machines shall be located as far away from surrounding residence as possible. The project shall connect to existing electrical service at the site to avoid the use of stationary, diesel-fueled, or other alternatively fueled power generators, if feasible.

d. Impact tools such as jack hammers shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. When use of pneumatic tools is unavoidable, it shall be ensured the tool will not exceed a decibel limit of 85 A-weighted decibels at a distance of 50 feet. Pneumatic tools shall also include a noise suppression device on the compressed air exhaust.

e. No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

f. Use construction equipment that is in good working order, and inspect mufflers for proper functionality.

g. Use of "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures) when feasible.

h. Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors.

i. Prohibit the idling of inactive construction equipment for more than 5 minutes;

j. Measures for notifying the public of construction activities, complaint procedures, and monitoring construction noise levels shall include the following:

   i. Designation of an on-site construction noise manager for the project;

   ii. Notify neighboring noise-sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pile driving, other activities that may generate noise levels greater than 75 A-weighted decibels at noise-sensitive receptors) about the timing and estimated duration of the activity;

   iii. Post a sign on-site describing noise complaint procedures and a complaint hotline number that shall always be answered during construction;

   iv. Implement a procedure for notifying the planning department of any noise complaints within one week of receiving a complaint.

k. Where feasible, the following additional measures shall be implemented for proposed pile-driving activities:

   1. When pile driving is to occur within 600 feet of a noise-sensitive receptor, implement "quiet" pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions;
   2. Where the use of driven impact piles cannot be avoided, properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer and/or install a temporary noise barrier; and
   3. Conduct noise monitoring (measurements) before, during, and after the pile-driving activity.

MM N-2 At the time of application for building and construction permits, the project applicant shall identify the material type of the proposed transformers housing encasements and the corresponding noise-reduction level. Appropriate manufacturer housing encasements or alternative enclosures shall be required to ensure transformer noise levels do not result in an increase in ambient noise levels above 56 dB during daytime hours (between 7:00 a.m. and 6:00 p.m.) or 50 dB during nighttime hours (between 6:00 p.m. and 7:00 a.m.) as measured from the property line of the nearest off-site sensitive land use. Supplemental

enclosures or sound barriers may be used to reduce noise levels, or alternatively, the project plans may be designed to locate transformers within the equipment pad at a greater distance from off-site sensitive receptors, to ensure ambient noise levels do not exceed 56 dB during daytime hours or 50 dB during nighttime hours at the property line of the nearest off-site noise-sensitive land use, to be verified by Merced County. If existing ambient noise levels already exceed 56 dB during daytime hours or 50 dB during nighttime hours, transformers shall be located within housing enclosures or at a greater distance from off-site noise-sensitive uses in a manner that does not result in an increase in ambient noise levels of greater than 5 dB as measured from the property line of the nearest off-site noise-sensitive land use.

XIV. Population and Housing

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
(b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Setting

As of 2021, Merced County had a population of approximately 286,461 residents, which was a 1.9% increase from the 2020 population. The average population per household is approximately 3.29 persons in the county (U.S. Census Bureau 2021). By 2046 Merced County is projected to increase by approximately 82,000 persons (a 29% increase), 34,000 households (a 42% increase), and 27,000 jobs (a 32% increase) (MCAG 2022). There is an existing single-family residence located in the western portion of the project property.

Environmental Evaluation

a) 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 proposed project would result in construction and operation of a new 8.5-acre PV solar power generation facility. The project does not include the development of new residences, businesses, or other uses that could directly induce population growth within the county. Operation of the project would not require regular staff presence and would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years. Based on the limited number and nature of employment opportunities generated by the proposed project, operational site inspection and maintenance activities are expected to be conducted by existing employees and would not require workers to relocate to the project area. Construction activities for the proposed project have the potential to generate short-term employment opportunities; however, project

construction is expected to use workers from the local employment force and would not require workers to relocate to the project area. The project would not directly or indirectly induce substantial or unplanned population growth; therefore, impacts would be *less than significant*.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

There is an existing single-family residence located in the western portion of the project property; however, the project does not require the demolition or removal of this residence. Therefore, implementation of the proposed project would not necessitate the construction of replacement housing elsewhere, and *no impacts* would occur.

Conclusion

The project would not induce substantial planned or unplanned population growth and would not necessitate the construction of replacement housing elsewhere. Therefore, impacts related to population and housing would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XV. Public Services

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Setting

The Merced County Fire Department (MCFD) is responsible for fire protection services within the county. The nearest MCFD station is the Livingston Station located approximately 1.5 miles north of the project site. The Merced County Sheriff's Office is responsible for protecting the life and property of the residents living in the unincorporated areas of Merced County. The Sherriff's Office is located at 700

West 22nd Street, approximately 13 miles southeast of the project site. The nearest Sherriff's Office is the Charles F. Bludworth Station located at 9481 Shanks Road, approximately 5.5 miles northwest of the project site. There are a total of 20 school districts with 90 schools, one community college district with two campuses, and one public university in Merced County. There are approximately 114,000 acres of parks and recreational facilities in the county that offer a variety of amenities such as picnicking, swimming, boating, hunting, bird watching, playgrounds, sports fields, and hiking.

Environmental Evaluation

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?

The project does not include the construction of new buildings or structures that would directly increase demand on existing fire protection services. The project would be limited to the construction and operation of a PV solar generation facility and would not facilitate substantial planned or unplanned population growth in a manner that would increase demand on existing fire protection services. The project would not require new or physically altered governmental facilities for fire protection services; therefore, *no impacts* related to fire protection would occur.

Police protection?

The project does not include the construction of new residences, businesses, or other uses that would directly increase demand on existing police protection services. The project would be limited to construction and operation of a PV solar generation facility and would not facilitate substantial planned or unplanned population growth in a manner that would increase demand on existing police protection services. The project would not require new or physically altered governmental facilities for police protection services; therefore, *no impacts* would occur.

Schools?

The project does not include the construction of new residences or other uses that could facilitate an increase in school-aged children within the project area; therefore, the project would not create an increased demand on local schools, and *no impacts* would occur.

Parks?

The project does not include the construction of new residences, businesses, or other uses that could facilitate population growth and increase demand on existing public park facilities in the project area. Therefore, the proposed project would not require the construction of new or physically altered public park facilities, and *no impacts* would occur.

Other public facilities?

As discussed in Section XIV, *Population and Housing*, the project would not result in substantial planned or unplanned population growth. The project does not propose features that would significantly increase the demand on public facilities, such as libraries or post offices, or result in the need for new or physically altered governmental facilities; therefore, *no impacts* would occur.

Conclusion

The project would not increase demand for fire or police protection services, schools, parks, libraries, or other public facilities. Therefore, no impacts related to public services would occur as a result of the project, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XVI. Recreation

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) 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?	☐	☐	☐	☒
(b) 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?	☐	☐	☐	☒

Setting

Merced County contains several federal, state, and county parks and recreational areas in addition to public open space areas. There are approximately 114,000 acres of parks and recreational facilities in the county that offer a variety of amenities, such as picnicking, swimming, boating, hunting, bird watching, playgrounds, sports fields, and hiking. The nearest public park to the project site is Frederick Worden Park, approximately 0.75 mile northwest of the project site.

Environmental Evaluation

a) 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?

As discussed in Section XIV, *Population and Housing*, the project does not include the development of new residences, businesses, or other uses that could directly induce population growth within the county. Construction activities are expected to be conducted by workers from the local employment force and operation of the project would be limited to periodic site inspection and maintenance activities approximately four times per year; therefore, construction and operation of the proposed project is not anticipated to require workers to relocate to the project area. Since the project would not directly or indirectly induce population growth in the project area, the proposed project would not increase the use of existing recreational facilities in a manner that would lead to substantial deterioration of existing recreational facilities; therefore, *no impacts* would occur.

b) 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 does not include the development of new or expanded recreational facilities; therefore, *no impacts* related to adverse physical effects on the environment as a result of construction or expansion of recreational facilities would occur.

Conclusion

The project would not increase the use of existing recreational facilities in a manner that would lead to substantial deterioration of existing recreational facilities or require the development of new or expanded recreational facilities. Therefore, no impacts would occur, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XVII. Transportation

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
(b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
(c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
(d) Result in inadequate emergency access?	☐	☐	☒	☐

Setting

The RTP/SCS identifies strategies to ensure that the Merced County transportation system will continue to operate efficiently in the future with sufficient capacity to meet demand and that mobility options are available for county residents (MCAG 2022).

The *2030 Merced County General Plan Transportation and Circulation Element* establishes goals and policies to meet the needs of motorists, bicyclists, and pedestrians in addition to the needs for the movement of farm equipment and agricultural commodities. Since the circulation needs of urban areas are significantly different than the needs of rural areas, the County's functional roadway classification system includes distinct categories for urban and rural areas (Merced County 2013a). Table 8 identifies the desired roadway characteristics for each functional roadway classification.

Table 8. Functional Classification – Desired Roadway Characteristics

Location	Functional Classification	Right-of-Way (feet) [1]	Lanes[2]	LOS Analysis Threshold[3]	Intersecting Roadways[4]	Private Property Access[5]	Mobility / Operating Speed[6]
Urban	Freeway	Varies	4–8	D	Interchange at 1-mile spacing	None	High
	Expressway	150–180	4–6	D	1 per ½ mile	None	High
	Principal Arterial	100'-180'	2–6	D	1 per ¼ mile	Very Limited	Medium–High
	Minor Arterial	60'-100'	2–4	D	1 per ¼ mile	Limited	Medium
	Collector	60'-90'	2	D	1 per 1/8 miles	Limited	Low–Medium
	Local	46'-60'	2	D	No Limit (100-foot offset min.)	Controlled	Low
Rural	Freeway	Varies	4–8	D	Interchange at 2-mile spacing	None	High
	Principal Arterial	Varies	2–4	C	1 per ½ mile	Very Limited	High
	Minor Arterial	80'-120'	2–4	C	1 per ½ mile	Limited	Medium–High
	Major Collector	60'-90'	2–3	C	1 per ¼ mile	Limited	Medium–High
	Minor Collector	60'	2	C	1 per ¼ mile	Limited	Medium–High
	Local	60'	2	C	1 per ¼ mile	Controlled	Low–High

Source: Merced County (2013a)

[1] Right-of-Way. The right-of-way widths shown represent typical right-of-way widths needed to accommodate the number of travel lanes necessary to support anticipated traffic volumes, shoulders, roadside ditches (rural roadways), curb, gutter, sidewalk, and bicycle lanes (where appropriate). Additional right-of-way width may be necessary at approaches to intersections to accommodate turn pockets.

[2] Lanes. The number of lanes shown represents the typical number of lanes likely to be necessary for the various types of roadways. In unusual cases, additional lanes may be necessary to accommodate higher traffic volumes.

[3] LOS Analysis Threshold. The LOS thresholds indicated in this table represents the maximum acceptable weekday AM or PM Peak Hour LOS. Whenever a traffic analysis is prepared as part of a project approval, improvements need to be identified to ensure the resulting operating LOS does not exceed these threshold values.

[4] Intersecting Roadways. The values in this column represent the typical maximum number of intersections along the various types of roadways. In some cases, the number of intersections may be greater; however, a traffic analysis will be required indicating that the safety and function of the roadway will not be significantly compromised.

[5] Private Property Access. Private property access to roadways maintained by Merced County is granted through the issuance of an encroachment permit by the Department of Public Works. No access to private property will be permitted on Freeways or Expressways. Access to local roads will generally be approved; however, guidelines for driveways on local roadways in urban areas have been established in the Merced County Improvement Standards and Specifications. Generally, driveways on other roadway types will be permitted; however the number of driveways will be limited to preserve the safety and function of the roadway. In some cases joint driveways serving more than one parcel may be required.

[6] Mobility/Operating Speed. The descriptions in this column represent the perceived level of mobility (usually represented by operating speed) a motorist may anticipate to experience on the various roadway types during non-peak hours.

The project site is located at the intersection of Westside and Lincoln Boulevards, which are classified as major collector roads in a rural area (Merced County 2013a).

Environmental Evaluation

a) Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The project site is located at the intersection of Westside and Lincoln Boulevards, which are classified as major collector roads in a rural area. The Transportation and Circulation Element establishes Level of Service (LOS) standards for roadways within the county. As shown in Table 7, LOS C is considered an acceptable LOS for major collector roads in rural areas. During peak construction activities, it is

anticipated that up to 50 construction workers would be on-site and no more than 50 daily truck trips to transport material and equipment would occur. Construction activities would be temporary and would not result in a long-term increase in vehicle trips to and from the site in a manner that could increase vehicle congestion along proximate roadways. Operation of the project would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years. Based on the limited number of vehicle trips generated by the project, implementation of the proposed project would result in a negligible number of new vehicle trips along Westside and Lincoln Boulevards and would not reduce existing LOS in the area. In addition, based on the limited number of vehicle trips generated by the proposed project, the project would be consistent with applicable VMT-reduction goals included in the RTP/SCS. Based on the limited number of vehicle trips generated by the project, the project would be consistent with the Transportation and Circulation Element and RTP/SCS; therefore, impacts would be *less than significant*.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

According to the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (California Governor's Office of Planning and Research [OPR] 2018), projects that would not generate a potentially significant level of VMT, that are consistent with an SCS or general plan, or that would generate or attract fewer than 110 trips per day would not result in significant transportation impacts. During construction, the project would generate up to 50 truck trips per day. Operational vehicle trips generated by the proposed project would be limited to a total of four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years. Based on the limited number of construction and operational vehicle trips, the project would not result in or exceed 110 trips per day and would not generate a significant increase in VMT; therefore, project impacts would be *less than significant*.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The project site would be accessed via an existing 15-foot-wide driveway that would be improved to an unpaved aggregate-based road. The proposed access road improvements would be constructed in accordance with Merced County Department of Public Works Improvement Standards and Specifications to reduce potential hazards related to road design. The project would be consistent with surrounding land uses and would not introduce new incompatible uses (i.e., farm equipment) along nearby roadways. Based on required compliance with Merced County Department of Public Works Improvement Standards and Specifications, proposed access road improvements would not substantially increase roadway hazards; therefore, potential impacts would be *less than significant*.

d) Would the project result in inadequate emergency access?

The project site would be accessed via an existing 15-foot-wide driveway that would be improved to an unpaved aggregate-based road. The access road would be required to comply with requirements included in the most recent CFC and Merced County Department of Public Works Improvement Standards and Specifications for access roads to ensure adequate emergency access to and from the project site. Based on required compliance with CFC and Merced County Public Works requirements, the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan; therefore, impacts would be *less than significant*.

Conclusion

The project would not generate a substantial number of new vehicle trips, generate a significant increase in VMT, or conflict with a program plan, ordinance, or policy addressing the circulation system. The access road would be required to comply with requirements included in the most recent CFC and Merced County Department of Public Works Improvement Standards and Specifications for access roads reduce roadway hazards and to ensure adequate emergency access to and from the project site.

Mitigation Measures

Mitigation is not necessary.

XVIII. Tribal Cultural Resources

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
	(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
	(ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Setting

Approved in 2014, AB 52 added tribal cultural resources to the categories of resources that must be evaluated under CEQA. Tribal cultural resources are defined as either of the following:

1. Sites, features, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the CRHR; or
    b. Included in a local register of historical resources as defined in PRC Section 5020.1(k).
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). In applying these criteria for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.

Recognizing that tribes have expertise with regard to their tribal history and practices, AB 52 requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe regarding the potential for adverse impacts on tribal cultural resources as a result of a project. Consultation may include discussing the type of environmental review necessary, the presence and/or significance of tribal cultural resources, the level of significance of a project's impacts on the tribal cultural resources, and available project alternatives and mitigation measures recommended by the tribe to avoid or lessen potential impacts on tribal cultural resources.

Environmental Evaluation

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a-i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

a-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 Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No California Native American tribes have requested to be notified of proposed projects within the Merced County pursuant to AB 52.

Construction activities would result in approximately 0.7 acre of ground disturbance, including 150 cubic yards of cut and fill activity. Based on a records search conducted at the CCIC and of the NAHC Sacred Lands File, there are no previously recorded archaeological resources within the project area. Additionally, with the exception of Lehner Lateral, no other archaeological resources or evidence of archaeological resources were observed during a field survey of the project area. Based on the findings of the records search and pedestrian field survey, the project area is considered to have low sensitivity for the presence of unidentified prehistoric or historic archaeological resources; therefore, proposed ground-disturbing activities are not anticipated to adversely affect any known or unknown tribal cultural resource sites within the project area (SWCA 2022). Further, Mitigation Measure MM CR-1 has been included in the unlikely event that previously unidentified cultural resources are uncovered during proposed ground-disturbing activities. Based on the low potential to uncover cultural resources within the project area and implementation of Mitigation Measure MM CR-1, the project would not result in adverse impacts to known or unknown tribal cultural resources; therefore, impacts would be *less than significant with mitigation*.

Conclusion

Based on the low potential to uncover cultural resources within the project area, and implementation of Mitigation Measure MM CR-1, the project would not result in adverse impacts to known or unknown tribal cultural resources. Therefore, with implementation of Mitigation Measure MM CR-1, impacts related to tribal cultural resources would be less than significant.

Mitigation Measures

Implement Mitigation Measure MM CR-1.

XIX. Utilities and Service Systems

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☒	☐	☐
(b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
(c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
(d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
(e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Setting

The project site is located in the Merced Subbasin of the San Joaquin Valley Groundwater Basin. There is a total of nine water and sewer districts that provide potable water and sewer collection services to residents in the county. There are two active solid waste landfills within the county that are owned and operated by the Merced County Regional Waste Management Authority (MCRWMA). The Highway 59 Landfill is located at 7040 North Highway 59 and accepts mixed municipal waste, green and wood materials, tires, and household hazardous wastes. (California Department of Resources Recycling and Recovery [CalRecycle] 2005). The Billy Wright Landfill (BWL) is located at 17173 South Billy Wright Road in Los Banos and accepts mixed municipal waste, construction and demolition waste, and agricultural waste (CalRecycle 2010).

Environmental Evaluation

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The project includes the construction of a PV solar power generation facility, battery storage, and may include installation of additional power poles. As evaluated throughout this Initial Study, the project has the potential to result in adverse impacts related to Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, and Noise. Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 through MM BIO-6, MM CR-1, and MM N-1 and MM N-2 have been included to avoid and/or minimize adverse impacts to less-than-significant levels. Therefore, upon implementation of the identified mitigation measures, construction of utility infrastructure would not result in adverse impacts to the environment; therefore, potential impacts would be *less than significant with mitigation*.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

The project does not require any connections to water and would not require any long-term operational water use. The solar PV panels would be dry cleaned once a year using a smart robot dry-cleaning system and would not require the use of water. During construction, water may be used for dust suppression; however, any water used during construction would be limited in volume and supplied from off-site sources. Therefore, *no impact* would occur.

c) Would the project 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?

Operation of the project does not include connection to any public or private wastewater treatment providers. Portable restrooms would likely be used by workers and other personnel throughout the construction period; therefore, the project would not require short- or long-term connections to wastewater treatment providers, and *no impact* would occur.

d) Would the project 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?

Construction of the project may result in a temporary increase in solid waste, which would be disposed of in accordance with applicable state and local laws and regulations, such as California's Green Building Standards Code (CALGreen) Sections 4.408 and 5.408, which requires diversion of at least 75% of construction waste. Based on required compliance with CALGreen regulations, construction of the project would not generate solid waste in excess of local infrastructure capacity. Solid waste generated during project construction would be disposed of at either the Highway 59 Landfill or BWL, which have adequate capacity to accept the marginal amount of solid waste generated by the proposed project. Operation of the project would not require regular staff presence and would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, the project would generate minimal solid waste during operation. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Solid waste generated during decommissioning would also be disposed of at either the Highway 59 Landfill or BWL and would be required to comply with applicable federal,

state, and local waste requirements. The proposed project would not generate waste in excess of state or local standards or in excess of the capacity of local infrastructure; therefore, impacts would be *less than significant*.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

As previously described, operation of the project would not result in the long-term generation of solid waste. Construction-related waste (i.e., excavated soils) would be disposed of according to federal and state regulations, including CALGreen standards for diversion of construction waste. Operation of the project would not require regular staff presence and would result in approximately four vehicle trips per year for site inspection and maintenance activities and delivery trips for as-needed equipment replacement once every 10 years; therefore, the project would generate minimal solid waste during operation. The project would operate for 35 years and would be decommissioned following operation of the proposed project. Solid waste generated during decommissioning would also be required to comply with applicable federal, state, and local waste requirements. Therefore, impacts would be *less than significant*.

Conclusion

Implementation of Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 and MM BIO-2, MM CR-1, and MM N-1 and MM N-2 would reduce potential adverse environmental impacts related to implementation of the proposed PV solar power generation facility to less-than-significant levels. The project does not require connection to groundwater resources or a local water or wastewater provider. The project would not generate solid waste in exceedance of state or local regulations. Therefore, with implementation of the mitigation measures identified below, impacts related to utilities and service systems would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 and MM BIO-2, MM CR-1, and MM N-1 and MM N-2.

XX. Wildfire

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
(a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
(c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Setting

According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone (FHSZ) Viewer, the project site and surrounding area is located in a Local Responsibility Area (LRA). According to the *Merced County Multi-Jurisdictional Hazard Mitigation Plan*, the project site and surrounding area is at low risk for wildfire occurrence because the low-growing native grasses and shrubs found in the area present a minimal vegetative fuel source and a corresponding low wildfire risk (Merced County 2021).

Environmental Evaluation

a) 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?

The proposed project would result in the construction and operation of an 8.5-acre PV solar generation facility in an area with low risk of wildfire occurrence. The project site would be accessed via an existing 15-foot-wide driveway that would be improved to an unpaved aggregate-based road. The proposed access road improvements would be required to comply with the most recent CFC and Merced County Department of Public Works Improvement Standards and Specifications for access roads to ensure adequate emergency access to and from the project site. Operation of the project would be limited to periodic maintenance and inspection activities up to four times per year and would not generate a substantial number of people or vehicle trips within the area that could otherwise impede emergency response or evacuation efforts within the project area. Based on required compliance with CFC and Merced County Public Works requirements, the project would not substantially impair an adopted emergency response plan or emergency evacuation plan; therefore, impacts would be *less than significant*.

b) Due to slope, prevailing winds, and other factors, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The project site is located approximately 0.7 mile south of the city of Livingston and is characterized by relatively flat topography with a low potential for wildfire occurrence. The project includes the construction of an 8.5-acre PV solar generation facility on a previously undeveloped portion of the project site. The proposed PV solar generation facility would be required to comply with Section 1204.4 of the most recent CFC, which identifies requirements for solar panel installation to reduce the potential for wildfire ignition at the project site. In addition, vegetation maintenance would occur during periodic maintenance and inspection activities at the project site, which would further reduce the potential for wildfire ignition at the project site. The proposed project would be sited in an area with low risk of

wildfire and would be required to comply with requirements of the most recent CFC; therefore, implementation of the proposed project would not increase risk of wildfire at the project site, and impacts would be *less than significant.*

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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 site and surrounding area is not located in a high or very high FHSZ (CAL FIRE 2022). The project includes the construction of a new 8.5-acre PV solar generation facility, battery storage, and may include the installation of additional utility poles along Westside Boulevard. The proposed PV solar generation facility and associated infrastructure would be required to comply with regulations included in Section 1204.4 of the most recent CFC to reduce the potential for wildfire ignition at the project site. Based on required compliance with the CFC, the proposed project would not exacerbate fire risk within the project area; therefore, impacts would be *less than significant*.

d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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 area is not designated as a high or very high fire hazard area. Based on the low risk of wildfire within the project area, hazards associated with wildfire, including post-fire instability or drainage changes, have a low potential to occur. Further, the project does not include the development of occupiable structures that could be damaged or create a hazard for nearby residents; therefore, impacts would be *less than significant.*

Conclusion

The project site is located in an area with low risk of wildfire and the proposed project would not exacerbate wildfire or post-wildfire risk. Therefore, impacts would be less than significant, and mitigation is not necessary.

Mitigation Measures

Mitigation is not necessary.

XXI. Mandatory Findings of Significance

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
(b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
(c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Environmental Evaluation

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As discussed in the preceding sections, the project has the potential to significantly degrade the quality of the environment, including effects on biological and cultural resources. The project's proposed construction activities have the potential to result in adverse impacts to special status wildlife species, as discussed in Section IV. of this document. Proposed ground-disturbing activities are not anticipated to adversely affect any known or unknown cultural resource sites within the project area (SWCA 2022). Further, Mitigation Measure CR-1 has been included in the unlikely event that previously unidentified cultural resources are uncovered during proposed ground-disturbing activities. Implementation of Mitigation Measures BIO-1 through BIO-6 and CR-1 would reduce potential impacts a less-than-significant level.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

When project impacts are considered along or in combination with other impacts, the project-related impacts may be significant. Construction and operation of the project would contribute to cumulative impacts related to air quality, biological resources, cultural resources, and noise. Mitigation measures

have been incorporated into the project to reduce project-related impacts to a less-than-significant level. Based on implementation of Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 and MM BIO-2, MM CR-1, and MM N-1 and MM N-2, the cumulative effects of the proposed project would be less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The project would result in air emissions during construction of the project. Mitigation measures have been identified that would reduce these project-specific impacts to a less-than-significant level; therefore, the project would not result in substantial, adverse environmental effects to human beings, either directly or indirectly.

Conclusion

Based on implementation of Mitigation Measures MM AG-1, MM AQ-1 through MM AQ-3, MM BIO-1 and MM BIO-2, MM CR-1, and MM N-1 and MM N-2, all potential impacts associated with the construction and operation of the proposed project would be mitigated to less-than-significant levels.

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APPENDIX A

Project Site Plans

RNA
Think Local. Act Local.

RENEWABLE AMERICA LLC
4675 Stevens Creek Blvd, Ste 250
Santa Clara, CA 95051
TEL: 408-663-6647 X702
ADMIN@RENEWAM.COM

WEST TAMBO CLEAN POWER II SPECS:

MODULE SPECIFICATION	
MANUFACTURER	ASTRO
PV MODULE MODEL	CHSM66M-HC
PV MODULE POWER (Pmax)	650
OPEN CIRCUIT VOLTAGE (V)	45.28
VOLTAGE TEMP. COEFF. (%/°C)	0.25
INVERTER SPECIFICATION	
MANUFACTURER	SUNGROW
INVERTER MODEL	SG350HX-US
MAX OUTPUT POWER (kW)	333
AC OUTPUT CURRENT (A)	254
NOM AC VOLTAGE (kV)	0.8
MAX INPUT CURRENT (A)	480
MIN VOLTAGE START UP (V)	500
MAX INPUT VOLTAGE (V)	1500
PV SYSTEM SPECIFICATION	
DC SYSTEM SIZE (kWp)	2867
TOTAL NUMBER OF MODULES	4410
AC SYSTEM NAMEPLATE (kW)	2000
TOTAL NUMBER OF INVERTERS	6
LOADING RATIO	1.43
INNER SPACING (ft)	14
FTC TRACKER QUANTITY	49
TURNING ANGLE RANGE (°)	50

SITE DETAILS	
PHASE I PROJECT AREA, FENCED (SQ.FT)	370,260
PHASE I PROJECT AREA, FENCED (ACRES)	8.50
TOTAL PROJECT AREA (SQ.FT)	370,260
TOTAL PROJECT AREA (ACRES)	8.50
TOTAL NEW EQUIPMENT PAD (SQ.FT)	600
TOTAL NEW IMPERVIOUS AREA (SQ.FT)	600

THIS DRAWING IS FOR PERMITTING PURPOSES ONLY.
NOT FOR CONSTRUCTION.

NO.	REVISION / ISSUE	DATE
0.	A001	9-Jan-23

PROJECT NAME:
WEST TAMBO CLEAN POWER II

PROPERTY OWNER:	PROPERTY OWNER CONTACT:
Paul A Farajian	(209)-777-1491

PARCEL NUMBER:
047-290-002

LOCATION:	POI GPS COORDINATES:
5056 N LINCOLN BLVD, LIVINGSTON CA 95334	37.360522, -120.719120

DRAWING TITLE:
SITE PLAN

AUTOCAD FILE NAME:			SHEET:
230109-LAYOUT-RNA-WEST-II-2866KWDC			PHASE1-LAYOUT
PLOT FILE NAME:			PLOT DATE:
230109-LAYOUT-RNA-WEST-II-2866KWDC			9-Jan-23
DRAWN BY: UR	CHECKED BY:	SCALE: 1"= 100'	PLOT TIME: 17:58

APPENDIX B

Air Quality and Greenhouse Gas Emissions Technical Memorandum

AMBIENT
AIR QUALITY & NOISE CONSULTING

75 Higuera Street, Suite 105
San Luis Obispo, CA 93401
(805) 226-2727

TECHNICAL MEMORANDUM

Date:	November 3, 2022
To:	SWCA Environmental Consultants, Inc.
From:	Kurt Legleiter, Principal
Project:	Livingston Solar Project
Subject:	Air Quality & Greenhouse Gas Emissions Calculations

INTRODUCTION

This memorandum provides estimated short-term construction and long-term operational emissions associated with the proposed Livingston Solar Project (project) in support of the environmental impact analysis being prepared for this project. The proposed project is located in Merced County, within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Applicable CEQA thresholds of significance recommended by the SJVAPCD are summarized below. Emissions modeling output files are included as an attachment to this memorandum.

SJVAPCD CEQA Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guidance for Assessing and Mitigating Air Quality Impacts* (2015).[1] This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction and long-term operational air quality impacts. SJVAPCD's recommended mass-emissions thresholds of significance for short-term construction and long-term operational emissions of criteria air pollutants (ROG, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$) are summarized below.

- Short-term Emissions—Construction impacts associated with the proposed project would be considered significant if project-generated emissions would exceed 100 tons/year of CO, 10 tons/year of ROG or NO_X, 27 tons/year of SO_X, or 15 tons/year of PM_{10} or $PM_{2.5}$.
- Long-term Emissions—Operational impacts associated with the proposed project would be considered significant if project-generated emissions would exceed 100 tons/year of CO, 10 tons/year of ROG or NO_X, 27 tons/year of SO_X, or 15 tons/year of PM_{10} or $PM_{2.5}$.

In addition to the above mass-emissions thresholds, the SJVAPCD also recommends the use of average-daily emissions thresholds for the evaluation of project impacts on localized ambient air quality conditions. Accordingly, the project would also be considered to result in a significant contribution to localized ambient air

[1] SJVAPCD. February 19, 2015. *Guidance for Assessing and Mitigating Air Quality Impacts.* Available at website url: https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF.

quality impacts if on-site emissions of ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, or SO_2 associated with either short-term construction or long-term operational activities would exceed a daily average of 100 pounds per day (lbs/day) for each of the pollutants evaluated. It is important to note that the SJVAPCD's recommended thresholds of significance were developed taking into account the achievement and maintenance of applicable ambient air quality standards. As previously noted, these standards represent the upper limits deemed necessary to adequately protect public health and welfare. Therefore, projects that do not exceed SJVAPCD's recommended significance thresholds would also be considered to have a less-than-significant impact with regard to potential health-related impacts. The SJVAPCD has not yet adopted updated significance thresholds for project-generated greenhouse gas (GHG) emissions addressing the State's future year (post year 2020) GHG reduction targets.

Emissions Calculation Methodology

Construction and operational emissions of criteria air pollutants and GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. Emissions modeling was conducted for annual and daily conditions based on construction and operational requirements (e.g., equipment use, vehicle trips) provided by the project applicant and information derived from similar solar projects. Construction-generated emissions were quantified for site preparation/clearing, grading/excavation, road improvements, and installation of the solar photovoltaic (PV) cells/battery energy storage system (BESS) and related infrastructure. Operational emissions included routine maintenance activities assuming an estimated total of four worker trips/day occurring over an estimated four days/year. Decommissioning activities are assumed to require similar construction requirements as those identified for the facility construction/installation phase. As a result, emissions associated with the facility construction/ installation activities are also anticipated to be reflective of emissions associated with project decommissioning. Construction of Phase I of the facility was assumed to occur over an estimated six-month period, commencing in January 2023. Phase II construction activities and duration are anticipated to be similar to Phase I and would, therefore, generate similar daily and annual emissions. Calculated maximum-daily emissions assumes some construction activities (e.g., site preparation, road improvements) could occur simultaneously on any given day based on the anticipated construction schedule provided. Emissions modeling assumptions and CalEEMod output files are included in Attachment A to this memorandum.

Proposed Project-Generated Emissions

Project generated daily and annual construction emissions are summarized in Tables 1 and 2, respectively. Project generated daily and annual operational emissions are summarized in Tables 3 and 4, respectively. As depicted, project generated emissions would not exceed SJVAPCD recommended significance thresholds. Project-generated GHG emissions and displaced GHG emissions are summarized in Table 5. As depicted, the amount of GHGs potentially displaced by the proposed project would more than offset estimated annual GHG emissions associated with project construction and operational activities and would be considered a beneficial impact of the project.

AMBIENT
AIR QUALITY & NOISE CONSULTING

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Table 1. Daily Construction Emissions Summary (lbs/day)

CONSTRUCTION PHASE/SOURCE	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
SITE PREPARATION						
ONSITE SOURCES:	1.03	10.22	8.61	0.02	3.44	1.79
OFFSITE SOURCES:	0.05	0.03	0.4	0.004	0.1	0.03
TOTAL EMISSIONS:	1.08	10.25	9.01	0.024	3.54	1.82
GRADING/EXCAVATION						
ONSITE SOURCES:	0.34	3.08	5.49	0.008	43.58	4.83
OFFSITE SOURCES:	0.03	0.02	0.25	0.0005	0.06	0.02
TOTAL EMISSIONS:	0.37	3.1	5.74	0.0085	43.64	4.85
ROAD IMPROVEMENTS						
ONSITE SOURCES:	1.56	16.4	12.52	0.03	7.39	2.4
OFFSITE SOURCES:	0.07	0.05	0.66	0.001	0.17	0.05
TOTAL EMISSIONS:	1.63	16.45	13.18	0.031	7.56	2.45
CONSTRUCTION/INFRASTRUCTURE INSTALLATION						
ONSITE SOURCES:	1.15	12.29	14.14	0.02	0.53	0.5
OFFSITE SOURCES:	0.56	2.56	5.74	0.02	1.28	0.35
TOTAL EMISSIONS:	1.71	14.85	19.88	0.04	1.81	0.85
MAXIMUM DAILY EMISSIONS:	2.7	26.7	25.6	0.1	51.2	7.3
SJVAPCD SIGNIFICANCE THRESHOLDS:	100	100	100	100	100	100
EMISSIONS EXCEED SIGNIFICANCE THRESHOLDS? :	NO	NO	NO	NO	NO	NO

PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust. Maximum daily emissions based on the highest modeled emissions for winter or daily conditions. Represents emissions associated with Phase I development. Emissions associated with Phase II development would be similar and, likewise, would not exceed applicable significance thresholds. Maximum daily emissions assumes multiple activities could potentially occur simultaneously. Totals may not sum due to rounding.

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Table 2. Annual Construction Emissions Summary (tons/year)

CONSTRUCTION YEAR	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	$MTCO_2e$
YEAR 2023:	0.09	0.79	0.96	0.002	0.17	0.07	205.1
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EMISSIONS EXCEED SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-
PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.							

Table 3. Daily Operational Emissions Summary (lbs/day)

OPERATIONAL ACTIVITIES	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
ROUTINE MAINTENANCE:	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SJVAPCD SIGNIFICANCE THRESHOLDS:	100	100	100	100	100	100
EMISSIONS EXCEED SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO
Assumes two workers/day, two trips/worker/day. Water use for cleaning of PV panels not required.						

Table 4. Annual Operational Emissions Summary (tons/year)

OPERATIONAL ACTIVITIES	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	$MTCO_2e$
ROUTINE MAINTENANCE:	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.09
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EMISSIONS EXCEED SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-
Assumes two workers/day, two trips/worker/day, four days/year. Water use for cleaning of PV panels not required.							

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Table 5. Annual GHG Emissions Summary ($MTCO_2e$/year)

SOURCE	$MTCO_2e$/YEAR	
ROUTINE MAINTENANCE EMISSIONS:	0.09	
AMORTIZED CONSTRUCTION EMISSIONS (35 YEARS):	14.21	
TOTAL EMISSIONS:	14.30	
Based on estimated annual construction-generated GHG emissions. Includes decommissioning emissions estimated to be roughly equivalent to GHG emissions generated during trenching/solar PV installation.		
DISPLACED GHG EMISSIONS		
ESTIMATED ANNUAL ELECTRICITY GENERATION:	10,075,000	kWh/YEAR
POTENTIAL DISPLACED GHG EMISSIONS:	2,170.00	$MTCO_2e$/YEAR
NET ANNUAL GHG EMISSIONS POTENTIALLY DISPLACED:	2,155.70	
Displaced GHG emissions assumes an equivalent 5 MW (10,075,000 kWh/year) would otherwise be generated by fossil fuels. Net displaced GHG emissions accounts for project generated GHG emissions associated with routine maintenance activities, as well as, construction-generated GHG emissions amortized over an assumed 35-year project life.		

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ATTACHMENT A
EMISSIONS MODELING

SUMMARY OF EMISSIONS MODELING ASSUMPTIONS

PROJECT CONSTRUCTION

TOTAL SITE DEVELOPED ACREAGE:	20.5 ACRES
TOTAL GROUND DISTURBANCE:	0.96 ACRES. LIMITED LARGELY TO EQUIPMENT PADS.
INITIAL YEAR OF CONSTRUCTION (PHASE I):	2023
PERIOD OF CONSTRUCTION/PHASE:	6 MONTHS
WORKER TRIPS/DAY:	100 MAX (50 WORKERS, 2 TRIPS/WORKER) DURING THE CONSTRUCTION/ INFRASTRUCTURE INSTALLATION PHASE
TRUCK TRIPS/DAY:	50 MAX
MATERIAL FILL/EXPORT:	NONE. 150 CY CUT/FILL TO BE BALANCED ONSITE
TRIP DISTANCES:	MODEL DEFAULTS
OFF-ROAD EQUIPMENT:	PROJECT INFORMATION PROVIDED/SIMILAR SOLAR PV PROJECTS
OFF-ROAD EQUIPMENT USAGE RATES/HP RATINGS:	MODEL DEFAULTS

PROJECT OPERATION

PROJECT SIZE:	5 MW
ELECTRICITY GENERATION:	10,075,000 kWh/YEAR
HOURS/DAYS OF USE:	24 HOURS/DAY, 365 DAYS/YEAR
WATER USE:	NONE. DRY CLEANING SYSTEM TO BE USED
MAINTENANCE WORKER TRIPS/DAY:	4 (2 WORKERS, 2 TRIPS/WORKER)
MAINTENANCE DAYS/YEAR:	4
PROJECT LIFE:	35 YEARS

CONSTRUCTION EMISSIONS SUMMARY

PROJECT: LIVINGSTON SOLAR PV PROJECT, MERCED COUNTY

DAILY EMISSIONS SUMMARY

CONSTRUCTION PHASE	ROG	NOX	CO	SOX	PM10	PM2.5
SITE PREPARATION						
ONSITE	1.03	10.22	8.61	0.02	3.44	1.79
OFFSITE	0.05	0.03	0.4	0.004	0.1	0.03
TOTAL	1.08	10.25	9.01	0.024	3.54	1.82
GRADING/EXCAVATION						
ONSITE	0.34	3.08	5.49	0.008	43.58	4.83
OFFSITE	0.03	0.02	0.25	0.0005	0.06	0.02
TOTAL	0.37	3.1	5.74	0.0085	43.64	4.85
ROAD IMPROVEMENTS						
ONSITE	1.56	16.4	12.52	0.03	7.39	2.4
OFFSITE	0.07	0.05	0.66	0.001	0.17	0.05
TOTAL	1.63	16.45	13.18	0.031	7.56	2.45
CONSTRUCTION/INFRASTRUCTURE INSTALLATION						
ONSITE	1.15	12.29	14.14	0.02	0.53	0.5
OFFSITE	0.56	2.56	5.74	0.02	1.28	0.35
TOTAL	1.71	14.85	19.88	0.04	1.81	0.85
MAXIMUM DAILY EMISSIONS	**ROG**	**NOX**	**CO**	**SOX**	**PM10**	**PM2.5**
SITE PREPARATION/ROAD IMPROVEMENTS	2.71	26.7	22.19	0.055	11.1	4.27
GRADING/EXCAVATION/ROAD IMPROVEMENTS	2	19.55	18.92	0.0395	51.2	7.3
CONSTRUCTION/INFRASTRUCTURE/GRADING	2.08	17.95	25.62	0.0485	45.45	5.7
MAXIMUM DAILY EMISSIONS	2.7	26.7	25.6	0.1	51.2	7.3
SJVAPCD SIGNIFICANCE THRESHOLDS	100	100	100	100	100	100
EXCEEDS SIGNIFICANCE THRESHOLDS?	NO	NO	NO	NO	NO	NO

PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust. Maximum daily emissions based on the highest modeled emissions for winter or daily conditions. Assumes multiple activities could potentially occur simultaneously. Totals may not sum due to rounding.

ANNUAL EMISSIONS SUMMARY

CONSTRUCTION YEAR	ROG	NOX	CO	SOX	PM10	PM2.5	CO2e
2023	0.09	0.79	0.96	0.002	0.17	0.07	205.1
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-

PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.

OPERATIONAL EMISSIONS SUMMARY

PROJECT: LIVINGSTON SOLAR PV PROJECT, MERCED COUNTY

ANNUAL EMISSIONS SUMMARY

OPERATIONAL ACTIVITIES	ROG	NOX	CO	SOX	PM10	PM2.5	CO2e
ROUTINE MAINTENANCE	4.057E-05	3.275E-05	0.0003313	8.64E-07	0.0001028	2.762E-05	0.09
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-

DAILY EMISSIONS SUMMARY

OPERATIONAL ACTIVITIES	ROG	NOX	CO	SOX	PM10	PM2.5	
ROUTINE MAINTENANCE	0.020284	0.016376	0.165632	0.000432	0.051376	0.013808	
SJVAPCD SIGNIFICANCE THRESHOLDS:	100	100	100	100	100	100	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-

WORKER TRIP EMISSIONS SUMMARY	ROG	NOX	CO	SOX	PM10	PM2.5	CO2e
DAILY CONSTRUCTION WORKER EMISSIONS (100 TRIPS/DAY)	0.5071	0.4094	4.1408	0.0108	1.2844	0.3452	1098.5394
DAILY OPERATIONAL MAINTENANCE WORKER EMISSIONS (4 TRIPS/DAY)	0.020	0.016	0.166	0.000	0.051	0.014	43.942
ANNUAL OPERATIONAL MAINTENANCE WORKER EMISSIONS (4 DAYS/YEAR)	4.057E-05	3.275E-05	3.313E-04	8.640E-07	1.028E-04	2.762E-05	0.088

ANNUAL OPERATIONAL GHG EMISSIONS SUMMARY

PROJECT: LIVINGSTON SOLAR PV PROJECT, MERCED COUNTY

ANNUAL GHG EMISSIONS SUMMARY	**MTCO2e/Year**
Routine Maintenance	0.09
Amortized Construction Emissions (35 Years)	14.21
Total:	14.30

Based on estimated annual construction-generated GHG emissions. Includes decommissioning emissions estimated to be roughly equivalent to GHG emissions generated during trenching/solar PV installation.

DISPLACED GHG EMISSIONS		
ESTIMATED ANNUAL GENERATION	10,075,000	kWh/year
	10.08	GWh/year
POTENTIAL DISPLACED GHG EMISSIONS	2,170.00	MTCO2e/year
NET ANNUAL GHGs POTENTIALLY DISPLACED	2,155.70	

Displaced GHG emissions assumes an equivalent 5 MW (10,075,000 kWh/year) would otherwise be generated by fossil fuels. Net displaced GHG emissions accounts for project generated GHG emissions associated with routine maintenance activities, as well as, construction-generated GHG emissions amortized over an assumed 35 year project life.

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Livingston Solar PV Project - Construction Only

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	20.50	Acre	20.50	892,980.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 20.5 acres

Construction Phase - Based on information provided and data obtained from similar sized solar projects. Grading only required for equipment pad (1 day). Assumes 10 days for initial site prep and 10 days for road improvements. Overall construction period 6 months.

Off-road Equipment - .

Off-road Equipment - Grading of equipment pad assumes one excavator and one tractor/loader/backhoe.

Off-road Equipment - Assumes 1 excavator, 1 grader, 1 dozer, 2 tractor/loader/backhoes

Off-road Equipment - Based on information provided assumes use of 1 excavator. Includes 1 dozer and 1 tractor/loader/backhoe.

Trips and VMT - Worker trips are based on estimated 50 workers 2 trips/worker/day during install phase. Other phases based on model defaults. Assumes an avg of 50 MHDT/HHDT per day.

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - Dust from material movement based on model defaults. No fill material imported or exported/material balanced on site.

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Off-road Equipment - Installation equipment based on information provided. Assumes use of 2 skid mounted post drivers, 2 bobcats, 1 forklift, 1 genset, 1 tractor/loader/backhoe, 1 crane.

Vehicle Trips - .

Water And Wastewater - .

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstructionPhase	NumDays	370.00	89.00
tblConstructionPhase	NumDays	35.00	1.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	PhaseEndDate	7/19/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	12/30/2022	2/27/2023
tblConstructionPhase	PhaseEndDate	2/17/2023	2/27/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseStartDate	2/18/2023	2/28/2023
tblConstructionPhase	PhaseStartDate	11/12/2022	2/27/2023

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	12/31/2022	2/14/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	1/2/2023
tblGrading	AcresOfGrading	0.00	105.00
tblGrading	AcresOfGrading	10.00	105.00
tblGrading	AcresOfGrading	5.00	15.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	146.00	50.00
tblTripsAndVMT	WorkerTripNumber	375.00	100.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblWater	OutdoorWaterUseRate	24,425,367.67	0.00

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.9966	19.5466	19.8857	0.0462	128.7398	0.8520	129.5918	16.5970	0.7838	17.3808						4,662.6099
Maximum	**1.9966**	**19.5466**	**19.8857**	**0.0462**	**128.7398**	**0.8520**	**129.5918**	**16.5970**	**0.7838**	**17.3808**						**4,662.6099**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.9966	19.5466	19.8857	0.0462	50.3488	0.8520	51.2008	6.5100	0.7838	7.2939						4,662.6099
Maximum	**1.9966**	**19.5466**	**19.8857**	**0.0462**	**50.3488**	**0.8520**	**51.2008**	**6.5100**	**0.7838**	**7.2939**						**4,662.6099**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	60.89	0.00	60.49	60.78	0.00	58.04	0.00	0.00	0.00	0.00	0.00	0.00

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	1/13/2023	5	10	Site Preparation/Clearing
2	Road Improvements	Grading	2/14/2023	2/27/2023	5	10	Road Improvements
3	Grading/Excavation	Grading	2/27/2023	2/27/2023	5	1	Grading/Excavation
4	Construction/Infrastructure	Building Construction	2/28/2023	6/30/2023	5	89	Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 105

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	0	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Road Improvements	Excavators	1	8.00	158	0.38
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction/Infrastructure	Forklifts	1	8.00	89	0.20
Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Construction/Infrastructure	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Construction/Infrastructure	8	100.00	50.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820						0.0000
Off-Road	1.0257	10.2192	8.6117	0.0168		0.4729	0.4729		0.4351	0.4351						1,644.3723
Total	**1.0257**	**10.2192**	**8.6117**	**0.0168**	**7.6128**	**0.4729**	**8.0858**	**3.4820**	**0.4351**	**3.9171**						**1,644.3723**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0432	0.0276	0.4036	9.6000e-004	0.1022	5.6000e-004	0.1028	0.0271	5.2000e-004	0.0276						98.2384
Total	**0.0432**	**0.0276**	**0.4036**	**9.6000e-004**	**0.1022**	**5.6000e-004**	**0.1028**	**0.0271**	**5.2000e-004**	**0.0276**						**98.2384**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580						0.0000
Off-Road	1.0257	10.2192	8.6117	0.0168		0.4729	0.4729		0.4351	0.4351						1,644.3723
Total	**1.0257**	**10.2192**	**8.6117**	**0.0168**	**2.9690**	**0.4729**	**3.4419**	**1.3580**	**0.4351**	**1.7931**						**1,644.3723**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0432	0.0276	0.4036	9.6000e-004	0.1022	5.6000e-004	0.1028	0.0271	5.2000e-004	0.0276						98.2384
Total	**0.0432**	**0.0276**	**0.4036**	**9.6000e-004**	**0.1022**	**5.6000e-004**	**0.1028**	**0.0271**	**5.2000e-004**	**0.0276**						**98.2384**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					17.1573	0.0000	17.1573	4.5126	0.0000	4.5126						0.0000
Off-Road	1.5595	16.4002	12.5194	0.0266		0.6991	0.6991		0.6432	0.6432						2,591.9033
Total	**1.5595**	**16.4002**	**12.5194**	**0.0266**	**17.1573**	**0.6991**	**17.8565**	**4.5126**	**0.6432**	**5.1558**						**2,591.9033**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0701	0.0449	0.6559	1.5700e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						159.6374
Total	**0.0701**	**0.0449**	**0.6559**	**1.5700e-003**	**0.1661**	**9.2000e-004**	**0.1670**	**0.0440**	**8.4000e-004**	**0.0449**						**159.6374**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6914	0.0000	6.6914	1.7599	0.0000	1.7599						0.0000
Off-Road	1.5595	16.4002	12.5194	0.0266		0.6991	0.6991		0.6432	0.6432						2,591.9033
Total	**1.5595**	**16.4002**	**12.5194**	**0.0266**	**6.6914**	**0.6991**	**7.3905**	**1.7599**	**0.6432**	**2.4031**						**2,591.9033**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0701	0.0449	0.6559	1.5700e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						159.6374
Total	**0.0701**	**0.0449**	**0.6559**	**1.5700e-003**	**0.1661**	**9.2000e-004**	**0.1670**	**0.0440**	**8.4000e-004**	**0.0449**						**159.6374**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					111.3525	0.0000	111.3525	12.0235	0.0000	12.0235						0.0000
Off-Road	0.3400	3.0843	5.4891	8.2800e-003		0.1516	0.1516		0.1395	0.1395						808.1641
Total	**0.3400**	**3.0843**	**5.4891**	**8.2800e-003**	**111.3525**	**0.1516**	**111.5042**	**12.0235**	**0.1395**	**12.1630**						**808.1641**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0270	0.0173	0.2523	6.0000e-004	0.0639	3.5000e-004	0.0642	0.0169	3.2000e-004	0.0173						61.3990
Total	**0.0270**	**0.0173**	**0.2523**	**6.0000e-004**	**0.0639**	**3.5000e-004**	**0.0642**	**0.0169**	**3.2000e-004**	**0.0173**						**61.3990**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					43.4275	0.0000	43.4275	4.6892	0.0000	4.6892						0.0000
Off-Road	0.3400	3.0843	5.4891	8.2800e-003		0.1516	0.1516		0.1395	0.1395						808.1641
Total	**0.3400**	**3.0843**	**5.4891**	**8.2800e-003**	**43.4275**	**0.1516**	**43.5791**	**4.6892**	**0.1395**	**4.8286**						**808.1641**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0270	0.0173	0.2523	6.0000e-004	0.0639	3.5000e-004	0.0642	0.0169	3.2000e-004	0.0173						61.3990
Total	**0.0270**	**0.0173**	**0.2523**	**6.0000e-004**	**0.0639**	**3.5000e-004**	**0.0642**	**0.0169**	**3.2000e-004**	**0.0173**						**61.3990**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1526	12.2932	14.1426	0.0249		0.5303	0.5303		0.4981	0.4981						2,410.7272
Total	**1.1526**	**12.2932**	**14.1426**	**0.0249**		**0.5303**	**0.5303**		**0.4981**	**0.4981**						**2,410.7272**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0583	2.0092	0.6980	9.2900e-003	0.3067	0.0133	0.3200	0.0884	0.0127	0.1011						1,023.9029
Worker	0.5393	0.3454	5.0451	0.0121	1.2773	7.0500e-003	1.2844	0.3387	6.4900e-003	0.3452						1,227.9798
Total	**0.5976**	**2.3546**	**5.7431**	**0.0213**	**1.5840**	**0.0203**	**1.6044**	**0.4271**	**0.0192**	**0.4463**						**2,251.8827**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1526	12.2932	14.1426	0.0249		0.5303	0.5303		0.4981	0.4981						2,410.7272
Total	**1.1526**	**12.2932**	**14.1426**	**0.0249**		**0.5303**	**0.5303**		**0.4981**	**0.4981**						**2,410.7272**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0583	2.0092	0.6980	9.2900e-003	0.3067	0.0133	0.3200	0.0884	0.0127	0.1011						1,023.9029
Worker	0.5393	0.3454	5.0451	0.0121	1.2773	7.0500e-003	1.2844	0.3387	6.4900e-003	0.3452						1,227.9798
Total	**0.5976**	**2.3546**	**5.7431**	**0.0213**	**1.5840**	**0.0203**	**1.6044**	**0.4271**	**0.0192**	**0.4463**						**2,251.8827**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Unmitigated	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0460					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0460					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Livingston Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Livingston Solar PV Project - Construction Only

Merced County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	20.50	Acre	20.50	892,980.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 20.5 acres

Construction Phase - Based on information provided and data obtained from similar sized solar projects. Grading only required for equipment pad (1 day). Assumes 10 days for initial site prep and 10 days for road improvements. Overall construction period 6 months.

Off-road Equipment - .

Off-road Equipment - Grading of equipment pad assumes one excavator and one tractor/loader/backhoe.

Off-road Equipment - Assumes 1 excavator, 1 grader, 1 dozer, 2 tractor/loader/backhoes

Off-road Equipment - Based on information provided assumes use of 1 excavator. Includes 1 dozer and 1 tractor/loader/backhoe.

Trips and VMT - Worker trips are based on estimated 50 workers 2 trips/worker/day during install phase. Other phases based on model defaults. Assumes an avg of 50 MHDT/HHDT per day.

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - Dust from material movement based on model defaults. No fill material imported or exported/material balanced on site.

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Off-road Equipment - Installation equipment based on information provided. Assumes use of 2 skid mounted post drivers, 2 bobcats, 1 forklift, 1 genset, 1 tractor/loader/backhoe, 1 crane.

Vehicle Trips - .

Water And Wastewater - .

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstructionPhase	NumDays	370.00	89.00
tblConstructionPhase	NumDays	35.00	1.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	PhaseEndDate	7/19/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	12/30/2022	2/27/2023
tblConstructionPhase	PhaseEndDate	2/17/2023	2/27/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseStartDate	2/18/2023	2/28/2023
tblConstructionPhase	PhaseStartDate	11/12/2022	2/27/2023

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	12/31/2022	2/14/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	1/2/2023
tblGrading	AcresOfGrading	0.00	105.00
tblGrading	AcresOfGrading	10.00	105.00
tblGrading	AcresOfGrading	5.00	15.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	146.00	50.00
tblTripsAndVMT	WorkerTripNumber	375.00	100.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblWater	OutdoorWaterUseRate	24,425,367.67	0.00

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.9909	19.5582	19.0027	0.0450	128.7398	0.8520	129.5918	16.5970	0.7838	17.3808						4,535.4654
Maximum	**1.9909**	**19.5582**	**19.0027**	**0.0450**	**128.7398**	**0.8520**	**129.5918**	**16.5970**	**0.7838**	**17.3808**						**4,535.4654**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.9909	19.5582	19.0027	0.0450	50.3488	0.8520	51.2008	6.5100	0.7838	7.2939						4,535.4654
Maximum	**1.9909**	**19.5582**	**19.0027**	**0.0450**	**50.3488**	**0.8520**	**51.2008**	**6.5100**	**0.7838**	**7.2939**						**4,535.4654**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	60.89	0.00	60.49	60.78	0.00	58.04	0.00	0.00	0.00	0.00	0.00	0.00

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	1/13/2023	5	10	Site Preparation/Clearing
2	Road Improvements	Grading	2/14/2023	2/27/2023	5	10	Road Improvements
3	Grading/Excavation	Grading	2/27/2023	2/27/2023	5	1	Grading/Excavation
4	Construction/Infrastructure	Building Construction	2/28/2023	6/30/2023	5	89	Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 105

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	0	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Road Improvements	Excavators	1	8.00	158	0.38
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction/Infrastructure	Forklifts	1	8.00	89	0.20
Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Construction/Infrastructure	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Construction/Infrastructure	8	100.00	50.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820						0.0000
Off-Road	1.0257	10.2192	8.6117	0.0168		0.4729	0.4729		0.4351	0.4351						1,644.3723
Total	**1.0257**	**10.2192**	**8.6117**	**0.0168**	**7.6128**	**0.4729**	**8.0858**	**3.4820**	**0.4351**	**3.9171**						**1,644.3723**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0406	0.0328	0.3313	8.6000e-004	0.1022	5.6000e-004	0.1028	0.0271	5.2000e-004	0.0276						87.8832
Total	**0.0406**	**0.0328**	**0.3313**	**8.6000e-004**	**0.1022**	**5.6000e-004**	**0.1028**	**0.0271**	**5.2000e-004**	**0.0276**						**87.8832**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580						0.0000
Off-Road	1.0257	10.2192	8.6117	0.0168		0.4729	0.4729		0.4351	0.4351						1,644.3723
Total	**1.0257**	**10.2192**	**8.6117**	**0.0168**	**2.9690**	**0.4729**	**3.4419**	**1.3580**	**0.4351**	**1.7931**						**1,644.3723**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0406	0.0328	0.3313	8.6000e-004	0.1022	5.6000e-004	0.1028	0.0271	5.2000e-004	0.0276						87.8832
Total	**0.0406**	**0.0328**	**0.3313**	**8.6000e-004**	**0.1022**	**5.6000e-004**	**0.1028**	**0.0271**	**5.2000e-004**	**0.0276**						**87.8832**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					17.1573	0.0000	17.1573	4.5126	0.0000	4.5126						0.0000
Off-Road	1.5595	16.4002	12.5194	0.0266		0.6991	0.6991		0.6432	0.6432						2,591.9033
Total	**1.5595**	**16.4002**	**12.5194**	**0.0266**	**17.1573**	**0.6991**	**17.8565**	**4.5126**	**0.6432**	**5.1558**						**2,591.9033**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0659	0.0532	0.5383	1.4000e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						142.8101
Total	**0.0659**	**0.0532**	**0.5383**	**1.4000e-003**	**0.1661**	**9.2000e-004**	**0.1670**	**0.0440**	**8.4000e-004**	**0.0449**						**142.8101**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6914	0.0000	6.6914	1.7599	0.0000	1.7599						0.0000
Off-Road	1.5595	16.4002	12.5194	0.0266		0.6991	0.6991		0.6432	0.6432						2,591.9033
Total	**1.5595**	**16.4002**	**12.5194**	**0.0266**	**6.6914**	**0.6991**	**7.3905**	**1.7599**	**0.6432**	**2.4031**						**2,591.9033**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0659	0.0532	0.5383	1.4000e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						142.8101
Total	**0.0659**	**0.0532**	**0.5383**	**1.4000e-003**	**0.1661**	**9.2000e-004**	**0.1670**	**0.0440**	**8.4000e-004**	**0.0449**						**142.8101**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					111.3525	0.0000	111.3525	12.0235	0.0000	12.0235						0.0000
Off-Road	0.3400	3.0843	5.4891	8.2800e-003		0.1516	0.1516		0.1395	0.1395						808.1641
Total	**0.3400**	**3.0843**	**5.4891**	**8.2800e-003**	**111.3525**	**0.1516**	**111.5042**	**12.0235**	**0.1395**	**12.1630**						**808.1641**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0254	0.0205	0.2070	5.4000e-004	0.0639	3.5000e-004	0.0642	0.0169	3.2000e-004	0.0173						54.9270
Total	**0.0254**	**0.0205**	**0.2070**	**5.4000e-004**	**0.0639**	**3.5000e-004**	**0.0642**	**0.0169**	**3.2000e-004**	**0.0173**						**54.9270**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					43.4275	0.0000	43.4275	4.6892	0.0000	4.6892						0.0000
Off-Road	0.3400	3.0843	5.4891	8.2800e-003		0.1516	0.1516		0.1395	0.1395						808.1641
Total	**0.3400**	**3.0843**	**5.4891**	**8.2800e-003**	**43.4275**	**0.1516**	**43.5791**	**4.6892**	**0.1395**	**4.8286**						**808.1641**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0254	0.0205	0.2070	5.4000e-004	0.0639	3.5000e-004	0.0642	0.0169	3.2000e-004	0.0173						54.9270
Total	**0.0254**	**0.0205**	**0.2070**	**5.4000e-004**	**0.0639**	**3.5000e-004**	**0.0642**	**0.0169**	**3.2000e-004**	**0.0173**						**54.9270**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1526	12.2932	14.1426	0.0249		0.5303	0.5303		0.4981	0.4981						2,410.7272
Total	**1.1526**	**12.2932**	**14.1426**	**0.0249**		**0.5303**	**0.5303**		**0.4981**	**0.4981**						**2,410.7272**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0546	2.1496	0.7194	9.3100e-003	0.3067	0.0133	0.3201	0.0884	0.0128	0.1011						1,026.1989
Worker	0.5071	0.4094	4.1408	0.0108	1.2773	7.0500e-003	1.2844	0.3387	6.4900e-003	0.3452						1,098.5394
Total	**0.5617**	**2.5591**	**4.8602**	**0.0201**	**1.5840**	**0.0204**	**1.6044**	**0.4271**	**0.0193**	**0.4463**						**2,124.7383**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1526	12.2932	14.1426	0.0249		0.5303	0.5303		0.4981	0.4981						2,410.7272
Total	**1.1526**	**12.2932**	**14.1426**	**0.0249**		**0.5303**	**0.5303**		**0.4981**	**0.4981**						**2,410.7272**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0546	2.1496	0.7194	9.3100e-003	0.3067	0.0133	0.3201	0.0884	0.0128	0.1011						1,026.1989
Worker	0.5071	0.4094	4.1408	0.0108	1.2773	7.0500e-003	1.2844	0.3387	6.4900e-003	0.3452						1,098.5394
Total	**0.5617**	**2.5591**	**4.8602**	**0.0201**	**1.5840**	**0.0204**	**1.6044**	**0.4271**	**0.0193**	**0.4463**						**2,124.7383**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Unmitigated	0.0462	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0460					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0460					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.7800e-003
Total	**0.0462**	**2.0000e-005**	**2.0900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.7800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Livingston Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Livingston Solar PV Project - Construction Only

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	20.50	Acre	20.50	892,980.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 20.5 acres

Construction Phase - Based on information provided and data obtained from similar sized solar projects. Grading only required for equipment pad (1 day). Assumes 10 days for initial site prep and 10 days for road improvements. Overall construction period 6 months.

Off-road Equipment - .

Off-road Equipment - Grading of equipment pad assumes one excavator and one tractor/loader/backhoe.

Off-road Equipment - Assumes 1 excavator, 1 grader, 1 dozer, 2 tractor/loader/backhoes

Off-road Equipment - Based on information provided assumes use of 1 excavator. Includes 1 dozer and 1 tractor/loader/backhoe.

Trips and VMT - Worker trips are based on estimated 50 workers 2 trips/worker/day during install phase. Other phases based on model defaults. Assumes an avg of 50 MHDT/HHDT per day.

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - Dust from material movement based on model defaults. No fill material imported or exported/material balanced on site.

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Off-road Equipment - Installation equipment based on information provided. Assumes use of 2 skid mounted post drivers, 2 bobcats, 1 forklift, 1 genset, 1 tractor/loader/backhoe, 1 crane.

Vehicle Trips - .

Water And Wastewater - .

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstructionPhase	NumDays	370.00	89.00
tblConstructionPhase	NumDays	35.00	1.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	PhaseEndDate	7/19/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	12/30/2022	2/27/2023
tblConstructionPhase	PhaseEndDate	2/17/2023	2/27/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseStartDate	2/18/2023	2/28/2023
tblConstructionPhase	PhaseStartDate	11/12/2022	2/27/2023

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	12/31/2022	2/14/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	1/2/2023
tblGrading	AcresOfGrading	0.00	105.00
tblGrading	AcresOfGrading	10.00	105.00
tblGrading	AcresOfGrading	5.00	15.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	146.00	50.00
tblTripsAndVMT	WorkerTripNumber	375.00	100.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblWater	OutdoorWaterUseRate	24,425,367.67	0.00

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0888	0.7920	0.9638	2.2500e-003	0.2494	0.0305	0.2798	0.0649	0.0285	0.0934						205.0833
Maximum	**0.0888**	**0.7920**	**0.9638**	**2.2500e-003**	**0.2494**	**0.0305**	**0.2798**	**0.0649**	**0.0285**	**0.0934**						**205.0833**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0888	0.7920	0.9638	2.2500e-003	0.1399	0.0305	0.1703	0.0368	0.0285	0.0653						205.0832
Maximum	**0.0888**	**0.7920**	**0.9638**	**2.2500e-003**	**0.1399**	**0.0305**	**0.1703**	**0.0368**	**0.0285**	**0.0653**						**205.0832**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.92**	**0.00**	**39.14**	**43.25**	**0.00**	**30.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-3-2022**	**1-2-2023**	0.0040	0.0040
2	**1-3-2023**	**4-2-2023**	0.3371	0.3371
3	**4-3-2023**	**7-2-2023**	0.5212	0.5212
		Highest	0.5212	0.5212

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Waste						0.0000	0.0000		0.0000	0.0000						0.8851
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**8.4100e-003**	**0.0000**	**1.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**						**0.8855**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Waste						0.0000	0.0000		0.0000	0.0000						0.8851
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**8.4100e-003**	**0.0000**	**1.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**						**0.8855**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	1/13/2023	5	10	Site Preparation/Clearing
2	Road Improvements	Grading	2/14/2023	2/27/2023	5	10	Road Improvements
3	Grading/Excavation	Grading	2/27/2023	2/27/2023	5	1	Grading/Excavation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Construction/Infrastructure	Building Construction	2/28/2023	6/30/2023	5	89	Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 105

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Construction/Infrastructure	Skid Steer Loaders	2	8.00	65	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	0	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Road Improvements	Excavators	1	8.00	158	0.38
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction/Infrastructure	Forklifts	1	8.00	89	0.20
Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Construction/Infrastructure	Tractors/Loaders/Backhoes	1	7.00	97	0.37

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Construction/Infrastructure	8	100.00	50.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0381	0.0000	0.0381	0.0174	0.0000	0.0174						0.0000
Off-Road	5.1300e-003	0.0511	0.0431	8.0000e-005		2.3600e-003	2.3600e-003		2.1800e-003	2.1800e-003						7.4588
Total	**5.1300e-003**	**0.0511**	**0.0431**	**8.0000e-005**	**0.0381**	**2.3600e-003**	**0.0404**	**0.0174**	**2.1800e-003**	**0.0196**						**7.4588**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.9000e-004	1.5000e-004	1.7100e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004						0.4108
Total	**1.9000e-004**	**1.5000e-004**	**1.7100e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**						**0.4108**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0149	0.0000	0.0149	6.7900e-003	0.0000	6.7900e-003						0.0000
Off-Road	5.1300e-003	0.0511	0.0431	8.0000e-005		2.3600e-003	2.3600e-003		2.1800e-003	2.1800e-003						7.4587
Total	**5.1300e-003**	**0.0511**	**0.0431**	**8.0000e-005**	**0.0149**	**2.3600e-003**	**0.0172**	**6.7900e-003**	**2.1800e-003**	**8.9700e-003**						**7.4587**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.9000e-004	1.5000e-004	1.7100e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004						0.4108
Total	**1.9000e-004**	**1.5000e-004**	**1.7100e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**						**0.4108**

3.3 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0858	0.0000	0.0858	0.0226	0.0000	0.0226						0.0000
Off-Road	7.8000e-003	0.0820	0.0626	1.3000e-004		3.5000e-003	3.5000e-003		3.2200e-003	3.2200e-003						11.7567
Total	**7.8000e-003**	**0.0820**	**0.0626**	**1.3000e-004**	**0.0858**	**3.5000e-003**	**0.0893**	**0.0226**	**3.2200e-003**	**0.0258**						**11.7567**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.1000e-004	2.4000e-004	2.7700e-003	1.0000e-005	8.1000e-004	0.0000	8.1000e-004	2.1000e-004	0.0000	2.2000e-004						0.6676
Total	**3.1000e-004**	**2.4000e-004**	**2.7700e-003**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**8.1000e-004**	**2.1000e-004**	**0.0000**	**2.2000e-004**						**0.6676**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0335	0.0000	0.0335	8.8000e-003	0.0000	8.8000e-003						0.0000
Off-Road	7.8000e-003	0.0820	0.0626	1.3000e-004		3.5000e-003	3.5000e-003		3.2200e-003	3.2200e-003						11.7567
Total	**7.8000e-003**	**0.0820**	**0.0626**	**1.3000e-004**	**0.0335**	**3.5000e-003**	**0.0370**	**8.8000e-003**	**3.2200e-003**	**0.0120**						**11.7567**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Road Improvements - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.1000e-004	2.4000e-004	2.7700e-003	1.0000e-005	8.1000e-004	0.0000	8.1000e-004	2.1000e-004	0.0000	2.2000e-004						0.6676
Total	**3.1000e-004**	**2.4000e-004**	**2.7700e-003**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**8.1000e-004**	**2.1000e-004**	**0.0000**	**2.2000e-004**						**0.6676**

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0557	0.0000	0.0557	6.0100e-003	0.0000	6.0100e-003						0.0000
Off-Road	1.7000e-004	1.5400e-003	2.7400e-003	0.0000		8.0000e-005	8.0000e-005		7.0000e-005	7.0000e-005						0.3666
Total	**1.7000e-004**	**1.5400e-003**	**2.7400e-003**	**0.0000**	**0.0557**	**8.0000e-005**	**0.0558**	**6.0100e-003**	**7.0000e-005**	**6.0800e-003**						**0.3666**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.0000e-005	1.0000e-005	1.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005						0.0257
Total	**1.0000e-005**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**						**0.0257**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0217	0.0000	0.0217	2.3400e-003	0.0000	2.3400e-003						0.0000
Off-Road	1.7000e-004	1.5400e-003	2.7400e-003	0.0000		8.0000e-005	8.0000e-005		7.0000e-005	7.0000e-005						0.3666
Total	**1.7000e-004**	**1.5400e-003**	**2.7400e-003**	**0.0000**	**0.0217**	**8.0000e-005**	**0.0218**	**2.3400e-003**	**7.0000e-005**	**2.4100e-003**						**0.3666**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.0000e-005	1.0000e-005	1.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005						0.0257
Total	**1.0000e-005**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**						**0.0257**

3.5 Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0513	0.5471	0.6293	1.1100e-003		0.0236	0.0236		0.0222	0.0222						97.3204
Total	**0.0513**	**0.5471**	**0.6293**	**1.1100e-003**		**0.0236**	**0.0236**		**0.0222**	**0.0222**						**97.3204**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.5000e-003	0.0933	0.0315	4.1000e-004	0.0133	5.9000e-004	0.0139	3.8500e-003	5.7000e-004	4.4200e-003						41.3738
Worker	0.0214	0.0166	0.1900	4.9000e-004	0.0552	3.1000e-004	0.0555	0.0147	2.9000e-004	0.0150						45.7030
Total	**0.0239**	**0.1099**	**0.2214**	**9.0000e-004**	**0.0685**	**9.0000e-004**	**0.0694**	**0.0185**	**8.6000e-004**	**0.0194**						**87.0769**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0513	0.5471	0.6293	1.1100e-003		0.0236	0.0236		0.0222	0.0222						97.3203
Total	**0.0513**	**0.5471**	**0.6293**	**1.1100e-003**		**0.0236**	**0.0236**		**0.0222**	**0.0222**						**97.3203**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Construction/Infrastructure - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.5000e-003	0.0933	0.0315	4.1000e-004	0.0133	5.9000e-004	0.0139	3.8500e-003	5.7000e-004	4.4200e-003						41.3738
Worker	0.0214	0.0166	0.1900	4.9000e-004	0.0552	3.1000e-004	0.0555	0.0147	2.9000e-004	0.0150						45.7030
Total	**0.0239**	**0.1099**	**0.2214**	**9.0000e-004**	**0.0685**	**9.0000e-004**	**0.0694**	**0.0185**	**8.6000e-004**	**0.0194**						**87.0769**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000						0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.4100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004
Unmitigated	8.4100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	8.4000e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004
Total	**8.4200e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.9000e-004**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	8.4000e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.9000e-004
Total	**8.4200e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				0.0000
Unmitigated				0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0				0.0000
Total					**0.0000**

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0				0.0000
Total					**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				0.8851
Unmitigated				0.8851

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.76				0.8851
Total					**0.8851**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.76				0.8851
Total					**0.8851**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Merced County Livingston Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Special-Status Species Investigated for Potential Occurrence

Table C-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CRPR	Rationale for Expecting Presence or Absence
alkali milk-vetch* *Astragalus tener var. tener*	Annual herb that occurs on playas, valley and foothill grassland, vernal pools within adobe clay and alkaline soils. Elevation: 1–60 meters.	March–June	--/--/1B.2	**Suitable Conditions Absent:** Playas, grasslands with adobe clay, and vernal pools are absent from the BSA.
Heartscale* *Atriplex cordulata* var. *cordulata*	Annual herb that occurs in chenopod scrub, meadows and seeps, valley and foothill grasslands in sandy soils. Elevation: 0–560 meters.	April–October	--/--/1B.2	**Suitable Conditions Absent:** The project site does not include alkaline meadows or seeps.
Crownscale *Atriplex coronate* var. *coronate*	Occurs in chenopod scrub, valley and foothill grassland, and vernal pools in alkaline and clay soils (often). Elevation: 1–590 meters.	March–October	--/--/4.2	**Suitable Conditions Absent:** The project site does not include alkaline meadows or seeps.
Brittlescale *Atriplex depressa*	Occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools in alkaline and clay soils. Elevation: 1–320 meters.	May–October	--/--/1B.2	**Suitable Conditions Absent:** The project site does not include vernal pools, alkaline meadows or seeps.
lesser saltscale* *Atriplex minuscula*	Annual herb occurs in chenopod scrub, playas, and valley and foothill grassland, in sandy soil. Elevation: 15–1,090 meters.	May–October	--/--/1B.1	**Suitable Conditions Absent:** The project site does not include chenopod scrub, playas or vernal pools. Sandy soil is present.
Vernal pool smallscale* *Atriplex persistens*	Annual herb that is found in vernal pools with alkaline substrate. Elevation: 10–115 meters.	June–October	--/--/1B.2	**Suitable Conditions Absent:** The project site does not include vernal pools or alkaline substrate.
Subtle orache *Atriplex subtilis*	Annual herb. Prefers alkaline areas of valley and foothill grasslands. Elevation: 1–590 meters.	(April)June–October	--/--/1B.2	**Suitable Conditions Absent:** The project site did not contain alkaline soils or vernal pools.
succulent owls clover *Castilleja campestris* ssp. *succulenta*	Annual herb that occurs in vernal pools. Often Associated with acidic soil. Elevation: 40–100 meters.	April–May	FT/SE/1B.2	**Suitable Conditions Absent:** The project site did not contain vernal pools.
Parry's rough tarplant *Centromadia parryi* ssp. rudis	Occurs in alkaline, seeps, vernally mesic areas of valley and foothill grassland. Sometimes found along roadsides. Elevation: 0–100 meters.	May–October	--/--/4.2	**Suitable Conditions Absent:** The project site does not include alkaline seeps or vernally mesic areas.
Hispid salty bird's-beak *Chloropyron molle* ssp. *hispidum*	Occurs in alkaline, meadows and seeps, playas, and valley and foothill grassland. Elevation: 1–155 meters.	July–November	--/--/1B.1	**Suitable Conditions Absent:** The project site does not include vernal pools or alkaline meadows or seeps.
recurved larkspur *Delphinium recurvatum*	Perennial herb that occurs in chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation: 3–790 meters.	March–June	--/--/1B.2	**Suitable Conditions Absent:** The project site does not include chenopod scrub, playas or vernal pools.

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CRPR	Rationale for Expecting Presence or Absence
Delta button-celery *Eryngium racemosum*	Annual or perennial herb that is found in riparian scrub habitat, usually vernally mesic clay depressions. Elevation: 1–155 meters.	(May)June–October	--/--/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
Spiny-sepaled button-celery *Eryngium spinosepalum*	Annual to perennial herb that occurs in vernal pools among valley and foothill grassland. Elevation: 80–975 meters	April–June	--/--/1B.2	**Suitable Conditions Absent:** The project site is lacks suitable vernal pool habitat for this species.
Hoover's spurge *Euphorbia hooveri*	Occurs in vernal pools on volcanic mudflow or clay substrate. Elevation: 25–130 meters.	July–September (October)	--/--/1B.2	**Suitable Conditions Absent:** The project site lacks suitable vernal pool habitat for this species.
San Joaquin spearscale* *Extriplex joaquiniana*	Shrub that occurs in chenopod scrub, meadows, seeps, playas, and valley and foothill grassland. Often in alkaline soils. Elevation: 1–835 meters	April–October	--/--/1B.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Stinkbells *Fritillaria agrestis*	Perennial bulbiferous herb that is known to occur in chaparral, cismontane woodland, pinyon and juniper woodland and valley and foothill grassland in clay and serpentine soils. Elevation: 10–1,555 meters.	March–June	--/--/4.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Vernal barley *Hordeum intercedens*	Occurs in coastal dunes, coastal scrub, valley and foothill grassland, and vernal pools. Elevation: 5–1,000 meters.	March–June	--/--/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
Alkali-sink goldfields* *Lasthenia chrysantha*	Occurs in alkaline vernal pools. Elevation: 0–200 meters.	February–April	--/--/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
Ferris' goldfields *Lasthenia ferrisiae*	Occurs in vernal pools. Elevation: 20–700 meters.	February–May	--/--/4.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Coulter's goldfields* *Lasthenia glabrata ssp. coulteri*	Annual herb that occurs in freshwater wetlands coastal salt marshes, wetland riparian habitat, alkali sink, playas, vernal pools, and swamps. Elevation: 1–1,220 meters	February–June	--/--/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
Heckard's pepper-grass* *Lepidium latipes* var. *heckardii*	Annual herb that occurs in valley and foothill grassland. Elevation: 2–200 meters.	March–May	--/--/1B.2	**Suitable Conditions Absent:** No suitable habitat present on site.
serpentine leptosiphon *Leptosiphon ambiguous*	Annual herb that occurs in cismontane woodland, coastal scrub, valley and foothill grassland, usually on serpentinite. Elevation: 120–1,130 meters.	March–June	--/--/4.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Merced monardella *Monardella leucocephala*	Perennial rhizomatous herb that is usually associated with valley and foothill grasslands. Elevation: 35–100 meters.	May–August	--/--/1A	**Suitable Conditions Absent:** No suitable habitat present on site.

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CRPR	Rationale for Expecting Presence or Absence
Little mousetail *Myosurus minimus* ssp. *apus*	Occurs in vernal pools in valley and foothill grassland areas. Elevation: 20–640 meters.	March–June	--/--/3.1	**Suitable Conditions Absent:** No suitable habitat present on site.
prostrate vernal pool navarretia* *Navarretia prostrata*	An annual herb that occurs in vernal pools and seeps among coastal scrub and valley and foothill grassland with alkaline soils. Elevation: 15–1,210 meters.	April–July	--/--/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
Colusa grass* *Neostapfia colusana*	Annual herb that is associated with vernal pools. Elevation: 5–200 meters.	May–August	FT/SE/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
San Joaquin Valley orcutt grass *Orcuttia inaequalis*	Occurs in valley grassland with freshwater wetlands, vernal pools, or riparian habitat. Elevation: 10–755 meters	April–September	FT/CE/1B.1	**Suitable Conditions Absent:** No suitable habitat present on site.
California alkali grass* *Puccinellia simplex*	Occurs in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools in alkaline, flats, lake margins, and vernally mesic soils. Elevation: 2–930 meters.	March–May	--/--/1B.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Sanford's arrowhead *Sagittaria sanfordii*	Perennial rhizomatous herb (emergent) that occurs in assorted freshwater marshes and swamps. Elevation: 0–360 meters.	May–October (November)	--/--/1B.2	**Suitable Conditions Absent:** No suitable habitat present on site.
Wright's Trichocoronis *Trichocoronis wrightii* var. *wrightii*	Occurs in marshes and swamps, meadows and seeps, riparian forest, and vernal pools, usually in alkaline conditions. Elevation: 5–435 meters.	May–September	--/--/2B.1	**Suitable Conditions Absent:** No suitable habitat present on site.

General references: Baldwin et al. (2012); all plant descriptions paraphrased from CNDDB (2022) or CNPS (2022).

* indicates CNDDB occurrences from Arena USGS quadrangle.

Status Codes:
--= No status
Federal: FE = Federal Endangered; FT=Federal Threatened
State: SE=State Endangered; ST= State Threatened; SR= State Rare

CNPS Rare Plant Ranking:
1B = rare, threatened, or endangered in California and elsewhere.
2 = rare, threatened, or endangered in California, but more common elsewhere.
3 = plants that about which more information is needed.
4 = a watch list plants of limited distribution.
Threat Code:
_.1 = Seriously endangered I California (over 80% of occurrences threatened / high degree and immediacy of threat)
_.2 = Fairly endangered in California (20-80% occurrences threatened)
_.3 = Not very endangered I California (<20% of occurrences threatened or no current threats known)

Rationale Terms:
Species Present: Species was or has been observed in the survey area.
Suitable Conditions Present: The appropriate habitat, soils, and elevation are present in the survey area.
Marginal Conditions Present: The appropriate habitat and/or soils are present but other factors (past disturbances, elevation range) may preclude species occurrence.
Suitable Conditions Absent: The survey area did not support the appropriate habitat, soils, and/or elevation for the species.

Table C-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
Insects			
Crotch bumble bee *Bombus crotchii*	Inhabits grassland and scrub habitats in California, Nevada, and Baja California. Feeds on milkweeds, dustymaidens, lupines, medics, phacelias, and sages.	--/CE/--	**Suitable Conditions Absent:** The project site does not support native vegetation and does not support significant populations of wildflowers that would attract this species.
monarch butterfly *Danaus plexippus*	Occurs along coast from northern Mendocino to Baja California, Mexico. Winter roosts in wind-protected tree groves (eucalyptus, Monterey pine [*Pinus radiata*], and cypress), with nectar and water sources nearby.	FC/SA/--	**Suitable Conditions Absent:** The project site does contain eucalyptus, but it is not located within their winter roosting range. This species was not observed during surveys.
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	Occurs in central valley of California and vicinity, in association with blue elderberry (*Sambucus mexicana*).	FT/--/--	**Suitable Conditions Absent:** The project site does not support any blue elderberry, the necessary host plant for this species.
Branchiopods			
Conservancy fairy shrimp* *Branchinecta conservation*	Occurs in vernal pools. Not known to occur in permanent bodies of water and are dependent on seasonal fluctuations in habitat, such as absence or presence of water during specific times of year. Inhabits highly turbid water in vernal pools.	FE/--/--	**Suitable Conditions Absent**: The project site does not support vernal pools.
Vernal pool fairy shrimp* *Branchinecta lynchi*	Occurs in vernal pool habitats including depressions in sandstone, to small swale, earth slump, or basalt-flow depressions with a grassy or, occasionally, muddy bottom in grassland.	FT/-- /--	**Suitable Conditions Absent**: The project site does not support vernal pools.
Vernal pool tadpole shrimp* *Lepidurus packardi*	Occurs in seasonal habitats, including vernal pools, clay flats, alkaline pools, ephemeral stock tanks, and ditches. Known to occur in Sacramento Valley, Sacramento River Delta, east side of San Francisco Bay, and San Joaquin Valley.	FE/--/--	**Suitable Conditions Absent**: The project site does not support vernal pools.
Fish			
Green sturgeon – southern DPS Acipenser medirostris	Most marine species of sturgeon; occurs mostly north of Point Conception. Believed to spend majority of lives in nearshore oceanic waters, bays, and estuaries. Early life history stages reside in fresh water, with adults returning to freshwater to spawn.	FT/--/SSC	**Suitable Conditions Absent**: The project site does not support requisite waterbodies.

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
Delta smelt *Hypomesus transpacificus*	Euryhaline species (tolerant of a wide salinity range) occurring in estuarine waters up to 14 ppt salinity. Found only from Suisun Bay upstream through delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	FT/SE/--	**Suitable Conditions Absent**: The project site does not support requisite waterbodies.
Hardhead* *Mylopharodon conocephalus*	Found in both small to large streams in low to mid-elevations. May also inhabit reservoirs and lakes.	--/--/SSC	**Suitable Conditions Absent**: The project site does not support requisite waterbodies.
Steelhead - Central valley DPS *Oncorhynchus mykiss*	Occurs in clear, cool water with abundant in-stream cover, well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio.	FT, PCH /-- /SSC	**Suitable Conditions Absent**: The project site does not support requisite waterbodies.
Amphibians			
California tiger salamander – central California DPS *Ambystoma californiense*	Occurs in grasslands or oak woodlands that support natural ephemeral pools or ponds that mimic them. This species requires seasonal water for breeding and small mammal burrows, crevices in logs, piles of lumber, and shrink-swell cracks in the ground for refuges. To be suitable, aquatic sites must retain at least 30 centimeters of water for a minimum of ten weeks in the winter.	FT/ST/SSC	**Suitable Conditions Absent:** The project site does not support suitable upland or aquatic breeding habitat for this species are present.
western spadefoot* *Spea hammondii*	Inhabits vernal pools in primarily grassland, but also in valley and foothill hardwood woodlands. Vernal pools are essential for breeding and egg laying.	--/--/SSC	**Suitable Conditions Absent:** Suitable upland habitat or breeding habitat for this species does not occur in the project area and is not expected to occur.
Reptiles			
Northern California legless lizard* *Anniella pulchra*	Occurs from southern edge of San Joaquin River in northern Contra Costa County south to Ventura County. Occurs in scattered locations in San Joaquin Valley, along southern Sierra Nevada mountains, and on desert side of Tehachapi Mountains and part of San Gabriel Mountains. Prefers sandy or loose loamy soils with high moisture content under sparse vegetation.	--/--/SSC	**Marginal Conditions Present:** The project site has been heavily disturbed by decades of agricultural practices. However, there are strips of ruderal vegetation along the perimeter and sandy soil conditions that could possibly allow this species to persist in the region. The closest CNDDB occurrence (#13) is approximately 3.4 miles north on the other side of the Merced River and 5.4 miles south (occurrence #14), south of Highway 140. Ground disturbing impacts are limited to 0.7 acres and populations may benefit from the area not being disturbed annually.
western pond turtle *Emys marmorata*	Typically occurs in deepest parts of ponds, lakes, streams, and marshes, in quiet waters with an abundance of basking sites.	--/--/SSC	**Suitable Conditions Absent:** The project site does not support freshwater habitat with basking structures.

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
blunt-nosed leopard lizard *Gambelia sila*	Inhabits open, sparsely vegetated areas of low relief on San Joaquin Valley floor and in surrounding foothills. Occurs on valley floor; most commonly found in Nonnative Grassland, saltbrush scrub, and valley sink scrub at 100 to 2,400 feet elevation.	FE/SE/--	**Suitable Conditions Absent:** The project site is in the northern extent of the species' historic range (Stebbins 2003) and the closest CNDDB occurrence (#116), which is listed as possibly extirpated, is located approximately 18.6 miles south. The project site does not support natural vegetation or nonnative grassland habitat suitable for this species.
coast horned lizard* *Phrynosoma blainvillii*	Frequents wide variety of habitats, most commonly in lowlands along sandy washes with scattered low bushes. Uses open areas for sunning, bushes for cover, loose soil for burial, and abundant supply of ants and other insects for food.	--/--/SSC	**Suitable Conditions Absent:** The project site does contain sandy soils, but regular agricultural practices have made the habitat unsuitable for the species. Closest CNDDB occurrence (#608) is approximately 6 miles south. Ground disturbing impacts are limited to 0.7 acres and if the species is still present in the area, populations may benefit from the site not being disturbed annually.
giant garter snake *Thamnophis gigas*	Utilizes canals, creeks, ponds, and other areas that support permanent water with vegetative cover. Uses grasses, weeds, cattails, tules, and other vegetation for basking, foraging, and cover.	FT/ST/--	**Suitable Conditions Absent**: The project site does not support requisite waterbodies.
Birds			
Cooper's hawk *Accipiter cooperii*	Found in deciduous riparian woodland habitat throughout California. Nests in deciduous, mixed-deciduous, and evergreen forests, as well as in suburban and urban environments. Tends to nest in more open areas that have older and larger trees.	MBTA/--/WL	**Marginally Suitable Conditions Present:** Trees on site may provide suitable nesting habitat for this species. CNDDB did not have any occurrences for this species. Nesting bird surveys are recommended.
tricolored blackbird* *Agelaius tricolor*	(Nesting colony); requires open water, protected nesting substrate such as cattails or tall rushes, and foraging area with insect prey.	MBTA/--/SSC	**Suitable Conditions Absent:** There are four CNDDB records within the immediate vicinity of the project site (#s 625, 626, 627, and 628) that are all listed as possibly extirpated. The occurrences were associated with cattail marshes along canals, no such habitat exists on the project site. The site does not support freshwater marsh habitat for nesting.

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
burrowing owl *Athene cunicularia*	Occurs in open, dry grasslands, deserts, and scrublands. Subterranean nester, dependent on burrowing mammals. Also occurs in agricultural areas in the Central Valley but needs areas with low growing vegetation and suitable burrows for nesting.	MBTA/-- /SSC	**Marginally Suitable Conditions Present:** Burrowing owls are known to occur in agricultural areas in the Central Valley. The closest CNDDB occurrences are in Atwater (#s 876 and 877) and on Castle Airport (#s 2012 and 2013). Occurrence #877 occurs on low-density agricultural property and a ruderal field. The berm adjacent to the irrigation canal on the south side of the property could potentially provide suitable habitat, but no large burrows were observed during the site visit (only smaller mammal burrows). Burrowing owls prefer short sparse vegetation and the disked field provides suitable foraging habitat for them if present. The limiting factor making the site only marginally suitable is the lack of ground squirrels and evidence of large burrows suitable for nesting. Nevertheless, nesting bird surveys are recommended.
Ferruginous hawk *Buteo regalis*	(Wintering) occurs in open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon-juniper habitats; eats lagomorphs, ground squirrels, and mice.	MBTA/--/WL	**Marginally Suitable Conditions Present:** The agricultural field provides marginally suitable foraging habitat for this species, but the project site falls outside of its breeding range. The project will have no effect on this species.
Swainson's hawk *Buteo swainsoni*	Occurs in open desert, grassland, or cropland containing scattered, large trees or small groves. Roosts in large trees but will roost on ground if none are available. Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah in Central Valley.	--/ST/--	**Suitable Conditions Present:** The fallowed agricultural field provides suitable foraging habitat and some of the trees on site provide suitable nest habitat. Two hawks were also observed flying immediately north of the property along Magnolia Avenue. SWHA nesting surveys shall be conducted for a half mile radius around all project activities. If a nest is found, coordination with CDFW is required along with habitat mitigation at a 1:1 ratio.
northern harrier *Circus cyaneus*	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Permanent resident of the northeastern plateau and coastal areas; less common resident of the Central Valley. Widespread winter resident and migrant in suitable habitat.	MBTA/--/SSC	**Suitable Conditions Absent:** Uncommon winter resident in Central Valley. Closest CNDDB occurrence (#7) is located 11 miles south on the San Luis National Wildlife Refuge. Species not observed during site visit. Surveys for nesting birds and raptors are recommended for this project.
white-tailed kite *Elanus leucurus*	Occurs along rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes are used for foraging close to isolated, dense-topped trees for nesting and perching.	--/--FP	**Marginally Suitable Conditions Present::** Trees on site may provide suitable nesting habitat for this species. CNDDB did not have any occurrences for this species, but it is widespread in California. This species was not observed during the field survey. Surveys for nesting birds and raptors are recommended for this project.

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
loggerheaded shrike *Lanius ludovicianua*	Predatory passerine that frequents open areas with scattered shrubs. Commonly observed foraging in grassland, desert scrubs, and waste places. Builds nests in isolated trees or shrubs in the vicinity of foraging areas.	--/--/SSC	**Suitable Nesting Conditions Present:** Trees and shrubs on site may provide suitable nesting habitat for this species. CNDDB did not have any occurrences for this species, but it is widespread in California. This species was not observed during the field survey. Surveys for nesting birds and raptors are recommended for this project.
Class Aves Other migratory bird species (nesting)	Occurs in annual grasslands, coastal scrub, chaparral, and oak woodlands may provide nesting habitat.	MBTA/--/--	**Suitable Conditions Present:** Potential nesting habitat for this species occurs throughout the site. Pre-disturbance nesting bird surveys are proposed to avoid impacts to nesting birds.
Mammals			
pallid bat *Antrozous pallidus*	Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and buildings.	--/--/SSC	**Suitable Conditions Absent**: The project site does not support rocky outcrops or crevices for roosting.
Townsends big-eared bat *Corynorhinus townsendii*	Occurs in wide variety of habitats; most common in mesic (wet) sites. May use trees for day and night roosts; however, requires caves, mines, rock faces, bridges, or buildings for maternity roosts. Maternity roosts are in relatively warm sites.	--/--/SSC	**Suitable Conditions Absent**: The project site does not support suitable habitat for this species. This species is not expected to occur.
Merced kangaroo rat *Dipodomys heermanni dixoni*	Occurs in grasslands and savanna communities in eastern Merced and Stanislaus Counties. Needs fine, deep, well-drained soil. Granivorous, but also eats forbs and green grasses.	--/SA/--	**Suitable Conditions Absent**: The project site does not support suitable habitat for this species. This species is not expected to occur.
western mastiff bat *Eumops perotis californicus*	Found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	--/--/SSC	**Suitable Conditions Absent:** Suitable roosting habitat does not occur in the project area. This species is not expected to occur.
Western red bat *Lasiurus blossevillii*	Roosts primarily in trees, often in edge habitats adjacent to streams, fields, or urban areas. Mating occurs in August and September and young are born from late May through early July.	--/--/SSC	**Suitable Conditions Absent:** Suitable roosting habitat does not occur in the project area. This species is not expected to occur.
Hoary bat *Lasiurus cinereus*	Occurs in open habitats and habitat mosaics with access to trees for cover. Roosts in dense foliage of medium to large trees.	--/SA/--	**Suitable Conditions Absent:** The site does not support appropriate habitats or trees suitable for roosting. This species is not expected to occur.

Species Name	Habitat and Distribution	Legal Status Federal/ State/CDFW	Rationale for Expecting Presence or Absence
American badger *Taxidea taxus*	Occurs in open stages of shrub, forest, and herbaceous habitats. Needs uncultivated ground with friable soils.	--/--/SSC	**Suitable Conditions Absent:** The site does not support uncultivated ground. This species is not expected to occur.
San Joaquin kit fox *Vulpes macrotis mutica*	Historic range included most of San Joaquin Valley from San Joaquin County southward to southern Kern County (USFWS 1998). Currently occurs in remaining native valley and foothill grasslands and saltbush scrub communities of valley floor and surrounding foothills from southern Kern County north to Merced County.	FE/ST/--	**Suitable Conditions Absent:** The site does not support uncultivated ground. The closest CNDDB occurrence (#23) is located six miles west in north Atwater. There are also several records approximately 10 miles southwest on Great Valley Grassland State Park. Several major barriers such as Interstate 99 and State Route 140, including a dense matrix of agricultural land separate the project site from these two occurrences. No large burrows were observed along the berms adjacent to the property. No species or potential dens were observed during the site visit. This species is not expected to occur.

General references: Unless otherwise noted, all habitat and distribution data provided by the CNDDB (2022).

* indicates CNDDB occurrences from Arena USGS quadrangle.

Status Codes:

--= No status
Federal: FE = Federal Endangered; FT= Federal Threatened; FC= Federal Candidate; CH= Federal Critical Habitat; PCH= Proposed Federal Critical Habitat; MBTA= Protected by Federal Migratory Bird Treaty Act
State: SE= State Endangered; ST= State Threatened; SCT= State Candidate Threatened
California Department of Fish and Game: SSC= CDFW Species of Special Concern ; FP= Fully Protected Species; SA= Not formally listed but included in CDFW “Special Animal” List; WL= Watch List

Rationale Terms:
Species Present: Species was or has been observed in the survey area.
Suitable Conditions Present: The survey area is within the species range and supports the appropriate habitat, soils, elevation, and other habitat requirements.
Marginal Conditions Present: The survey area is in the species range and supports the appropriate habitat but other factors (past disturbances, presence of predators, etc.) may preclude species occurrence.
Suitable Conditions Absent: The survey area is not in the species range and/or does not support the appropriate habitat, soils, elevation, and/or other habitat requirements.

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APPENDIX D

Mitigation Monitoring and Reporting Plan

Livingston Solar Energy and Battery Storage Project
Mitigation Monitoring and Reporting Program

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
Agriculture and Forestry Resources				
MM AG-1	**Agricultural Resources.** At the time of application for building and construction permits, the project applicant shall offset impacts associated with conversion of productive agricultural land (defined as 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) to non-agricultural uses by implementing one of the options described below: **Option 1. Agricultural Land Easement.** If Option 1 is selected, the project Applicant shall offset impacts associated with conversion of productive agricultural land to non-agricultural uses by arranging for the imposition of an agricultural conservation easement on no less than 1 acre of mitigation land for each acre of land proposed for conversion. The agricultural easement on mitigation land shall be held in perpetuity by a qualified entity that operates in Merced County, or by Merced County on a temporary basis until transferred to a qualified entity, and shall meet the following criteria (as detailed in Merced County Code Section 9.30.050): a. **Location.** The mitigation land shall be located within Merced County. b. **Land Uses.** The mitigation land is subject to an agricultural designation in the General Plan and zoned for agricultural use and is located outside a city sphere of influence as adopted by the Local Agency Formation Commission of Merced County. The type of agricultural-related activity allowed on the mitigation land shall be specified in the easement and is at least as restrictive as the requirements of the agricultural zoning district. The agricultural easement shall prohibit all residential, commercial, or industrial development and any land uses or activities that substantially impair or diminish the agricultural productive capacity of the mitigation land or that are otherwise inconsistent with the conservation purposes of this chapter. Any legal nonconforming use of the mitigation land shall be abandoned prior to execution of the agricultural easement, or if maintained, will not interfere with agricultural use of the mitigation land. c. **Soil Quality.** The soil quality of the mitigation land shall have the agricultural productive capacity equivalent to or better than that of the land proposed for conversion. d. **Water Supply.** The available water supply for the mitigation land shall be at least equal to that of the land proposed for conversion in terms of quantity, quality, and security. The water supply on the agricultural mitigation land shall be protected in the farmland conservation easement or other document evidencing the agricultural mitigation.	Submittal of documentation demonstrating imposition of an agricultural conservation easement, payment of in lieu fee, or implementation of alternative mitigation method	At the time of application for building and construction permits	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
	e. **Existing Interests and Encumbrances.** The mitigation land shall not be already subject to an encumbrance or interest that would legally or practicably prevent converting the land, in whole or in part, to a nonagricultural use, such as a conservation easement, open space easement, flowage easement, avigation easement, long-term agricultural lease, profit, or an interest in the subsurface estate that would preclude development of the surface estate. A contract entered pursuant to the Williamson Act shall not constitute an encumbrance for purposes of this section. f. **Physical Limitations.** There shall be no physical conditions or contamination on the mitigation land that would legally or practicably prevent converting the land, in whole or in part, to a nonagricultural use. g. **Existing Home.** The mitigation land shall have no existing home, unless the land proposed for conversion includes an existing home. h. **Public Ownership.** The mitigation land may be owned by a public agency if it is managed for compatible agricultural use in perpetuity similar to an agricultural easement placed on privately owned land. i. **Permanently Preserve.** The mitigation land shall conform to the perpetuity requirements contained in Internal Revenue Service Code Section 170(h) to ensure the land will satisfy the intent of this ordinance to permanently preserve the agricultural land placed under easement. **Option 2. Payment of an In-Lieu Fee.** As an alternative to Option 1 as detailed above, the applicant may choose to seek approval to implement the following alternative mitigation option, as detailed in Merced County Code Section 9.30.040: a. **In-Lieu Fee.** An applicant for conversion may satisfy the mitigation obligation set forth in Merced County Code Section 9.30.030(B) by paying to a qualified entity a fee in lieu of conveying an agricultural easement. If a qualified entity is unwilling or unable to accept the in-lieu fee and acquire an agricultural easement, the in-lieu fee may be paid to Merced County. Merced County shall establish the amount of in-lieu fees on a case-by-case basis unless the applicant for conversion has reached agreement on the fee amount with a qualified entity, or unless Merced County has previously adopted the resolution provided for in Merced County Code Section 9.30.040(B)(5). **Option 3. Applicant-Designed Mitigation Options.** The applicant proposing conversion may propose an alternative method of mitigation for review and approval by Merced County subject to the requirements of the Merced County Code. Proposed alternative mitigation must satisfy all of the following criteria: a. The proposed mitigation must result in permanent protection of mitigation land; b. The applicant must bear all costs of reviewing, approving, managing, and enforcing the mitigation;			

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
	c. The proposed mitigation must be in substantial compliance with the requirements for mitigation land and agricultural easements set forth in Merced County Code Section 9.30.050; and d. The proposed mitigation must be in all respects at least as protective of agricultural land as the mitigation required by the Merced County Code.			
Air Quality				
MM AQ-1	**Permit Requirements.** Prior to ground disturbance and construction, the Construction Contractor shall obtain all required permits for dust control and the use of portable equipment, 50 horsepower or greater, from the San Joaquin Valley Air Pollution Control District. Upon application for construction permits, all required mitigation measures shall be shown on all applicable grading or construction plans and implemented during all applicable grading and construction activities.	The Construction Contractor shall obtain all required permits for dust control and the use of portable equipment	Prior to ground disturbance and construction	Project Applicant, San Joaquin Valley Air Pollution Control District
MM AQ-2	**Dust Control Measures.** No person shall perform any construction, demolition, excavation, extraction, or other earth-moving activities unless measures are sufficiently implemented to limit visible dust emissions (VDE) to 20 percent opacity and comply with the conditions for a stabilized surface area when applicable. In addition to the requirements of this rule, a person shall comply with all other applicable requirements of San Joaquin Valley Air Pollution Control District Regulation VIII. An individual shall monitor the fugitive dust emissions to ensure the following requirements are met: b. Pre-Activity: 1. Pre-water site sufficient to limit VDE to 20 percent opacity, and 2. Phase work to reduce the amount of disturbed surface area at any one time. b. During Active Operations: 1. Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20 percent opacity; 2. Construct and maintain wind barriers sufficient to limit VDE to 20 percent opacity. If utilizing wind barriers, control measure 2.a above shall also be implemented; and 3. Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20 percent opacity and meet the conditions of a stabilized unpaved road surface. c. Temporary Stabilization During Periods of Inactivity: 1. Restrict vehicular access to the area; and 2. Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for 7 or	Implement measures to limit visible dust emissions	Prior to and during ground disturbance and construction activities on the project site	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
	more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.			
MM AQ-3	**Construction Emissions.** The project shall utilize clean off-road construction equipment, including the latest tier equipment, where feasible.	Utilize clean off-road construction equipment	During construction activities on the project site	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
Biological Resources				
MM BIO-1	**Nesting Bird Surveys.** If construction activities involving ground disturbance or vegetation removal are proposed during the typical nesting bird season (February 15–September 15), a nesting bird survey shall be conducted by a qualified biologist no more than 2 weeks prior to construction to determine presence/absence of nesting birds. If absence of nesting birds is verified, construction can proceed. If nesting activity is detected, the following measures shall be implemented: a. Buffer Establishment. If an active bird nest is observed during preconstruction surveys or during construction, a 500-foot avoidance buffer surrounding the nest shall be implemented for nesting raptors and a 100-foot avoidance buffer shall be implemented for other nesting avian species until chicks have fledged. b. Buffer Reductions. The project biologist may recommend a buffer decrease depending on site conditions (such as line-of-sight to the nest) and the birds' level of tolerance for construction activities, or specific exceptions for work activities on a case-by-case basis when the potential for nesting disturbance is low (such as vehicle access or the use of handheld tools and equipment). If buffer reductions are recommended, the biologist shall collect data on the birds' baseline behavior and their tolerance to disturbance by observing the birds at the nest prior to construction activities. If the birds are incubating, the biologist shall record how long they stay in the nest. If nestlings are present, the biologist shall record how frequently adults deliver food and visit the nest. The biologist shall also record the birds' reaction to the biologist and how close the biologist can get to the nest before the birds' behavior is altered or they show signs of stress or disturbance. The biologist shall set the reduced buffer distance based on these data. c. Nesting Monitoring. If nest buffers are reduced, the biologist shall monitor any construction activities that take place within 100 feet of nesting birds and 500 feet of raptor nests. If nesting birds show any signs of disturbance, including changes in behavior, significantly reducing frequency of nests visits, or refusal to visit the nest, the biologist will stop work and increase the nest buffer. If appropriate on a case-by-case basis, as determined by the qualified biologist, nest monitoring may be reduced to weekly spot-check monitoring, at a minimum, if the biologist determines that the nesting birds have shown no signs of disturbance from construction activities and a continuation of the same types of construction activities are unlikely to disturb the nesting birds. d. Nest Removal. Nests, eggs, or young of birds covered by the Migratory Bird Treaty Act and California Fish and Game Code shall not be moved or disturbed until a qualified biologist has determined that the nest has become inactive or young have fledged and become independent of the nest. e. Reporting. A qualified biologist shall document all active nests and submit a letter report to Merced County documenting project compliance with the Migratory Bird Treaty Act, California Fish and Game Code, and applicable project mitigation measures.	Survey results shall be submitted to Merced County	If construction activities are proposed during the typical nesting bird season (February 15–September 15); within 2 weeks prior to construction activities on the project site	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
MM BIO-2	**Burrowing Owl Preconstruction Surveys.** A qualified biologist shall conduct preconstruction surveys of all areas of potential habitat that will be permanently or temporarily impacted, plus a 150-meter (approximately 492 feet) buffer in areas subject to legal access, to locate active breeding or wintering burrowing owl burrows. The survey(s) shall occur no more than 14 days prior to ground-disturbing activities (e.g., vegetation clearance, grading). The survey methodology shall be consistent with the take avoidance survey methods outlined in the California Department of Fish and Wildlife *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Wildlife 2012). Because burrowing owl may re-colonize a site after periods of inactivity, time lapses of 7 days during the breeding season or 14 days during the non-breeding season between project activities shall trigger subsequent surveys, including, but not limited to, a final survey conducted within 24 hours prior to ground disturbance to identify any additional burrowing owl or burrows necessitating avoidance, minimization, or mitigation measures. The need for additional surveys will be at the final discretion of the biologist.	Survey results shall be submitted to Merced County	Within 2 weeks prior to construction activities on the project site. If period(s) of inactivity occurs, within 24 hours of construction activities on the project site	Project Applicant
MM BIO-3	**Burrowing Owl Avoidance.** If burrowing owl(s) are detected on-site during preconstruction surveys or during construction, no ground-disturbing activities within a minimum 200-meter (approximately 656 feet) avoidance buffer shall occur around occupied burrows during the breeding season (February 1–August 31), unless authorized by the California Department of Fish and Wildlife. During the non-breeding season (September 1–January 31), no ground-disturbing activities within a minimum 50-meter (approximately 164 feet) avoidance buffer shall occur around occupied burrows, unless authorized by the California Department of Fish and Wildlife.	If present, avoid ground-disturbing activities around occupied burrows	If burrowing owl are detected on-site; during construction activities on the project site	Project Applicant
MM BIO-4	**Burrowing Owl Mitigation.** If occupied burrow avoidance is infeasible during the non-breeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juveniles are foraging independently and capable of independent survival, the applicant shall coordinate with the California Department of Fish and Wildlife to develop a Burrowing Owl Exclusion and Mitigation Plan. The plan shall differentiate strategies for active burrows found on the project site vs. active burrows found adjacent to the project site. For example, an Exclusion and Mitigation Plan strategy may include: a. Passive exclusion of burrowing owl from burrows within the project site using one-way doors. b. Excavation of potential burrowing owl burrows within the project site that are confirmed to be empty of burrowing owl adults and/or young. c. Creation of artificial burrowing owl burrows within the project property to offset the loss of known occupied burrowing owl burrows. d. Acquisition of burrowing owl conservation lands and/or bank credits.	If applicable, a Burrowing Owl Exclusion and Mitigation Plan	If burrow avoidance is infeasible; prior to issuance of construction permits	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
MM BIO-5	**Swainson's Hawk Surveys.** To meet California Department of Fish and Wildlife recommendations for mitigation and protection of Swainson's hawk, surveys shall be conducted for a 0.5-mile radius around all project activities. Surveys shall be conducted by a qualified biologist and follow the *Recommended timing and methodology for Swainson's hawk nesting surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). At a minimum, a qualified biologist shall conduct 3 surveys during two of the three recommended survey periods (Survey Periods II, III and V) totaling a minimum of six surveys prior to project initiation as outlined in the Swainson's Hawk Technical Advisory Committee's (2000) recommended methodology. Surveys shall be completed in Survey Periods II (March 20–April 5), III (April 5–April 20), and V (June 10–July 30). **Surveys should not be conducted in Period IV (April 21–June 10).** The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawk; however, the best times to survey will vary depending on seasonal factors. Known nest locations should be visited during surveys to verify nesting activity in the area. If Swainson's hawk absence is verified with 0.5 mile of the project site, project activities can proceed providing acceptance by the California Department of Fish and Wildlife of the survey results. Verification of acceptance of survey results by the California Department of Fish and Wildlife shall be submitted to Merced County prior to the start of construction.	Verification of acceptance of survey results by the California Department of Fish and Wildlife shall be submitted to Merced County	Prior to start of mobilization for construction activities	Project Applicant
MM BIO-6	**Swainson's Hawk Nest Protection.** If a Swainson's hawk nest is observed within 0.5 mile of the project site during the protocol surveys outlined in Mitigation Measure MM BIO-5 or during construction, the applicant shall coordinate with the California Department of Fish and Wildlife to determine if an Incidental Take Permit is required and implement measures to avoid take of Swainson's hawk. Such measures may include, but may not be limited to: a. Implementation of avoidance buffers; b. Nest monitoring by a qualified biologist during construction activities; c. When possible, seasonal restrictions of specific project activities during the nesting season; and/or d. Acquisition of Swainson's hawk conservation lands and/or bank credits.	Verification of acceptance by the California Department of Fish and Wildlife shall be submitted to Merced County	If a Swainson's hawk nest is observed within 0.5 mile of the project site; prior to and during construction activities, potentially during operation if applicable	Project Applicant
Cultural Resources				
MM CR-1	**Inadvertent Cultural Resource Encounter.** In the event that cultural resources are encountered during project activities, all ground-disturbing activities within a 25-foot radius of the find shall cease and Merced County shall be notified immediately. Work shall not continue until a qualified archaeologist assesses the find and determines the need for further study. If the find includes Native American-affiliated materials, a local Native American tribal representative will be contacted to work in conjunction with the approved archaeologist to determine the need for further study. A standard inadvertent discovery clause shall be included in every grading and construction contract to inform contractors of this requirement.	Cease ground disturbing activities and immediately notify Merced County	In the event that cultural resources are encountered during project activities; during ground disturbance activities on the project site	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
Noise				
MM N-1	**Construction Noise Control Best Management Practices.** During construction, the following construction noise best management practices shall be shown on all construction plans and implemented on-site: a. Construction work hours shall be limited to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday. No construction shall be permitted on Saturdays, Sundays, or federal or state holidays. b. Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition. c. Stationary equipment such as compressors, generators, and welder machines shall be located as far away from surrounding residence as possible. The project shall connect to existing electrical service at the site to avoid the use of stationary, diesel-fueled, or other alternatively fueled power generators, if feasible. d. Impact tools such as jack hammers shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. When use of pneumatic tools is unavoidable, it shall be ensured the tool will not exceed a decibel limit of 85 A-weighted decibels at a distance of 50 feet. Pneumatic tools shall also include a noise suppression device on the compressed air exhaust. e. No radios or other amplified sound devices shall be audible beyond the property line of the construction site. f. Use construction equipment that is in good working order, and inspect mufflers for proper functionality. g. Use of “quiet” construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures) when feasible. h. Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors. i. Prohibit the idling of inactive construction equipment for more than 5 minutes; j. Measures for notifying the public of construction activities, complaint procedures, and monitoring construction noise levels shall include the following: i. Designation of an on-site construction noise manager for the project;	Measures shall be shown on all construction plans and implemented on-site	At the time of submittal of construction plans, during construction activities on the project site	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
	ii. Notify neighboring noise-sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pile driving, other activities that may generate noise levels greater than 75 A-weighted decibels at noise-sensitive receptors) about the timing and estimated duration of the activity; iii. Post a sign on-site describing noise complaint procedures and a complaint hotline number that shall always be answered during construction; iv. Implement a procedure for notifying the planning department of any noise complaints within one week of receiving a complaint. k. Where feasible, the following additional measures shall be implemented for proposed pile-driving activities: i. When pile driving is to occur within 600 feet of a noise-sensitive receptor, implement "quiet" pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions; ii. Where the use of driven impact piles cannot be avoided, properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer and/or install a temporary noise barrier; and iii. Conduct noise monitoring (measurements) before, during, and after the pile-driving activity.			
MM N-2	**Transformer Operation Noise.** At the time of application for building and construction permits, the project applicant shall identify the material type of the proposed transformers housing encasements and the corresponding noise-reduction level. Appropriate manufacturer housing encasements or alternative enclosures shall be required to ensure transformer noise levels do not result in an increase in ambient noise levels above 56 dB during daytime hours (between 7:00 a.m. and 6:00 p.m.) or 50 dB during nighttime hours (between 6:00 p.m. and 7:00 a.m.) as measured from the property line of the nearest off-site sensitive land use. Supplemental enclosures or sound barriers may be used to reduce noise levels, or alternatively, the project plans may be designed to locate transformers within the equipment pad at a greater distance from off-site sensitive receptors, to ensure ambient noise levels do not exceed 56 dB during daytime hours or 50 dB during nighttime hours at the property line of the nearest off-site noise-sensitive land use, to be verified by Merced County. If existing ambient noise levels already exceed 56 dB during daytime hours or 50	Identify material type and noise reduction level of enclosures on project plans	At the time of application for building and construction permits	Project Applicant

Mitigation Measure	Requirements of Measure	Compliance Method	Verification Timing	Responsible Party
	dB during nighttime hours, transformers shall be located within housing enclosures or at a greater distance from off-site noise-sensitive uses in a manner that does not result in an increase in ambient noise levels of greater than 5 dB as measured from the property line of the nearest off-site noise-sensitive land use.			

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