DOE/EA–1840

FINAL ENVIRONMENTAL ASSESSMENT

Volume I

FOR
DEPARTMENT OF ENERGY LOAN GUARANTEE TO
HIGH PLAINS II, LLC FOR THE
CALIFORNIA VALLEY SOLAR RANCH PROJECT
IN SAN LUIS OBISPO COUNTY AND KERN COUNTY,
CALIFORNIA

U.S. Department of Energy
Loan Guarantee Program Office
Washington, D.C. 20585

August 2011

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Acronyms and Abbreviations

$\mu g/m^3$	Micrograms Per Cubic Meter
AC	Alternating Current
ACEC	Area of Critical Environmental Concern
ACS	American Community Survey
AG	Agriculture (land use designation)
APCD	Air Pollution Control District
APE	Area of Potential Effects
Applicant	SunPower Corporation Systems
ARRA	American Recovery and Reinvestment Act
AUSD	Atascadero Unified School District
BA	Biological Assessment
bgs	Below Ground Surface
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
BP	Before Present
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	Division of Occupational Safety and Health, California
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide

CO_2e	Carbon Dioxide Equivalent
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CPUC	California Public Utilities Commission
CUP	Conditional Use Permit
CVSR	California Valley Solar Ranch
CWA	Clean Water Act
CY	Cubic Yard
dBA	A-Weighted Sound Level
DC	Direct Current
DOE	Department of Energy
DTSC	Department of Toxic Substances Control
E & E	Ecology and Environment, Inc.
EA	Environmental Assessment
EDR	Environmental Data Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EPA	United States Environmental Protection Agency
EPAct of 2005	Energy Policy Act of 2005
ESA	Endangered Species Act, Federal
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
gpd	Gallons Per Day
gpm	Gallons Per Minute
HPR II	High Plains Ranch II, LLC
HMBP	Hazardous Materials Business Plan
HSPD-7	Homeland Security Presidential Directive-7
HWCL	Hazardous Waste Control Law
I-5	Interstate 5
IPCC	Intergovernmental Panel on Climate Change
kV	Kilovolt

Leq	Equivalent Sound Pressure Level
Ldn	Day-Night Sound Pressure Level
Lmax	Maximum Sound Pressure Level
LOS	Level of Service
MP	Milepost
MW	Megawatt
MWh	Megawatt Hours
MW-hrs/yr	Megawatt Hours per Year
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOC	Notice of Completion
NOP	Notice of Preparation
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PAA	Power Purchase Agreement
PG&E	Pacific Gas & Electric Company
ppm	Parts Per Million
$PM_{2.5}$	Particulate Matter (2.5 microns in diameter or less)
PM_{10}	Particulate Matter (10 microns in diameter or less)
PV	Photovoltaic
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SF_6	Sulfur Hexafluoride
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLO County	San Luis Obispo County
SMARA	Surface Mining and Reclamation Act

SPCCP	Spill Prevention Control and Countermeasure Plan
SO_2	Sulfur Dioxide
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSCA	Toxic Substances Control Act
USACE	United States Army Corps of Engineers
USA PATRIOT	Uniting and Strengthening America Provide Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1 Purpose and Need

1.1 Purpose and Need for Action

1.1.1 Department of Energy

The Department of Energy (DOE) has received an application from High Plains Ranch II, LLC (HPR II), a wholly-owned subsidiary of SunPower Corporation Systems (the Applicant), for a loan guarantee to support the construction and startup of the California Valley Solar Ranch Project (CVSR Project or the proposed action), a commercial 250-megawatt (MW) solar photovoltaic (PV) electricity generating project, located in southeastern San Luis Obispo County, California. The Energy Policy Act of 2005 (EPAct of 2005) established a federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of the EPAct of 2005 authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases (GHGs), and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the loan guarantee is issued.

The EPAct of 2005 was amended by the American Recovery and Reinvestment Act (ARRA) of 2009 to create Section 1705, which authorizes a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and biofuels projects. The primary purpose of the ARRA is the promotion of infrastructure investment, energy efficiency, scientific advancement, job preservation and creation, assistance to the unemployed, and state and local fiscal stabilization. The two principal goals of the loan guarantee program are to encourage commercial use of new or significantly improved energy-related technologies in the United States and to achieve substantial environmental benefits by reducing reliance on fossil fuels and reducing GHGs. Rising energy prices and global climate change resulting from elevated GHGs in the atmosphere provide further need for the accelerated commercial use of new and significantly improved energy technologies. To be eligible for ARRA funds, the Applicant must begin construction of the CVSR Project by September 30, 2011.

The purpose and need for federal agency action is to comply with DOE's mandate under the EPAct of 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the National Environmental Policy Act (NEPA) process to assist in determining whether to issue a loan guarantee to the Applicant to support the CVSR Project.

1.1.2 Proposed Action

DOE's proposed action is to issue a loan guarantee to the Applicant that would be used for the design, construction, and startup of the CVSR Project located in San Luis Obispo County and Kern County, California. The Applicant would use the DOE loan guarantee to construct a 250-MW solar PV electricity generating facility on previously disturbed, former agricultural land and to construct or upgrade related electrical transmission facilities.

The Applicant's purpose for the CVSR Project is to deliver solar energy that maximizes existing infrastructure and relies on highly efficient technology to realize county and state energy goals for renewable energy. To this end, the CVSR Project would use a PV technology based on crystalline silicon

solar panels. The CVSR Project also includes construction of a 4-mile 230-kilovolt (kV) interconnection line, which would connect the CVSR to the existing PG&E 230-kV Morro Bay–Midway transmission line, and construction of a new Caliente switching station.

To accommodate the CVSR Project and other solar power projects currently in development within the Carrizo Plain, a 35-mile-long segment of the Morro Bay–Midway transmission line in San Luis Obispo and Kern counties would be reconductored (upgraded). Reconductoring of the Morro Bay–Midway transmission line would consist of installing new conductor wires on existing towers, along with modifying or replacing several transmission towers, in order to increase the capacity of the existing transmission line, with only minimal ground disturbance, and no new transmission line construction. Because reconductoring of the Morro Bay–Midway transmission line would be financed in part by the proposed federal loan guarantee, reconductoring is also part of the proposed action.

Construction of the proposed CVSR Project and other proposed solar projects in the Carrizo Plain would require use of substantial amounts of aggregate for access road construction and the operations and maintenance (O&M) building structure foundation. Therefore, the Twisselman aggregate mine, an existing 10-acre borrow pit located near the Pacific Gas and Electric Company (PG&E) transmission corridor (about 3 miles north of State Route [SR] 58), would be expanded to a 24-acre surface mine for commercial use in order to substantially reduce the distance driven by trucks that would import material to the CVSR site and other solar energy projects being developed in the region. Though not a part of the proposed action, establishment of the mine is addressed in this Environmental Assessment (EA) as a connected action because mine establishment would not occur if the CVSR Project were not constructed.

In August 2008, PG&E and SunPower announced that all of the energy generated by the 250-MW CVSR would be sold under contract to PG&E in support of its requirement to meet California's Renewables Portfolio Standard of 20 percent renewable energy delivery by 2010 (Senate Bill [SB] 1078). The CVSR Project would also support California's goal of 33 percent renewable energy delivery by 2020 as outlined in Senate Bill X1 2, signed into law by Governor Brown on April 12, 2011. PV panels generate electricity without producing carbon emissions. To the extent PV projects displace natural gas and other fossil fuels used to produce electricity, PV installations have the potential to reduce generation of carbon dioxide (CO_2) and other GHGs. The net annual energy output for the entire 250 MW that would be provided to the PG&E system is estimated at 679,000 MW hours.

The GHG emissions impact analysis identifies an environmental benefit from the CVSR Project design—255,600 to 333,558 metric tons of carbon dioxide equivalent (CO_2e) GHG emissions (depending upon the calculation method used) from electricity produced by conventional fossil-fueled power plants would be potentially avoided each year for the life of the CVSR Project (approximately 25 years). Therefore, the CVSR Project would potentially contribute to the avoidance and reduction of air pollutants and anthropogenic emissions of GHGs, as required by the EPAct of 2005. In addition, the CVSR Project would avoid potentially up to 270,000 pounds of nitrogen oxides (NO_X) and 14,000 pounds of sulfur dioxide (SO_2) per year from power plant emissions.

The average daily number of workers on the CVSR site during a 36-month construction period would be 214 workers. The average daily number of workers onsite during a 30-month construction period would be 257, and the typical peak number of employees during a 30-month construction period would be 424 workers, although the short-term peak may be as high as 500 workers. The CVSR Project is planned to start generating electricity as early as the end of 2011 and to be fully online by the end of 2013 in order to help meet State of California and federal renewable energy goals. The ongoing operation of the CVSR Project would also require approximately 15 full-time workers. Altogether, the CVSR Project would generate $10 million in tax revenues, with a total economic benefit of $315 million due to direct revenue from sales and property taxes and indirect economic benefits resulting from project spending in the local supply chain and induced economic benefits from employee spending.

The proposed site for the CVSR Project was selected by the Applicant because it has a high solar resource potential, is relatively flat, and has access to power transmission lines with capacity to transmit power. The Northern Carrizo region has the highest solar resource value in San Luis Obispo County, as well as in PG&E's service territory. Few of California's existing transmission lines have capacity available to integrate additional power generation without expensive upgrades that involve significant ground disturbance and accompanying environmental impacts. The PG&E 230-kV Morro Bay–Midway transmission line, running in an east-west direction north of the proposed CVSR site, has capacity available to carry significant additional power with only minimal upgrades. PG&E's power purchase agreement with the Applicant contains provisions requiring PG&E to provide this additional capacity to the Morro Bay–Midway transmission line. PG&E would be responsible for providing the design, engineering, and construction of these transmission line upgrades.

The site selected for the aggregate mine was based on the presence of the existing Twisselman aggregate mine that has already been developed for private use. Assessment by the mine developer indicates that there are adequate mineral resources remaining to provide the road base for the CVSR Project and other solar power development projects within the Northern Carrizo region.

The CVSR Project would also support San Luis Obispo County's objectives to help meet state and federal renewable energy goals and satisfy the contractual obligation to supply renewable energy to PG&E where transmission capacity has been secured. The CVSR Project would support renewable energy goals stated in the San Luis Obispo County General Plan as well as other policies in the Plan designed to protect San Luis Obispo County's environment and economy. In addition, San Luis Obispo County has the goal of locating the facility in a high solar resource area, thereby optimizing the best available solar energy to the greatest extent possible within proximity to transmission lines with minimal environmental degradation.

In order to reduce the CVSR Project's biological impacts, the Applicant would offset impacts by enhancing and conserving more than 9,300 acres of species habitat for special status species in the CVSR Project vicinity, such as the giant kangaroo rat (*Dipodomys ingens*). The Applicant would also remove 10 miles of existing fence to improve movement corridors associated with the Tule elk (*Cervus elaphus nannodes)* and pronghorn antelope (*Antilocapra americana)*.

To reduce potential effects to sensitive biological resources, construction Best Management Practices and avoidance and minimization measures are proposed in the Proposed Action. Measures to compensate for effects to listed species and their habitats through the permanent protection and management of habitats on and off-site of the CVSR Project site are also proposed

1.2 Background

Title XVII of the EPAct of 2005 provides the basis of DOE's Loan Guarantee Program. This title provides broad authority to DOE to guarantee loans that support early commercial use of advanced technologies if there is reasonable prospect of repayment of the principal and interest on the obligation by the borrower. Loan guarantees are one way in which DOE promotes commercial use of innovative technologies. This tool is targeted at early commercial use only, rather than energy research, development, and demonstration programs. Accelerated commercial use of new or improved technologies is anticipated to help sustain economic growth, yield environmental benefits, and produce a more stable and secure energy supply.

DOE published *Guidelines for the Loan Guarantee Program* in the Federal Register and issued a solicitation announcement in July 2009 inviting interested parties to submit applications for loan guarantees under Title XVII of the EPAct of 2005 in support of debt financing for projects in the United States that employ energy efficiency, renewable energy, and advanced transmission and distribution technologies that constitute new or significantly improved technologies. In connection with this program,

the Applicant requested that DOE provide a loan guarantee to support the debt financing of the CVSR Project, which would promote the commercial use of innovative PV technologies that utilize solar power in order to create significant environmental benefits from a stable, renewable source of electricity.

The Applicant submitted an application for the CVSR Conditional Use Permit (CUP) and Twisselman Aggregate Mine CUP/Reclamation Plan (DRC2008-00097, DRC2009-00004) to San Luis Obispo County on January 13, 2009. The CVSR CUP is needed to allow the proposed use on the project site and the CUP for the Twisselman Aggregate Mine/Reclamation Plan is needed to allow development of an aggregate mine on the site of an existing borrow pit. As the California public agency that has principal responsibility for carrying out or approving the CVSR Project, San Luis Obispo County is the Lead Agency under the California Environmental Quality Act (CEQA), as defined in CEQA Guidelines Section 15367. San Luis Obispo County has prepared an Environmental Impact Report (EIR) for the CVSR CUP and Twisselman Aggregate Mine CUP/Reclamation Plan in accordance with CEQA (California Public Resources Code Sections 21000 et seq.). The Notice of Preparation [NOP] for the EIR was issued on January 29, 2009. The Draft EIR was circulated for public review on August 24, 2010 and the Final EIR was issued on January 5, 2011. The San Luis Obispo Planning Commission certified the Final EIR and approved the CVSR CUP on February 24, 2011. This decision was upheld by the Board of Supervisors on April 19, 2011. The Planning Commission approved the Twisselman Aggregate Mine CUP/Reclamation Plan on May 26, 2011. The final decision of San Luis Obispo County and applicable state agencies to grant the approvals required to build the proposed project was based in part on an evaluation of its potential environmental effects, its feasible alternatives, and its potential mitigation measures, pursuant to CEQA.

The EIR assesses the environmental impacts that may result from implementation of the CVSR Project under CEQA and focuses on impacts to the following resources: agricultural resources; aesthetic (visual) resources; air quality and climate change; biological resources; cultural and paleontological resources; geology, mineral resources, and soils; hazards and hazardous material; land use and recreation; noise; population and housing; public services, utilities and service systems; transportation and circulation; and water resources, including wastewater disposal. During the course of the CEQA EIR process, multiple alternatives to the originally proposed project were introduced and thoroughly analyzed. As a result of the CEQA EIR process, the Applicant's project benefitted from public comment and was modified to reduce its potential impact. This EA incorporates modifications to the project as a result of the CEQA EIR process and the applicable information and analyses from the Final EIR.

Since the time the Applicant submitted its initial CUP application, the proposed project evolved based on input received from the County, interested federal and state agencies, community members, and findings of special studies commissioned by the Applicant, including biological surveys, wetlands and jurisdictional water surveys, cultural resource surveys, visual simulations, and groundwater and well analyses. The Applicant also purchased significant additional land in 2009 and incorporated this land into the project study area evaluated by the County in its CEQA environmental review process. While the proposed action evaluated in this EA and described in detail in Chapter 2 of this EA is similar to that analyzed in the Final EIR, the current proposed action incorporates all measures developed during the EIR process to avoid, minimize, and/or mitigate for adverse effects of the Project on the human and natural environment.

The Applicant submitted a Wetland Determination to the United States Army Corps of Engineers (USACE), under Clean Water Act Section 404 for the CVSR site and the Twisselman Mine (H.T. Harvey and Associates 2010a). The USACE has indicated that no 404 permit would be required (See Appendices D-4 and D-5). Discussions on related issues to support endangered species incidental take permits under Federal Endangered Species Act (ESA)/California Endangered Species Act (CESA) and compliance with CEQA have occurred with the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). Application for the remaining necessary permits would occur incrementally, as appropriate, and according to the CVSR Project construction schedule. The California

Public Utilities Commission (CPUC) is responsible for reviewing and permitting PG&E's anticipated transmission line upgrades, in compliance with CEQA. A preliminary list of approvals and permits required is shown in Table 1-1.

1.3 Scope of the Environmental Assessment

This EA presents information on the impacts associated with guaranteeing a loan to the Applicant and covers the construction, operation, maintenance and decommissioning of the CVSR Project and associated facilities, as well as reconductoring approximately 35 miles of the Morro Bay–Midway transmission line, and constructing a new Caliente switching station. Reestablishment of the Twisselman aggregate mine is addressed in this EA as a connected action.

This EA has been prepared in accordance with NEPA, Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500−1508), and DOE NEPA Implementing Procedures (10 CFR 1021). If no significant impacts are identified during preparation of this EA, DOE will issue a Finding of No Significant Impact (FONSI). If potentially significant impacts are identified, DOE will prepare an Environmental Impact Statement (EIS).

This EA: (1) describes the affected environment relevant to potential impacts of the proposed action and no action alternative; (2) analyzes potential environmental impacts that could result from the proposed action and the no action alternative; (3) identifies and characterizes cumulative impacts that could result from the proposed action in relation to other ongoing or reasonably foreseeable activities within the surrounding area; and (4) provides DOE with environmental information for use in decision-making to protect, preserve, and enhance the human environment and natural ecosystems.

1.4 Public Notice

DOE issued the Draft EA on April 15, 2011, for public comment. The Department announced the availability of the Draft EA for public review and comment in the *The Tribune* in San Luis Obispo, CA and the *Bakersfield Californian* in Bakersfield, CA. This announcement began a 30-day comment period, which ended on May 16, 2011. Five public comment letters were received during the comment period. See Appendix G for more information on the comments received and DOE's responses to those comments.

Table 1-1. Preliminary List of Primary Approvals and Permits

Jurisdiction Level	Type of Permit/Approval	Agency	Status
California Valley Solar Ranch Project			
Federal	Section 7 Consultation (ESA)	USFWS	Section 7 consultation initiated December 2010. Final Biological Opinion was issued on June 24, 2011.
Federal	Spill Prevention Control and Countermeasure Plan (SPCCP)	United States Environmental Protection Agency (EPA)	Submitted to San Luis Obispo County Environmental Health Services Division on July 26, 2011.
State	Consistency Determination and 2081 Incidental Take Permit (CESA) Encroachment on threatened and endangered plant and animal species, and their key habitat	CDFG	2081 Incidental Take Permit Application submitted December 2010. Final permit expected July 30, 2010.
State	Report of Waste Discharge or Waiver (Porter Cologne Water Quality Control Act) for discharge of reverse-osmosis system reject water to the brine evaporation pond	Central Coast RWQCB, Region 3	Initial application submitted to RWQCB on May 19, 2011.
State	Section 1600 et seq. Streambed Alteration Agreement (CDFG Code)	CDFG	Application submitted March 21, 2011. Agreement with CDFG signed by Applicant June 29, 2011.
State	Water Well Permit	RWQCB	Complete. Permit has been obtained to drill, construct, and extract water from the on-site groundwater well. Existing well was permitted in 2008.
State	California Department of Transportation (Caltrans) Encroachment Permit (Form TR-0100) to allow crossing of Caltrans right-of-way (ROW)	Caltrans (District 5)	Encroachment permit for intersection improvements at Boulder Creek and Switchyard access road submitted June 7, 2011. Encroachment permit for OHD crossing already submitted. Permits expected August 22, 2011.
State	Caltrans Transportation Permit to allow movement of vehicles/loads exceeding Vehicle Code limitations on the size, weight, and loading	Caltrans	Submitted to Caltrans week of June 20th
State	National Pollution Discharge Elimination System (NPDES) General Permits for Construction Activities and Industrial Activities (Clean Water Act)	State Water Resources Control Board (SWRCB) and Central Coast RWQCB, Region 3	Application submitted March 30, 2011. CEQA Notice of Determination submitted June 21, 2011. Notice of Intent will be filed with SWB within two weeks ahead of construction start.

Table 1-1. Preliminary List of Primary Approvals and Permits

Jurisdiction Level	Type of Permit/Approval	Agency	Status
Local	CUP (DRC2008-00097 County Land Use Ordinance requirement), Flood Control/Drainage Channel Encroachment/ Crossing Permit, Explosives Permit	San Luis Obispo County Planning and Building Department	Planning Commission approved CUP February 24, 2011. Board of Supervisors upheld approval April 19, 2011.
Local	Authority to Construct/Permit to Operate, and/or Equipment Registration (i.e., Air Pollution Permit)	County of San Luis Obispo Air Pollution Control District (APCD)	Application submitted to APCD. Comments received. Revisions submitted July 2011.
Local	Construction Activity Management Plan, Naturally Occurring Asbestos requirements[1]	County of San Luis Obispo APCD	Exemption received on February 24, 2010.
Local	Hazardous Materials Business Plan (HMBP)	San Luis Obispo County Division of Environmental Health/Certified Unified Program Agency Program	Final HMBP submitted to San Luis Obispo County July 22, 2011. Plan approval anticipated August 2011.
Local	Building and Grading Permits	San Luis Obispo County Planning and Building Department	Phase 1A Grading & Drainage Plan and Array 1 Construction Permits submitted to County of San Luis Obispo, June 9, 2011.
Local	Reclamation Plan Completion for California Valley Mine and Farm Camp Mine, San Luis Obispo County Planning Permit No. D97021 (County Land Use Permit and Ordinance requirements, State Surface Mining and Reclamation Act)	San Luis Obispo County Planning and Building Department	California Valley Mine and Farm Camp Mine existing reclamation plans authorized in CUP.
Local	On-Site Wastewater Disposal Permit (i.e., Septic Tank Permit)	San Luis Obispo County Planning and Building Department	To be submitted with the permit application for the septic system prior to operations.[2]
Local	Encroachment Permit for construction on California Valley Road ROW	California Valley Community Services District	May not be required. If required, HPR II will submit in August 2011.
Reconductoring of the Morro Bay–Midway Transmission Line and Caliente Switching Station			
Federal	Section 7 Consultation (ESA)	USFWS	Section 7 consultation initiated December 2010. Final Biological Opinion was issued on June 24, 2011.

[1] An exemption request was filed with the State Naturally Occurring Asbestos requirements (17 California Code of Regulations [CCR] 93105) because no asbestos-bearing serpentine soils are present on the CVSR site.

[2] Interim measures include use of portables. Temporary Worker Construction Accommodations Area (WCAA) and Operation & Maintenance building will not be occupied until septic in-place.

Table 1-1. Preliminary List of Primary Approvals and Permits

Jurisdiction Level	Type of Permit/Approval	Agency	Status
State	Notice of Construction under CPUC General Order 131D	CPUC	Posted in field and submitted to CPUC on May 5, 2011.
State	California Department of Transportation (Caltrans) Encroachment Permit (Form TR-0100) to allow crossing of Caltrans right-of-way (ROW)	Caltrans (District 5)	To be submitted in October 2011.
State	2081 Incidental Take Permit (CESA) Encroachment on threatened and endangered plant and animal species, and their key habitat	CDFG	2081 Incidental Take Permit Application submitted March 3, 2011. Expected by August 24, 2011.
State	National Pollution Discharge Elimination System (NPDES) General Permit for Construction Activities (Clean Water Act)	State Water Resources Control Board (SWRCB); Central Coast RWQCB, Region 3; and Central Valley RWQCB, Region 5	Will be submitted 14 days prior to the start of construction.
State	Central Valley Flood Protection Board	Encroachment Permit	May not be required. If required, PG&E will submit by October 2011.
Local	Building and Grading Permits	San Luis Obispo County Planning and Building Department and Kern County Planning and Community Development	Permit applications to be filed at appropriate time after approval of CPUC
Twisselman Aggregate Mine			
Federal	Section 7 Consultation (ESA)	USFWS	Section 7 consultation initiated December 2010. Final Biological Opinion was issued on June 24, 2011.
State	NPDES General Permits for Construction Activities and Industrial Activities (Clean Water Act)	SWRCB and Central Coast RWQCB, Region 3	Application submitted April 12, 2011.
Local	CUP/Development Plan and Surface Mining Reclamation Plan, San Luis Obispo County Planning Permit Application No. DRC2009-00004 (Twisselman Aggregate Mine)	San Luis Obispo County Planning and Building Department	San Luis Obispo Planning Commission approved on May 26, 2011.
Local	Authority to Construct/Permit to Operate, and/or Equipment Registration (i.e., Air Pollution Permit), Fugitive Dust Permit	County of San Luis Obispo APCD	Draft submitted June 15, 2011.
Local	Construction Activity Management Plan, Naturally Occurring Asbestos requirements	County of San Luis Obispo APCD	Exemption received on February 24, 2010.

DOE has complied with all public notice requirements under NEPA. In addition to any public notice requirements under NEPA, the Applicant has engaged extensively with the public and interested stakeholders in accordance with the requirements under CEQA, which are substantially equivalent in scope to the requirements under NEPA. DOE has considered comments and concerns from the following agencies and organizations in this EA:

- USFWS;
- United States Bureau of Land Management (BLM);
- USACE;
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS);
- California Department of Conservation, Division of Land Resource Protection;
- CDFG;
- California Governor's Office of Planning and Research;
- California State Historic Preservation Office (SHPO);
- CPUC;
- California Department of Transportation (Caltrans);
- California Department of Forestry and Fire Protection (CAL FIRE)/San Luis Obispo County Fire Department;
- Native American Heritage Commission;
- San Luis Obispo County Department of Agriculture/Weights and Measures;
- San Luis Obispo County Department of Planning and Building;
- San Luis Obispo County Air Pollution Control District (APCD);
- San Luis Obispo County General Services Agency;
- San Luis Obispo County Parks;
- San Luis Obispo County Department of Public Works; and
- California Valley Community Services District.

In addition, the Applicant has conducted community outreach activities to inform the local and regional communities and other stakeholders about the proposed action. Comments collected during outreach activities have been integrated into CVSR Project design features that are intended to reduce or avoid impacts. The Applicant:

- Established a county-based telephone line dedicated to the Applicant and the proposed CVSR Project, employed two individuals onsite in San Luis Obispo County to address concerns in-person, and created and posted a website with information concerning the CVSR Project and as a vehicle by which interested parties could contact the Applicant with questions or concerns.
- Participated in the June 3, 2009 Scoping Meeting held by San Luis Obispo County on the Draft EIR; mailed invitations to homeowners and property owners within the California Valley subdivision as well as an additional 700 residents and other potentially interested parties throughout the County.
- Hosted an Open House in June 2009 that included local elected officials, environmental organizations, community civic organizations, labor representatives, and consumer advocates.

- Identified more than 50 service clubs, civic and social organizations, and other individuals and groups that may have interest in the project. From June 2009 to present, attended or extended offers to attend their meetings to present an overview of the CVSR Project and engage in question and answer sessions, resulting in contacts with between 700 and 800 residents, homeowners, and other interested parties.
- Conducted door-to-door informational visits to all residents within 1 mile of the CVSR Project in California Valley.
- Participated in San Luis Obispo, Paso Robles, and Atascadero Chambers of Commerce meetings to present an overview of the CVSR Project.
- Met with the local newspapers' editorial boards and provided a guided tour of the proposed CVSR site for *San Luis Obispo Tribune* staff reporters. The CVSR Project has been covered in multiple stories placed in the *San Luis Obispo Tribune*, the *Paso Robles Press*, and the *New Times* newspapers.
- Attended County Planning Commission hearings on the Conservation and Open Space Element of the General Plan Update from June 25, 2009 through May 2010. These hearings addressed the consolidation of multiple General Plan elements (e.g., historic, aesthetic, conservation, open space, and energy) into a consolidated Conservation and Open Space Element.
- Attended County Board of Supervisors hearings regarding the Conservation and Open Space Element beginning on February 9, 2010 and concluding May 11, 2010 on matters concerning county air quality, biological resources, cultural resources, energy, mineral resources, open space, soils, visual resources, and water resources.
- Hosted an informational booth at the California Mid-State Fair in Paso Robles from July 22, 2009 to August 2, 2009. Attendance at the fair was approximately 1.2 million.
- Attended and provided information about the CVSR Project at dozens of community events from March through December 2009.
- Met with elected officials and community leaders in the San Luis Obispo County cities of Arroyo Grande, Atascadero, Grover Beach, Paso Robles, Pismo Beach, San Luis Obispo, and in the communities of Cayucos, Nipomo, Shandon, California Valley, and Santa Margarita.
- Met with officers, staff, and members of recognized environmental organizations, such as the Sierra Club, Defenders of Wildlife, Natural Resources Defense Council, the Audubon Society, the Nature Conservancy, and the California Native Plant Society (CNPS).
- Held meetings and sought input from interested agencies such as the BLM and SHPO.
- Provided an informational presentation at California Polytechnic State University's annual Sustainability Conference, which draws local, regional, and state opinion leaders and elected officials as well as green-industry representatives.
- Organized and co-hosted a Conservation Planning Charrette for the Carrizo Plain on June 21, 2010 with USFWS, CDFG, BLM, USACE, San Luis Obispo County, The Nature Conservancy, First Solar, and other academic and conservation specialists.
- Held a community workshop on September 15, 2010 in San Luis Obispo to present the CVSR Project and answer questions.
- Attended and participated in San Luis Obispo County's public workshop for the CVSR Draft EIR on September 22, 2010.
- Held a giant kangaroo rat workshop on October 27 and 28, 2010 in San Luis Obispo County. The workshop included site visits, giant kangaroo rat experts, and representatives from the USFWS and CDFG. In addition, a Giant Kangaroo Rat Science Advisory Committee for the CVSR Project was

formed (which includes the USFWS and BLM) to provide recommendations for and technical review of proposed giant kangaroo rat conservation and restoration of on-site and off-site habitat.

- Participated in a Planning Commission Study Session to provide an overview of the Final EIR on December 9, 2010.
- Held a meeting with a representative of the Northern Chumash Tribal Council in January 2011 to discuss the CVSR Project and address stakeholder concerns.
- Participated in Planning Commission hearings on the Final EIR in January and February 2011, including presenting information on the CVSR Project, answering questions from the Planning Commission, and hosting a tour of the site for Planning Commissioners and San Luis Obispo County staff on February 2, 2011.
- Participated in Planning Commission hearings on the Twisselman Mine CUP/Reclamation Plan, in February, March, April, and May 2011.
- Participated in Planning Commission and Board of Supervisor hearings on the CVSR CUP in February, March, and April 2011.
- Along with DOE, the Applicant met with and gave a presentation to the Santa Ynez Band of Chumash Mission Indians Tribal Elders Council on March 14, 2011.
- Provided a site tour to representatives of the Santa Ynez Band of Chumash Mission Indians Tribal Elders Council on April 4, 2011.
- Participated in Solar Power Town Hall meeting with San Luis Obispo County Supervisor Patterson on May 25, 2011.
- Remains in contact with local and regional agency staff, elected officials, and community leaders.

In addition, PG&E ran two spots in local newspapers, submitted the Notice of Construction (NOC) to local planning departments, and posted the NOCs in the field for public review and comment.

1.5 Document Organization

This EA has been organized into the following sections:

Chapter 1, Purpose and Need, describes the purpose of and need for the proposed action, the background of the Loan Guarantee Program, and the scope of the analysis. It also describes the organization of the EA.

Chapter 2, Description of the Proposed Action and Alternatives, discusses the proposed action, alternatives considered, and the no action alternative.

Chapter 3, Affected Environment and Environmental Consequences, describes the existing baseline conditions of resources that may be affected by implementing the proposed action (including land use and visual resources, agricultural resources, transportation, noise, air quality, geology and soils, water resources, biological resources, cultural resources, paleontological resources, socioeconomics and environmental justice, transportation, public and occupational health and safety, and intentional destructive acts) and the potential social, economic, and environmental effects associated with the proposed action and no action alternative.

Chapter 4, Cumulative Effects, describes potential impacts to the environment from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions.

Chapter 5, List of Preparers, provides a brief description of credentials for the preparers of the EA.

Chapter 6, List of Entities Contacted, provides a list of entities contacted regarding this EA.

Chapter 7, References, describes the sources of information used in preparing the EA.

In addition, a list of acronyms and abbreviations follows the Table of Contents.

2 Description of the Proposed Action and Alternatives

2.1 Description of the Proposed Action

The DOE's proposed action is to issue a federal loan guarantee to the Applicant to support the construction and start up of the CVSR Project. The CVSR Project includes the construction, operation, maintenance, and decommissioning of the CVSR and the reconductoring of the PG&E 230-kV Morro Bay–Midway transmission line. The CVSR would be a commercial 250-MW solar PV electric generating facility located in eastern San Luis Obispo County, California. The CVSR would include such components as solar arrays, an electrical transmission interconnection line, a CVSR substation, access roads, operation and maintenance facilities, and one public viewing area. In addition, two former gypsum mines would be reclaimed and restored. The proposed interconnection line would convey electricity generated at the CVSR to the new Caliente switching station, north of the CVSR, where the electricity would be transferred to the Morro Bay–Midway transmission line. In order to accommodate the additional electricity that would be generated by the CVSR, as well as other projects in the Carrizo Plain area, a 35-mile segment of the Morro Bay–Midway transmission line in San Luis Obispo and Kern counties would be reconductored to increase line capacity (Appendix A).

To produce aggregate base for access road construction, the Twisselman aggregate mine would be established nearby on the site of an existing borrow pit. The proposed establishment of the Twisselman mine is not part of the proposed action (i.e., would not be financed with DOE loan guarantee funds), but is addressed as a connected action[1] in this EA.

2.1.1 Project Location

The proposed CVSR site is located on about 4,700 acres of land in the northern Carrizo region in eastern San Luis Obispo County, immediately north of the California Valley subdivision (Figure 2-1). The northern boundary of the Carrizo Plain National Monument is located approximately 2 miles south of the site, and Soda Lake is an additional 1 mile south within the monument. The CVSR would be primarily located south of SR-58 on private property. The CVSR site was primarily chosen based on three criteria: (1) access to electrical transmission lines; (2) suitable land; and (3) high solar resource. The existing Morro Bay–Midway transmission line is located about 3 miles to the north of the CVSR site in San Luis Obispo and Kern Counties, California. The approximately 35-mile segment of the line to be reconductored begins at the proposed Topaz Solar Farm site, located about 6 miles west of the CVSR site in San Luis Obispo County, crosses the Temblor Range into Kern County, and ends at the existing Midway substation in Buttonwillow.

The topography of the proposed CVSR site is relatively flat, which would allow the CVSR to follow existing topographical contours, minimizing land disturbance. The proposed site is designated for agricultural use under the San Luis Obispo County General Plan (SLO County 2010a, 2010b). Presently, however, the quality of the land is relatively poor for agricultural production and it has not been commercially farmed for over 30 years. The CVSR site currently supports a small cattle grazing operation

[1] As defined in NEPA (40 CFR 1508.25(a)(l)), an action is considered a connected action if it: (i) is automatically triggered by the proposed action, (ii) cannot or will not proceed unless the proposed action occurs first or simultaneously, or (iii) is an interdependent part of a larger action and depends upon the larger action for its justification.

and contains an abandoned ranch complex. It also contains two inactive gypsum mines; one located in the southwest section of the CVSR site west of Boulder Creek Road and the other located east of Boulder Creek Road, north of Belmont Trail, and west of Baird Road (Figure 2-1).

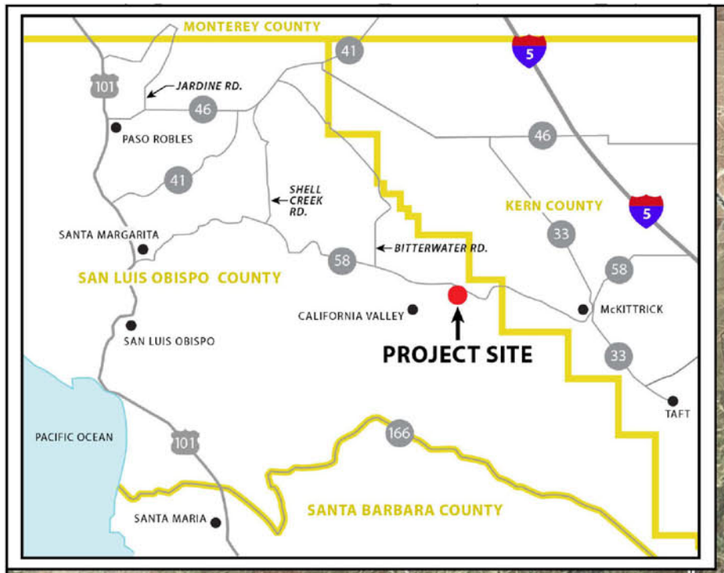
2.1.2 Project Components

The CVSR Project comprises the following components:

- *California Valley Solar Ranch*
  - Solar panel arrays, designated as Arrays 1, 2, 4, 5, 6, 7, 8, 9, 10, and 11, arranged in 10 separate areas on the CVSR site. Originally, Array 3 was also planned as part of the CVSR Project but was eliminated to reduce impacts to giant kangaroo rat habitat. Arrays would be mounted on SunPower T0 tracker units.
  - Electrical equipment, including a direct current (DC) collection system from the solar panels to centralized inverters, and an alternating current (AC), medium-voltage collection system. Several segments of the AC collection system would be underground and the remainder carried on overhead power lines, which would carry electrical output from each array to a new CVSR substation. Inverters would take the DC energy output of the panels and convert it to AC for delivery to the transmission grid via the CVSR Project's medium-voltage collection system, substation, and switchyard.
  - A CVSR substation, which would step-up voltage collected from the arrays at 34.5-kV to 230-kV, and from which the CVSR's interconnection line would originate.
  - A 230-kV interconnection line on steel towers between the CVSR substation and the Caliente switching station to transmit the generated electrical power to PG&E's 230-kV Morro Bay–Midway transmission line.
  - A permanent O&M facility with outdoor storage and a gasoline tank.
  - An on-site septic system and leach field for sanitary wastewater treatment and disposal, to be used during construction by the Temporary Construction Worker Accommodations Area and then during operations by the O&M building.
  - One outdoor viewing summit that would be accessed by a new hiking trail.
  - Access roads and fencing.
  - A water system for water supply and fire safety, which would be comprised of a well, reverse osmosis water treatment equipment within a small building, two brine evaporation ponds, and a water tank.
  - Temporary facilities, including two temporary covered work areas (for tracker assembly); a portable concrete batch plant for the O&M building foundation; tracker motors, inverters; electrical equipment within the substation; a temporary switching station until the permanent switching facility is constructed; and a Temporary Construction Worker Accommodations Area.
  - Closure and reclamation of two inactive on-site gypsum mines.
- *Morro Bay–Midway Transmission Line Reconductoring*
  - Reconductoring of approximately 35 miles of the Morro Bay–Midway transmission line, from the proposed Topaz Solar Farm to the Midway substation in Kern County.
  - A new CVSR switching station (the Caliente switching station).
  - A new optical ground wire (both a static line and a fiber optic communication line).

An overview of all CVSR Project components is provided in Figure 2-2. Additional details for all components, including construction methods and operational procedures, are provided in the following sections and a summary of all disturbances is included in Table 2-3 provided in Section 2.1.3.2. Detailed plans for the Morro Bay–Midway transmission line reconductoring are provided in Appendix A of this EA.

Figure 2-1
Project Overview
California Valley Solar Ranch Project



Twisselman Mine
Caliente Switching Station
MORRO BAY–MIDWAY TRANSMISSION LINE (230 kV)
Midway Substation (existing)
Buttonwillow
Wasco
CVSR Substation
California Valley Subdivision
San Luis Obispo Co.
Kern Co.
Soda Lake
Carrizo Plain National Monument
McKittrick
Derby Acres
Valley Acres
Fellows
Ford City
Taft

- CVSR site perimeter
- Solar array
- Interconnection line
- Collection line, overhead
- Collection line, underground
- Existing transmission line
- Segment of existing transmission line to be reconductored
- Milepost
- Existing substation
- Major road
- County boundary
- National monument
- California Valley Subdivision (mostly undeveloped)

NORTH

0 1 2 3 4 5
Miles

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: USGS National Hydrology Dataset 2009, ESRI 2009 basedata; Microsoft Virtual Earth Aerial Imagery 2009 (http://resources.esri.com/arcgisonlineservices/virtualearth)
Other transmission line data: National Renewable Energy Laboratory & FEMA, 1993

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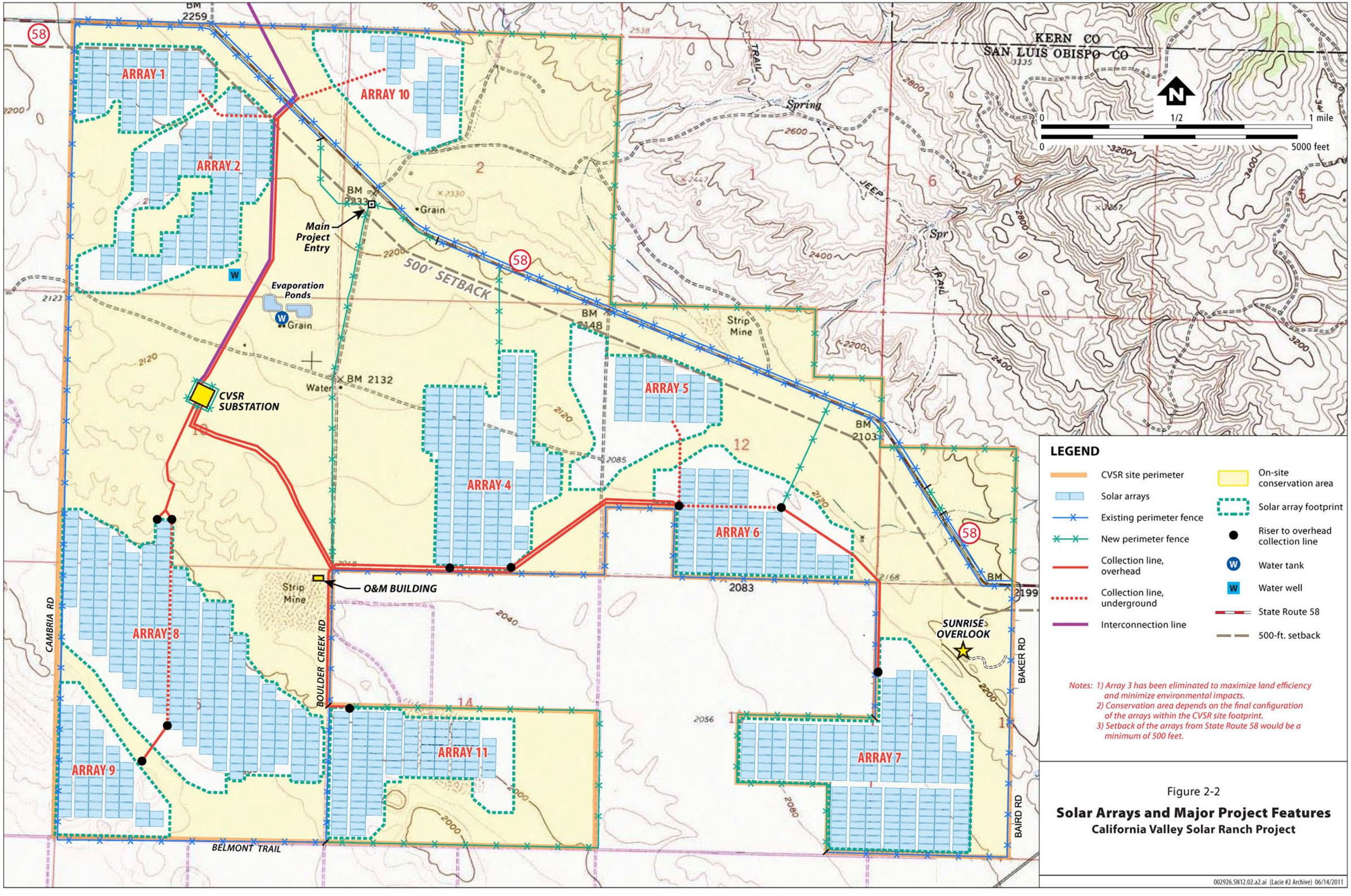

Figure 2-2

Solar Arrays and Major Project Features

California Valley Solar Ranch Project

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As discussed in Section 1.2, San Luis Obispo County prepared an EIR for the CVSR CUP and Twisselman Aggregate Mine CUP/Reclamation Plan to allow the proposed use on the project site and to allow development of an aggregate mine on the site of an existing borrow pit. During the CEQA EIR process, the proposed project evolved based on comments received from the County, interested federal and state agencies, community members, and findings of special studies commissioned by the Applicant, including biological surveys, wetlands and jurisdictional water surveys, cultural resource surveys, visual simulations, and groundwater and well analyses. Table 2-1 lists the project modifications and describes the changes that each modification accomplished. This EA analyses the CVSR Project as modified by the changes that came about during the CEQA EIR process.

Table 2-1. CVSR Project Improvements

Project Change	Impacts Avoided or Reduced
1. Redesigned project to reduce impacts but retains full 250 MW	• Redesigned array layouts to substantially avoid sensitive biological resources, including eliminating Array 3 to reduce impacts on Giant Kangaroo Rat (GKR)
2. Conserved 70% of site, actively managed to achieve both project and conservation objectives	• Developed 4,700 acre total project area with ~1,500 acres with solar arrays and support facilities • Would permanently manage 3,200 acres (70%) to meet conservation objectives
3. Established giant kangaroo rat conservation areas and criteria to maximize avoidance/mitigation	• Reduced percent of GKR precincts impacted from 75% to 9% • Developed a detailed conservation strategy in collaboration with USFWS, CDFG, and County, including the acquisition of mitigation land and conservation easements with input from USFWS and CDFG • Committed to prescriptive grazing to promote land management for habitat and species
4. Changed foundation design from concrete pedestals to low-impact penetrating foundation	• Reduced concrete and water use • Reduced construction disturbance and area of impermeable surfaces • Increased setback distance for endangered species
5. Changed T20 Trackers to T0 Trackers	• Increased slope tolerances for more efficient use of the site • Reduced visual impact due to T0 trackers being closer to the ground when oriented in the horizontal position • Eliminated need for offsite disposal of 400,000 cubic yards of soil
6. Changed to four-wire 'ranch' fencing to promote wildlife movement	• Removed 8 miles of exclusionary fencing to allow additional corridor movement • Proposed fencing compatible with San Joaquin kit fox and pronghorn antelope • Widened and permanently protected wildlife corridors in northern Carrizo
7. Reduced water use by 20% per year	• Replaced concrete pedestals with low impact penetrating foundations • Developed more efficient panel washing techniques • Onsite water conservation to provide for fire protection

Table 2-1. CVSR Project Improvements

Project Change	Impacts Avoided or Reduced
8. Ensured project will not use water suitable for domestic use	• Designed project to use non-potable, saline groundwater • Would consume 12 acre-feet per year during operations
9. Reduced traffic impacts	• Instituted an incentive program for coordinated employee transit to reduce vehicle trips • Would use a low emission shuttle to transport workers from San Luis Obispo, Atascadero, and Paso Robles • Would construct temporary onsite housing for workers • Developed transportation plan that would reduce road closures due to large and oversized vehicles
10. Incorporated use of an existing onsite surface gravel mine to reduce truck traffic	• Reduced total vehicle trips during construction by 40% • Reduced air quality (GHG) emissions from haul trucks
11. Reduced visual impacts	• Increased setbacks of arrays from SR-58 to 500 feet • Agreed to underground electrical collection lines within 3,000 feet south and 1,500 feet north of SR 58 where not already shielded from view by topography
12. Designed project to support community education and improved safety	• Limited public site access to improve safety and security by removing the onsite Visitor Center and trail • Provided funding for a Renewable Energy Education Center or maintenance of the Simmler Community Building • Provided information on Valley Fever to workers and nearby residents
13. Instituted noise reduction measures	• Would limit the number of panel washers operating within 3,700 feet of sensitive receptors to attenuate noise
14. Reduced Cultural Resources impacts	• Redesigned the Caliente Switching Station to avoid impacts to cultural resources

2.1.2.1 Project Design Features

Project design features are defined as those specific means, measures, or practices that have been incorporated into the proposed action to avoid or reduce adverse impacts; they can also be described as required best management practices. Most of these features were identified in DOE's draft Solar Programmatic EIS and were derived from comprehensive reviews of solar energy development activities; published data regarding solar energy development impacts; existing, relevant mitigation guidance; and standard industry practices. Many of these measures are accepted practices known to be effective when implemented properly at the project level.

These measures are also the result of a series of discussions with, and outreach to, conservation and environmental government agencies and non-governmental organizations, such as the USFWS, CDFG, county land use and public service agencies, the Defenders of Wildlife, the Sierra Club, Audubon Society, and the Natural Resources Defense Council. In addition, DOE has completed formal consultation with the USFWS under the ESA. All terms and conditions resulting from these consultations are incorporated into the proposed action. Specific project design features are discussed in this chapter, where applicable. In addition, where the features/procedures relate to specific resource areas, they are discussed in the

respective resource section presented in Chapter 3, Affected Environment and Environmental Consequences. The proposed design features are listed in Appendix B.

2.1.2.2 Photovoltaic Panels and Arrays

As currently planned, approximately 811,000 PV solar panels would be mounted on SunPower T0 tracker units and arranged in 10 arrays throughout the CVSR site. The T0 tracker is designed to have a low profile, typically 5 to 6 feet above the ground when oriented in the horizontal position (may be slightly higher in limited areas with steeper slopes). The trackers would use a low impact penetrating foundation design. These foundations would be driven directly into the ground without the need for concrete foundations (see photo). To prepare the site for installation of the trackers, about 315 acres would be graded, excluding grading for fire access roads around the arrays. More than half of this grading, about 172 acres, would occur in and around Array 11 and would be associated with reclamation of the idle gypsum mine at that location. Installation of the trackers would not generally require grubbing (removal of vegetation), and vegetation would only be removed in areas where grading would be required.

Typical T0 Tracker

The T0 Tracker system allows the panels to change direction to maximize solar input. In addition, no permanently shaded areas would be created by the panels. Existing vegetation would either continue to grow or the area would be revegetated after installation, and small animals could continue to inhabit the area around and under the trackers. Therefore, potential impacts on biological resources would be minimized by conserving most of existing habitat in and around the arrays.

Each of the 10 arrays would be located within an area referred to as the solar array footprint, as shown on Figure 2-2. The exact locations of the arrays may be slightly modified within the footprints with the approval of USFWS and CDFG to provide further species protection. Each array would contain perimeter fire access roads, internal access drives, and electrical utilities. Table 2-2 shows the estimated acreage under the solar trackers and the estimated maximum footprint of each array.

To reduce visual intrusiveness, the Applicant would maintain setbacks from public roads and provide vegetative screening for residences. The Applicant would also implement an exterior and signage lighting plan (see Section 3.1, Land Use and Visual Resources). All permanent exterior lighting fixtures would be constructed and maintained to be shielded so that neither the lamp nor the related reflector interior surface would be visible from adjacent properties. Permanent lighting would be restricted to the O&M building, Caliente switching station, substation, and main CVSR site entry intersection at SR-58.

2.1.2.3 PV Electrical System Components

Solar energy would be captured and converted directly to electricity through the PV panels. The electricity would then be directed through inverters that convert DC to AC. The CVSR would use 250 to 500 inverters[2] and an underground electrical collection system. Generally, the inverters would be centrally located within each array block. The array blocks (i.e., sets of PV panels) are estimated to range in size from 6 to 6.5 acres, and between 17 and 58 array blocks will make up a single array. For example, Array 1 would contain 17 trackers and would have an estimated maximum foot print of 103 acres (17 trackers x 6 acres/tracker ≈ 103 acres). Similarly, Array 8 would contain 58 trackers and would have an estimated maximum foot print of 350 acres (58 trackers x 6 acres/tracker ≈ 350 acres).

[2] The number of inverters is not yet finalized because equipment vendors continue to develop improved inverter designs to serve PV utility scale projects.

Table 2-2. Estimated Maximum Array Footprints

Array[1]	Estimated Area Under the Solar Trackers (acres)	Estimated Maximum Footprint (acres)
1	87	103
2	132	203
4	150	186
5	54	135
6	98	157
7	203	254
8	281	350
9	62	102
10	32	103
11	103	142
TOTAL	**1,202**	**1,735**

Note:
[1] Array 3, which was part of an earlier design, was eliminated from consideration to maximize land efficiency and minimize environmental effects.

The shortest distance from an inverter to the nearest array boundary would be no closer than 40 feet. Power would be transmitted from the inverters to the new substation (Figure 2-2) through medium-voltage AC collection lines. The electrical collection lines would run approximately 3 miles underground and 8 miles aboveground, carried on approximately 200 utility poles. The poles for the medium-voltage AC lines would be typically about 50 feet tall, and would range between 35 and 60 feet tall. At the new CVSR substation, the power would be converted from 34.5-kV to 230-kV and transmitted to the power grid via the new interconnection line and the Caliente switching station. The new CVSR substation equipment would range in height from 20 feet to 60 feet, would cover approximately 4 acres, would be enclosed within a securely fenced area, and would be accessed via new roads.

2.1.2.4 Transmission System

The electricity generated at the proposed CVSR would be transmitted to the California electrical grid through the existing Morro Bay–Midway transmission line north of the CVSR site. A new approximately 4-mile overhead 230-kV interconnection line would be constructed within a 250-foot-wide easement between the new CVSR substation and the new Caliente switching station, which would be the point of connection to the Morro Bay–Midway transmission line.

The interconnection line route would extend northwest from the CVSR site, crossing SR-58 to join an existing dirt access road. The route would then travel north to the Caliente switching station site (see Appendix A**)**. The new interconnection line would be supported by approximately 24 steel poles ranging in height from 90 feet to about 120 feet, except for the poles closest to the switching station. Near the switching station, the pole heights would be increased, subject to final design, to ensure line clearance to accommodate bypass of the existing PG&E 115-kV transmission line and interconnection with the Morro Bay–Midway transmission line.

2.1.2.5 Support Buildings and Structures

The buildings proposed as part of the CVSR Project include a 5,000-square-foot O&M building and a small building for reverse osmosis water treatment equipment. The Applicant would implement an Exterior Signage and Lighting Plan to reduce visual impacts, as discussed in Section 3.1, Land Use and Visual Resources. Permanent lighting would be restricted to the O&M building, Caliente switching station, substation, and main entry intersection at SR-58. In addition, one outdoor viewing summit, Sunrise Overlook, would be constructed to offer visitors views of the site. The summit would be accessed via a newly constructed hiking trail. The Sunrise Overlook trail would be about 850 feet long and 6 feet wide.

2.1.2.6 Access Roads and Fencing

The main access road would enter the site from SR-58 at the existing ranch road, which would be improved to 24 feet wide and with 8 inches of aggregate base. The CVSR would require the construction of a number of additional access roads, all either 20 or 24 feet wide with 8 inches of aggregate base, for fire access and to provide maintenance access to individual blocks of trackers within each solar array. The CVSR's permanent interior road system would consist of approximately 24 miles of roadways covering about 80 acres. The CVSR Project would also require the reconstruction of 2.6 miles of California Valley subdivision roads adjacent to the site.

Fencing would be designed to avoid potential impacts on local wildlife species, including the San Joaquin kit fox (*Vulpes macrotis mutica*) and pronghorn antelope. There would be about 100,000 linear feet of perimeter fencing on the CVSR site, most of which is already present (an estimated 18,000 linear feet of new fencing may be required). There would be about 116,120 linear feet of fencing around the solar arrays. The Applicant would also remove approximately 52,800 linear feet (about 10 miles) of existing interior fencing and associated wooden posts.

Except in selected areas where alternative fencing would be used for safety reasons, perimeter fencing (i.e., both existing and new) would be either repaired and retained or modified to incorporate wildlife movement design features (see Section 3.8, Biological Resources). The existing perimeter fencing is generally traditional four-wire barbed wire ranch fence. The modified perimeter fence segments, which would be a minimum of 300 feet in extent, would be three-strand ranch fencing with a smooth wire on the bottom that would be elevated 18 inches above ground level. The top of the modified segments of fence would be no greater than 42 inches above ground level. In compliance with resource agencies requirements and as part of the biological resources habitat mitigation and monitoring plan, approximately 23,750 linear feet of perimeter fencing is proposed for the area north of SR-58. With this additional fencing, there would be an estimated 60,250 linear feet of modified perimeter fencing.

Current National Electrical Safety Code requirements mandate a 7-foot-high fence around electric generating equipment. If 7-foot-tall fencing is required for inverters and/or arrays in addition to the CVSR substation and Caliente switching station, it would be constructed around the arrays only, rather than around the site perimeter. The fencing around the arrays would be constructed using wire mesh with a 6-inch by 6-inch opening. This design would allow San Joaquin kit fox to pass through the fence without risk of entanglement and would prevent coyotes and domestic dogs from entering the array areas. The 7-foot fence would use both wooden uprights, approximately 3 inches in diameter, and steel t-posts. Anti-perch structures would be installed on top of the 7-foot-tall wooden poles.

2.1.2.7 Water Supply Facilities and Reverse Osmosis System

Water needs for the CVSR and local fire safety requirements would be supplied from a 400-foot-deep on-site well capable of producing 50 gallons per minute (gpm). Water from the on-site well is brackish, has high levels of total dissolved solids, and is unsuitable for consumption without treatment. Therefore, the Applicant proposes to install a reverse osmosis system to remove excess total dissolved solids from the well water so that it would be potable for use at O&M building.

Proposed water supply facilities also include a 271,000-gallon water tank, a small building to house the reverse osmosis water treatment equipment, and two brine evaporation ponds totaling up to about 5 acres. The 271,000-gallon water tank would be located approximately 1 mile north of the O&M building (Figure 2-2) and would provide gravity-fed water to hydrants for fire safety requirements.

The reverse osmosis systems would remove dissolved solids, and as a byproduct, produce "reject water," which contains higher concentrations of minerals and salts (SLO County 2011a). Reject water (wastewater) from the reverse osmosis process would be disposed of using the two evaporation ponds, which would be lined with synthetic material. In addition, the ponds would be designed in accordance

with standards of, and subject to the jurisdiction of, the Regional Water Quality Control Board (RWQCB) to ensure no releases. For the CVSR Project, it is assumed that the large high pressure reverse osmosis system would have 75 percent efficiency, thus producing 25 percent reject water (SLO County 2011a).

Reject water from the reverse osmosis process contains higher concentrations of salts, metals, minerals, and organic and inorganic constituents. The evaporation ponds would gradually fill with solids from evaporation of the reject water, and solids would be removed on a regular basis. While the wastewater and solids are generally considered non-hazardous, the Applicant proposes to transport the solids on a regular basis to the Kettleman Hills hazardous waste facility in Kings County. Generation and transport of the wastewater is not expected to result in a hazard to the public or the environment.

2.1.2.8 Gasoline Storage Tank

An aboveground gasoline storage tank of up to 2,000 gallons would be located to the south of the O&M building to support permanent operations (this is a tentative sizing based on 3 to 6 months of fuel for O&M uses [such as maintenance vehicle refueling]). On-site container/tank management would be addressed in a Spill Prevention, Control and Countermeasure Plan pursuant to 40 CFR Part 112.

2.1.2.9 Gypsum Mine Reclamation

Two inactive gypsum mines are located in the southern section of the CVSR site (Figure 2-1). As part of the proposed action, the Applicant would reclaim the mine sites according to Surface Mining and Reclamation Act (SMARA) of 1975 requirements. Reclamation would involve grading the previously mined area to a smooth natural grade and applying top soil to allow for revegetation. Detailed plans would be incorporated into the overall grading design for the site.

2.1.2.10 Morro Bay–Midway Transmission Line Reconductoring

The California Independent System Operator has determined that the Morro Bay–Midway transmission line would require reconductoring to deliver the energy generated by the CVSR and the Topaz Solar Farm Project. The Topaz Solar Farm Project is proposed by First Solar, would be located just east of the CVSR site, and is not considered part of the proposed action.

To accommodate the additional load if both solar projects are constructed, PG&E would reconductor both circuits of the approximately 35-mile double-circuit transmission line segment between the Solar switching station at the Topaz Solar Farm (milepost 0) and the existing Midway substation in Kern County, California (milepost 35), as part of the proposed action (Figure 2-1). While construction of the proposed Topaz Solar Farm Project is independent and not part of the proposed action, cumulative impacts associated with that project are addressed in Chapter 4, Cumulative Effects. The CVSR's point of connection to the Morro Bay–Midway transmission line would be the proposed Caliente switching station, located at approximately milepost 7 (Figure 2-1).

Planned upgrades include replacing old conductors (wires) with new conductors, replacing four transmission line towers (two along the alignment and two near the Caliente switching station), reinforcing foundations, increasing the height of about 85 towers by 20 feet, installing microwave towers/reflectors, installing a fiber optic line, and modifying access roads. In addition, four wood poles would be permanently installed and several replaced to accommodate the new fiber optic line.

The average height of existing towers is approximately 118 feet, and the average height of towers with proposed extensions would be approximately 127 feet. PG&E's right-of-way (ROW) for the existing transmission line between the proposed Topaz Solar Farm and the Midway substation varies between about 75 and 128 feet in width. For approximately 6 miles extending east from the proposed Topaz Solar Farm, the transmission line is adjacent to a separate PG&E 115-kV transmission line ROW. The reconductored transmission line would run east from the proposed switching station for the Topaz Solar

Farm, loop into the Caliente switching station, cross the Temblor Range into Kern County, proceed east, and end at the Midway substation (Figure 2-1).

The Caliente switching station would be located south of the existing PG&E 230-kV and north of the existing 115-kV transmission corridor, and would tie into the Morro Bay–Midway transmission line. Based on discussions with the Santa Ynez Band of Chumash Mission Indians, the Caliente switching station has been moved approximately 165 feet east and 15 feet south of its originally proposed location to avoid disturbance of cultural resources in the vicinity (see Section 3.9, Cultural Resources). The total area of disturbance from construction of the switching station would be about 14 acres. The switching station would be within an approximately 5-acre fenced area (approximately 430 feet by 478 feet) surfaced with a combination of concrete pads, compacted road base for internal access roads, and compacted earth. PG&E would install night lighting for security purposes according to an exterior lighting plan (see Section 3.1, Land Use and Visual Resources). Two new towers would be constructed to connect the Caliente switching station to the transmission line in addition to the four towers that would be replaced as discussed above.

Temporary Switching Station Equipment. All temporary equipment would be installed within the Caliente switching station site. The only exception to this is a temporary, approximately 322-foot, single-circuit tap transmission line connecting the temporary switching station equipment within the Caliente switching station site to the Morro Bay–Midway transmission line. To accomplish the temporary interconnection, PG&E would install three poles between their existing lattice take-off tower and the temporary switching station 230-kV dead-end structure within the proposed switching station site.

Interconnection of the switching station with the Morro Bay–Midway transmission line would also require the replacement or modification of some of the towers at and near the point of connection. The heights of the towers near the switching station are subject to final design and would be adequate to ensure line clearance and accommodate bypass of the existing PG&E 115-kV transmission line and interconnection with the Morro Bay–Midway transmission line.

PG&E would install one 175-foot-tall, self-supporting lattice steel microwave tower at the Caliente switching station. In addition, at least one microwave reflector would be required offsite, would be mounted on a structure approximately 30 feet tall, and would be approximately 10 feet by 24 to 32 feet. The microwave reflector would be painted to reduce visibility (see Section 3.1, Land Use and Visual Resources).

2.1.3 Construction

Construction of the CVSR would occur in three phases lasting less than one year each (Figure 2-3). The first phase would consist of site grading and other improvements including construction of the Temporary Construction Worker Accommodations Area, construction of access points and fire access roads, and construction of the substation, Caliente switching station, interconnection line, and primary staging area. The second phase would include construction of additional fire access roads and installation of the solar arrays and medium-voltage collection system. The third phase would include additional road improvements, temporary staging and laydown areas, and infrastructure installation. As arrays near completion, temporary staging and laydown areas would be deconstructed, the land reseeded and revegetated with native groundcover, and T0 tracker units installed in those areas. Once installation is complete, the primary staging area would be downsized and converted to contain the O&M building, office space, and material storage facility. These permanent facilities would be serviced by a septic system for wastewater treatment, and temporary restroom facilities would be removed.

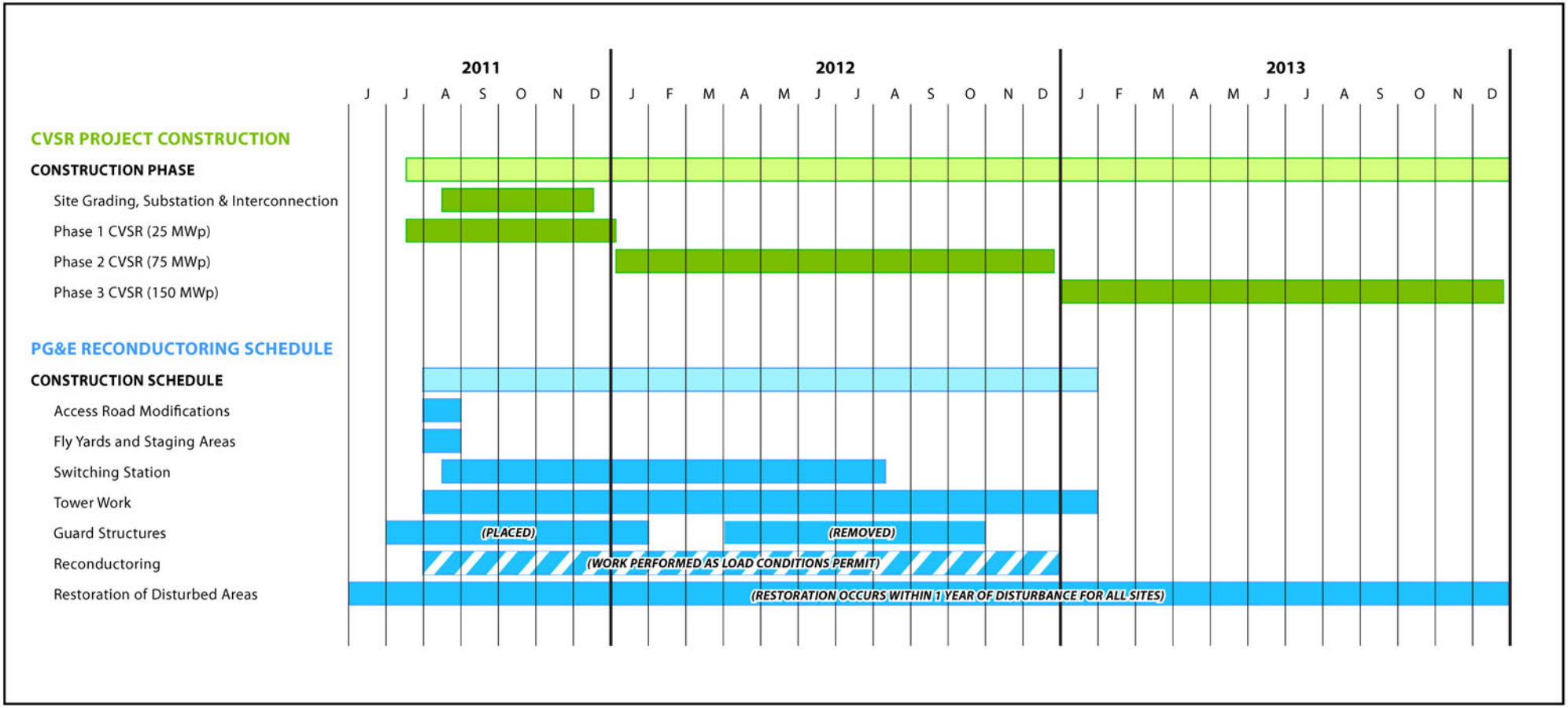

Figure 2-3

CVSR and PG&E Reconductoring Project Schedules

California Valley Solar Ranch Project

Temporary disturbance for the CVSR would result from trenching for electrical conduits, grading of areas with steep slopes, construction of staging areas, and the movement and storage of construction equipment and vehicles. Temporary structures and facilities adjacent to the permanent O&M building would be dismantled after construction, including two covered assembly areas (each approximately 39,400 square feet and 35 feet high) and a concrete batch plant (8,100 square feet with equipment up to about 47 feet high). In addition, all elements of the Temporary Construction Worker Accommodations Area, including a 2,000-square-foot utility building, would be removed from the site at end of the construction phase of the CVSR.

The Temporary Construction Worker Accommodations Area would hold up to 50 spaces for recreational vehicles or travel trailers that construction workers could use as housing within an approximately 5-acre area. The area would be designed with interior roadways, spaces, and all improvements required by county and state regulations. Water would be provided from the water tank, and the area would have garbage dumpsters, and recycling bins. The area would be served by the septic system for the O&M building and/or an on-site dump station for wastewater disposal. The 2,000-square-foot utility building would house a laundry area (washers and dryers), a TV room, vending machines, a storage area, and bathroom and shower facilities. Propane fuel tanks would provide power for the utility building and for each recreational vehicle/travel trailer's appliances (e.g., refrigerators, stovetops, water heaters, etc.). The area would be surrounded by a chain link security fence. Temporary ground illuminating pole-mounted lighting may also be installed for safety purposes.

The portable concrete batch plant[3] would be built within the disturbance footprint associated with the O&M building and adjacent parking lot. The batch plant would include various equipment, storage areas for aggregate (sand and gravel), loading and wash areas, and drainage control improvements to ensure that runoff water is contained onsite. Two temporary 5,000-gallon portable water tanks would also be installed for potential use for concrete batch plant operations during construction.

Permanent disturbance to the CVSR site would result from the construction of major project components, access roads, the O&M building, the substation, evaporation ponds, parking areas, tracker foundations, equipment pads, the hiking trail and overlook, and the water tank.

Construction for the reconductoring work, including tower replacement and modification, is expected to last approximately 20 months. According to proposed plans, construction would begin in August 2011 and would be substantially complete by February 2013 (Figure 2-3). The permanent Caliente switching station facilities would be constructed by PG&E and would be scheduled roughly in parallel with reconductoring activities to ensure that adequate transmission line capacity is available when the switching station becomes active.

The pull site crew would climb or be transported to each tower via helicopter, disconnect the old conductors, and attach them to spools on trucks below the tower. Other crews would set up temporary netting structures across busy roads and other areas as needed to protect against the unlikely event that a conductor breaks and falls to the ground. The pulling crew would then begin winding the old conductors onto the spools and use a pulling rope to pull the new conductor through the pulleys. The tensioning crew would keep the old conductor taut, preventing it from touching the ground or other objects. Once the new conductor is in place, it would be disconnected from the pulleys and permanently mounted to the end of new insulator strings. A new optical ground wire and a pure static line would be similarly installed.

Pull and tension sites are generally flexible; therefore, their locations would be selected upon completion of the biological and cultural resources surveys to minimize impacts on sensitive resources. Approximately 22 pull and tension sites and three construction work areas at road crossings would be used. In addition, there would be a work area at the Caliente switching station and six helicopter landing

[3] A concrete batch plant is a manufacturing plant where concrete is mixed before being transported to a construction site.

zones. Activities between the pull and tension sites are generally restricted to accessing the towers and repairing or replacing damaged towers or insulators.

For the purposes of the analysis, it is assumed that 4 of the lattice steel towers would be replaced (two along the alignment and two at the Caliente switching station). Replacement lattice steel towers would be generally erected within 75 feet of the original tower and would be installed using a crane or be transported to the site by helicopter. New towers would be sited to avoid sensitive resources and active fault zones as determined by the geotechnical investigation (see Section 3.6, Geology and Soils).

New lattice steel towers would require the installation of new tower foundations, which are typically poured concrete piers. For each lattice structure, four holes would be drilled using a truck or track-mounted excavator. The final depth of each foundation pier would be determined by soil and geologic conditions and by the design requirements of the tower structure. Each foundation would extend approximately 2 feet above the ground surface for bolting the tower in place.

Drilling, rock hauling, or the use of a rock anchoring or a mini-pile system may be required if solid rock is encountered. The rock anchoring or mini-pile system would be used in areas where site access is limited and sufficient rock is available for proper rock anchoring. In environmentally sensitive areas, a hydrovac, which uses water pressure and a vacuum, may be used to excavate material into a storage tank. In areas where it is not possible to operate large drilling equipment, due to access or environmental constraints, hand digging using compressed air tools may be required.

The height of approximately 85 existing towers would be raised by about 20 feet to satisfy conductor ground clearance requirements. Certain towers may also require modification of their foundations or superstructures, such as adding mid-cage or base extensions to the towers, or adding cage-top extensions to the top of the tower.

Helicopters would be used to erect towers at sites inaccessible by crane due to difficult terrain or sensitive resources. Final siting of helicopter fly yards and staging areas would be determined with the input of the helicopter contractor, affected private landowners, and land management agencies. Helicopter fueling would be supervised by the helicopter fuel service provider according to the Storm Water Pollution Prevention Plan (SWPPP). Helicopter use would be in accordance with PG&E specifications and would be similar to methods detailed in the Code of Safe Practices (Section 11), 2002 Edition, and the PG&E Helicopter Operations Manual, 2002.

Existing access roads would be maintained and widened to accommodate construction equipment and vehicles, as required. Access roads would be evaluated for vegetation removal, repair, and restoration requirements. Access roads would be typically graded to a standard 10-foot width, with possible 12-foot-wide sections required at sharp road angles. PG&E would use temporary bridges to span sensitive water crossings during the wet season. Gravel would not be typically used for the road bed, except to stabilize soft underlying soils.

2.1.3.1 Environmental Monitoring, Training, Planning, and Other Project Design Features

The Applicant has integrated a number of features into the design of the proposed action, as well as procedures to be implemented during construction and operation to avoid or reduce environmental impacts. The full text of each feature is included in Appendix B; a summary of features relevant to construction are listed below.

To avoid or reduce environmental impacts during construction, the Applicant would provide a public liaison and Carrizo Plain National Monument and BLM liaison during all phases of construction, advance notice of construction to land owners and residents, and quarterly construction updates. The Applicant would also limit noisy on-site construction activities; shield primary construction staging areas; allow for

San Luis Obispo Sheriff Department access review; ensure adequate funding to offset anticipated impacts on San Luis Obispo County public service staffing; and implement Temporary Construction Worker Accommodations Area general rules, quiet hours, and driving and parking requirements (see Section 3.1, Land Use and Visual Resources; Section 3.4, Noise; and Section 3.11, Socioeconomics and Environmental Justice).

In addition, in order to avoid or reduce impacts on public and occupational health and safety, the Applicant would provide access and circulation for fire protection and emergencies; implement a CAL FIRE-approved Fire Safety Plan and Health and Safety Plan; work with CAL FIRE/County Fire to develop a process during 'Red Flag Warning' times to cease work during times of high wildfire risk; install fire sprinklers, a water tank, and hydrants for fire suppression; install electrical safety signage; coordinate traffic during emergencies; designate an Emergency Response Liaison; and provide suitable temporary helicopter landing areas near construction areas on the CVSR site (see Section 3.12, Public and Occupational Health and Safety).

Features to avoid or reduce impacts from erosion and land-disturbance impacts on agricultural resources, geology and soils, and cultural resources would also be incorporated, such as: preserving off-site farmlands and conservation land; coordinating construction activities with agricultural landowners; implementing landslide survey results to protect against slope instability; minimizing construction on soft or loose soils; incorporating geotechnical investigation results; implementing a SWPPP in accordance with Clean Water Act Section 402 and the California State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ; implementing a Road Drainage Plan in accordance with Title 22 (Land Use Ordinance) of the San Luis Obispo County Code (Section 22.52.110); minimizing disturbance within stream channels; implementing a Cultural Resources Monitoring Plan and Paleontological Monitoring and Treatment Plan; implementing a Pre-Construction Worker Education Program; conducting cultural and paleontological resources construction monitoring and data recovery; conducting archeological and paleontological training for construction crews; ceasing work if remains that may be of human origin are encountered; installing silt fencing around historic resources; surveying new areas of disturbance that were previously unexamined; and using minimally invasive equipment to guard foreign transmission lines (see Section 3.2, Agriculture; Section 3.5, Air Quality; Section 3.6, Geology and Soils; Section 3.7, Water Resources; Section 3.9, Cultural Resources; and Section 3.10, Paleontological Resources).

The Applicant would also incorporate a number of features to avoid or reduce impacts on water resources. For example, the Applicant would implement a Groundwater Monitoring and Reporting Plan, Drought Water Management Program, and Water Supply Contingency Plan; use pervious and/or high-roughness groundcover for the CVSR substation and temporary switching station facilities; maximize groundwater recharge by directing drainage to common basins; use low-water landscaping; and return groundwater to the subsurface after dewatering (see Section 3.7, Water Resources). In addition, PG&E would use pervious and/or high-roughness groundcover for the permanent Caliente switching station.

Additionally, the Applicant would avoid or reduce impacts on air quality and transportation and circulation by implementing a Construction Activity Management Plan that includes a Dust Control Management Plan for controlling and reducing fugitive dust; complying with Air Pollution Control District standards for best available control technologies; reduce construction vehicle and equipment emissions; minimize GHG emissions; avoid sulfur hexafluoride emissions; fund off-site mitigation of construction equipment emissions and fugitive dust from existing sources in surrounding communities; implement a Traffic Control Plan and Truck and Bus Safety Plan; repair roadway damage; providing shuttle-use incentives for construction workers; implement requirements for parking and carpooling; and conduct an outreach campaign for truck escort delay periods (see Section 3.3, Transportation, and Section 3.5, Air Quality).

In order to reduce impacts from solid waste and hazardous waste or materials, the Applicant would recycle at least 50 percent of construction waste; provide documentation of recycling; obtain weekly

garbage service; implement a Hazardous Materials Business Plan, Hazardous Substance Control and Emergency Response Plan, site-specific Spill Response Plan, and Spill Prevention, Control and Countermeasure Plan. The Applicant would also complete SWPPP spill control and environmental training; maintain vehicles and equipment to be free of leaks; properly dispose of contaminated soil; and prohibit standing water and trash piles (see Section 3.12, Public and Occupational Health and Safety, and Section 3.7, Water Resources).

To avoid or reduce visual or aesthetic impacts, the Applicant would reduce visual intrusiveness using aesthetic treatments; maintain setbacks from public roads; provide vegetative screening for residents who request it, as applicable; implement an Exterior Signage and Lighting Plan; minimize reflectivity of conductors; and paint the microwave reflector to reduce visibility (see Section 3.1, Land Use and Visual Resources).

In addition to preserving, enhancing, and maintaining approximately 2,450 acres onsite as conservation lands, the Applicant would support a regional conservation strategy by compensating for any permanent loss of habitat for listed species with off-site conservation lands in the Northern Carrizo Region. Although some species in the vicinity of the CVSR site, such as the San Joaquin kit fox and giant kangaroo rat, may continue to use the areas occupied by the solar arrays after installation, habitat within solar array areas are considered acreage for which compensatory land would be provided elsewhere and lands within the solar arrays would not be considered to provide conservation habitat.

2.1.3.2 Disturbance Area Summary

Most of the CVSR would be constructed within about 1,500 acres south of SR-58. Approximately 30 percent of the site would be temporarily disturbed and then restored to pre-construction condition in accordance with the revegetation plan. The remainder of the site (68 percent or about 3,233 acres) would be left undisturbed for the creation of extensive environmental preservation lands within the site. Estimated ground disturbance associated with access roads, switching station, tension and pull sites, land zones, line and roadway crossings, and other components of the Morro Bay–Midway transmission line reconductoring is anticipated to be approximately 107 acres. A disturbance area summary for both the CVSR and Morro Bay–Midway transmission line reconductoring is presented in Table 2-3.

Solar arrays can be successfully installed on relatively uneven ground; therefore, the relatively flat site would require limited grading for tracker installation. Grading resulting in roughly 1,361,500 cubic yards (CY) of cut and 1,183,940 CY of fill with a net import of 6,000 CY would be required overall for construction of the CVSR (North Coast Engineering 2011). In addition, installation of the trackers would not require grubbing, except in areas where grading is otherwise needed.

Only an estimated 305 acres would need to be graded at the CVSR for installation of T0 tracker supports. This includes approximately 172 acres of grading associated with Array 11, which also includes reclamation of one of the two idle gypsum mines. Grading would also be required for installation of other facilities, including the substation, electrical collection system, O&M building, fire and access road, and other facilities. However, the results of landslide surveys and geotechnical studies would be used to determine final siting and grading to protect against slope instability. Construction on soft or loose soils would also be minimized (see Section 3.6, Geology and Soils).

2.1.3.3 Water Use

Water would be used during construction for dust control, concrete manufacturing, panel washing, sanitary uses, and landscaping. It would be supplied by a 400-foot-deep on-site well that was drilled and developed in May 2009. During construction, approximately 36,509 gallons per day (gpd) of water would be used, as presented in Table 2-4.

Table 2-3. CVSR Disturbance Area Summary [1]

Activity	Permanent (acres)	Temporary (acres)	Undisturbed (acres)	Total (acres)
California Valley Solar Ranch				
Areas Within Array Boundaries				
Foundations	4	3	-	7
Access Roads	61	26	-	87
Utilities	-	5	-	5
Landform Grading	-	303	-	303
Temp. Infrastructure/Temp. Dist. Balance	-	987	-	987
Subtotal	**65**	**1,324**	**-**	**1,389**
Areas Outside of Array Boundaries				
Access Roads	16	-	-	16
General Grading	8	39	-	47
Drainage Features	-	14	-	14
Undisturbed Areas	-	-	3,233	3,283
Subtotal	**24**	**53**	**3,233**	**3,310**
Interconnection Line				
Access Roads, Trans. Poles, Gen'l Grading	16	17	35	68
TOTAL ACRES (PERCENT OF SITE)	**104 (2%)**	**1,394 (28%)**	**3,268 (68%)**	**4,766 (100%)**
Morro Bay–Midway Transmission Line Reconductoring[2]				
Work Areas	-	-	-	80
Access Roads	-	-	-	27
TOTAL ACRES	**-**	**-**		**107**

Sources: North Coast Engineering, 2011; PG&E 2011.
Note:
[1] Acreages rounded to nearest whole number.
[2] Acreage of disturbance for Morro Bay–Midway Transmission Line Reconductoring components is shown as total permanent and temporary disturbance combined.

Table 2-4. California Valley Solar Ranch Water Usage During Construction

Construction Phase	Daily Demand (gallons)	Annual Water Demand (acre-feet)	Annual Reject Water Production (acre-feet)	% of Total Reject Water[1]
Dust Control	20,000	22.4	0.3	0%
Concrete Manufacturing	800	0.9	0.0	7%
Panel Washing	2,350	2.6	0.9	21%
Sanitary Uses	3,000	3.4	1.1	27%
Landscaping	5,000	5.6	1.9	45%
Reverse Osmosis Reject Water	3,717	4.2	4.2	100%
Temporary Construction Worker Accommodations Area	1,642	1.84		
TOTAL	**36,509**	**41**		

Note:
[1] Total reverse osmosis reject water includes reject water produced during the production of water used for dust control, concrete manufacturing, panel washing, sanitary uses, and landscaping. Therefore, the amounts listed in the table for reverse osmosis reject water include 100% of all reject water generated.

The Applicant would implement a groundwater monitoring plan to ensure that pumping does not affect other wells in the area and would develop a Water Supply Contingency Plan to install a second on-site well, if necessary. A Drought Water Management Program would also be implemented, as well as a number of other features that would minimize adverse impacts on groundwater such as using pervious or high-roughness groundcover, directing drainage to common basins, using low-water landscaping, and returning groundwater to the subsurface after dewatering. In addition, PG&E would require 16,000 gpd for dust control during reconductoring and 4.4 acre-feet for dust control during construction of the Caliente switching station.

2.1.3.4 Waste Management

Weekly garbage service from the local, permitted[4], franchised collection company would be provided for the CVSR. A signed recycling area would be established on the CVSR site and maintained in a manner to not attract sensitive wildlife. Estimated solid waste generation during the 36-month construction period is 12 CY per day, or a standard 40 CY bin every three days. Other construction waste would be handled in accordance with the 50 percent San Luis Obispo County recycling requirement by using recycling facilities of the San Luis Obispo Integrated Waste Management Authority or the licensed service provider for the unincorporated county. Approximately eight portable toilets would be maintained by a local contractor during construction.

Small quantities of hazardous materials (e.g., fuels, oils, lubricants, and solvents) would be stored in appropriate containers in a secure location. The Applicant would prepare a site-specific Spill Response Plan; Hazardous Materials Business Plan; complete SWPPP spill control and environmental training; and maintain vehicles and equipment to be free of leaks to reduce the risk of spills and accidental exposure. To avoid or reduce impacts from solid waste, the proposed action would incorporate the following features: recycle at least 50 percent of construction waste; provide documentation of recycling; obtain weekly garbage service; and prohibit standing trash piles (see Section 3.12, Public and Occupational Health and Safety, and Section 3.7, Water Resources, for additional information about these project design features).

2.1.3.5 Construction Personnel, Vehicle Trips, and Equipment

The CVSR would be constructed over 2.5 to 3 years, depending on the construction start date, Power Purchase Agreement, and electrical equipment availability (including PV panels). Workers would be grouped into three categories: SunPower management and supervisory personnel; grading, construction, and electrical contractors; and tracker assembly workers.

During a three-year (36-month) construction period, a gradual increase in the workforce leads to a range in estimates for the number of workers onsite, from a low of approximately 111 workers in the early months to a high of 353 workers. The average number of workers onsite during a 36-month construction period would be 214. Unplanned occurrences may lead to short-term increases in employee numbers, which would occur infrequently, and may be as high as 500 workers to get construction back on schedule. If the construction period was compressed from 36 to 30 months, the average number of workers onsite would be 257, with a high of 424. Table 2-5 represents the estimated on-site construction workforce for each six-month period based on the 36-month construction plan.

[4] Solid waste collection permits are issued by San Luis Obispo County Department of Environmental Services.

Table 2-5. Estimated Construction Workforce by Period

Six-Month Construction Period	Total On-Site Workers
Months 1-6	111
Months 7-12	111
Months 13-18	157
Months 19-24	157
Months 25-30	353
Months 31-36	353

Source: SLO County 2011a.

On-site job hours would normally be from 7:00 a.m. to 6:00 p.m. During installation, workers would be onsite in three shift schedules: 7:00 a.m. to 4:00 p.m., 8:00 a.m. to 5:00 p.m., and 9:00 a.m. to 6:00 p.m., five days a week, year-round, except for standard U.S. holidays. If construction work is required on Saturdays or Sundays, it would be between 8:00 a.m. and 5:00 p.m. Due to extreme weather in the summer months (June 1 through September 30), the construction crews may shift hours to start as early as 5:00 a.m. and end as late as 9:00 p.m., which would allow for work during cooler hours of the day. Noise from any construction activities occurring between 5:00 a.m. and 7:00 a.m. would not exceed 45 dBA (A-weighted sound level) at the perimeter property boundaries. Security personnel would be onsite around the clock in 8-hour shifts for every day during installation.

Construction-related traffic would include an estimated 656 daily trips for construction workers in personal vehicles during peak construction (two trips/worker/day) and 320 trips during non-peak periods. Adjusting traffic estimates for an average of 214 workers per day, there would be 320 automobile trips per day. To reduce traffic in the area, the Applicant would ensure that 75 percent of workers originating in the San Luis Obispo and Paso Robles–Atascadero areas would reach the project site other than in a single-occupant motor vehicle (e.g., on the bus/shuttle, in a carpool, or do not commute to the site due to temporary residency at the onsite Temporary Construction Worker Accommodations Area). Bus trips would average ten trips per day during peak construction and four trips per day during non-peak periods. A list of construction equipment expected to be used for the CVSR site is summarized in Table 2-6.

Reconductoring work, including tower replacement and modification, would be primarily completed by PG&E employees. Some work would be contracted out, including helicopter and crane operations, foundation construction, specialty transport, grading, and earthwork. Reconductoring would involve a maximum of 50 workers, which would involve multiple five-person crews working at various points along the approximately 35-mile segment. Table 2-7 summarizes the equipment required for the construction of access roads, laydown areas, landing zones, and the replacement or removal of towers required for reconductoring and construction of the Caliente Switching Station.

2.1.3.6 Truck Route

For the CVSR site, most deliveries of supplies and equipment would be from the south; therefore, the most direct route would be Interstate 5 (I-5) northbound to SR-58 westbound. A small percentage of trucks may come from the north via I-5 southbound. The preferred route for those trucks would be I-5 southbound to SR-46 westbound to Lost Hills Road southbound to SR-33 southbound to SR-58 westbound. A smaller amount of truck traffic (5 percent) would come from U.S. 101. The preferred route for those trucks would be SR-46 eastbound to SR-33 southbound to SR-58 westbound.

Table 2-6. CVSR Construction Vehicles and Equipment

Vehicle Traffic Use	Vehicle Type	Max. Weight (pounds)	Type Tread	Quantity Onsite
Grading and travel on main roads	Scraper	77,800	Axle	3
	Motor Grader	30,000	Dual Axle	3
	Excavator – Trench	36,000	Tractor	2
	Excavator – Pier	36,000	Tractor	6
	Dozer	44,582	Tractor	2
	Dump truck	35,000	Dual Axle	2
	Pad drum vibratory roller	27,340	Dual Axle	2
Between tracker rows	4,000-gallon water truck	53,220	Triple Axle	6
	Concrete trucks	46,000	Triple Axle	3
	Backhoe loader	13,046	Dual Axle	2
	Loaders – Bobcats	–	–	6
	Grade-all	10,000	Dual Axle	2
	Welders	–	–	10
	Trencher	5,500	Dual Axle	3
	Light-weight trucks	6,000	Dual Axle	30

Source: SLO County 2011a.

Table 2-7. Reconductoring and Switching Station Equipment and Intended Use

Equipment	Use
1/2-ton pickup trucks	Transport construction personnel
3/4-ton pickup trucks	Transport construction personnel
Crew-cab trucks (3/4 to 1 ton)	Transport construction personnel
Jeep vehicles	Construction and environmental inspectors
Road grader, six wheel	Site grading
Dozer with sheepsfoot	Grading/shaping and soil compaction/tensioning support
Front loader	Grading/shaping and soil compaction
Paddle wheel earthmover	Grading/shaping
Powered road roller	Subgrade compaction
AVS mower	Vegetation clearing
Water trucks	Dust and fire control
Cranes	Tower installation and reconductoring (one at each end)
2-ton flat bed trucks	Haul materials
Flat-bed boom truck	Haul and unload materials
Dump trucks (5- to 10-ton)	Haul spoil and import materials
Construction trucks and trailers (2- to 60-ton)	Haul materials
Tiltbed and lowboy trailers	Haul equipment
Rigging truck	Haul tools and equipment
Mechanic truck	Service and repair equipment
Shop vans	Store tools
Crawler-mounted auger	Excavate foundations

Table 2-7. Reconductoring and Switching Station Equipment and Intended Use

Equipment	Use
D6 and D8 bulldozer	Site grading and excavation
Puller (semi-truck and trailer)	Pull conductor wire
Tensioner (semi-truck and trailer)	Pull conductor wire
Helicopters (Bell 500 Long Ranger, Bell 205 Huey, Sikorsky Skycrane)	Tower installation/transport, cage top transport/installation, personnel and material delivery
Semi with wire reel trailer	Haul wire
Air compressor	Operate air tools
Air tampers	Compact soil around foundations
Portable generators	Power tools for tower assembly
Fuel trucks	Refuel equipment (helicopters)
Aerial lift trucks	String conductor wire
Fork Lift	Manage and assemble material at laydown area.
2 large bucket trucks	Pulling sites, insulator replacement, reconductoring
Water truck	Dust control and compaction at grading locations.
2 standard line bucket trucks	Reconductoring activities
Fire Suppression Equipment	Laydown areas, landing zones

Source: PG&E 2011.

SR-58 is designated as a state truck route as well as a California Legal Advisory Route. Trucks with a kingpin-to-rear-axle distance of greater than 30 feet are advised not to travel on SR-58.[5] The advisory applies to the segment of SR-58 between SR-229 (west of the CVSR site) and SR-33 (east of the CVSR site). Trucks that exceed the kingpin-to-rear-axle distance would be escorted in groups from the east to the site starting from a designated Truck Meeting Area.

The Truck Meeting Area would be located at the Travel Centers of America truck stop in Buttonwillow, CA adjacent to the SR-58 interchange with I-5. Trucks would assemble at the Truck Meeting Area and be escorted by pilot cars westbound through the constrained segment to the CVSR site. The opposing direction of SR-58 would be closed within the Traffic Control Area so that trucks could proceed through the Traffic Control Area with no opposing traffic. The system would work in reverse for trucks leaving the CVSR site. The Traffic Control Area on SR-58 would be approximately 8.8 miles long. It would begin at a mountainous section of SR-58 located approximately 10 miles west of the intersection of SR-58 and SR-33. It would end approximately 3 miles east of the CVSR site entrance.

For the reconductoring of the Morro Bay–Midway transmission line, most workers would be expected to travel to the transmission line region via eastbound and westbound SR-58, and PG&E would encourage carpooling to job staging areas to the extent feasible (PG&E 2011). Daily, approximately six to eight construction-related heavy trucks (including up to two tractor-trailer units) and approximately ten medium size vehicles (assuming an average of 20 workers and up to two workers per car) would travel to each reconductoring site. Locations along the transmission line segment to be reconductored would be accessed via either SR-46 to Shell Creek Road to eastbound SR-58, SR-33 to Lokern Road, or I-5 to westbound SR-58.

[5] The kingpin-to-rear-axle distance is the length between the rear axle of the trailer and the point at which the trailer connects to the back of the semi tractor.

2.1.3.7 Operations and Maintenance

The CVSR facility's output is guaranteed for 25 years. The CVSR Project is expected to be fully operational in 2013 and would operate seven days a week during daylight hours. The CVSR would function automatically and require very little operational support other than 15 permanent employees performing standard preventative and correctional maintenance (such as replacement of panels or inverters), security patrols, system monitoring, and panel washing. A major focus of the operations of the CVSR would be monitoring the system's operational status, performance, and diagnostics from the main control room in the O&M building. System production forecasting and scheduling with PG&E and the California Independent System Operator would also occur in the O&M building, along with operational planning. Other operation activities would include meter reading, production reporting, and updating O&M manuals.

Operations for the reconductored transmission line would be similar to current O&M procedures.

2.1.3.8 Environmental Considerations and Other Project Design Features

To avoid or reduce environmental impacts on local residents and property owners and from emergencies during O&M, the Applicant would implement noise-reducing features and practices; limit panel washing activity noise; ensure adequate funding to offset anticipated impacts on San Luis Obispo County public service staffing; provide access and circulation for fire protection and emergencies; implement a CAL FIRE-approved Fire Safety Plan; stop work during Red Flag warning times (assisted by the National Weather Service for the CVSR Project area[6]); install fire sprinklers, a water tank, and hydrants for fire suppression; install electrical safety signage; coordinate traffic during emergencies; and designate an Emergency Response Liaison.

In addition, the Applicant would incorporate the following features to avoid or reduce impacts from wastewater, solid waste, and hazardous materials/waste during O&M: an on-site sewage disposal system and brine management system designed by a professional engineer licensed in California; an on-site septic system and leach field that would meet all specifications of the San Luis Obispo County Health Department and RWQCB; and implementation of a Hazardous Materials Business Plan, Hazardous Waste Management Plan, Site-Specific Spill Response Plan, and Spill Prevention, Control and Countermeasure Plan. The Applicant would also prohibit standing water and trash piles; obtain weekly garbage service; and maintain vehicles and equipment to be free of leaks (see Section 3.6, Geology and Soils; Section 3.7, Water Resources; and Section 3.12, Public and Occupational Health and Safety).

2.1.3.9 Security

The Applicant would provide 24-hour security and maintenance personnel at the CVSR site. Security monitoring would be performed either from the main control room or through visual inspection. Security staff would routinely inspect the site in lightweight and all-terrain vehicles, primarily along perimeter fire access roads. Day/night closed-circuit security cameras would be placed throughout the site, including motion detectors that would trigger automatic video recording and analysis and an intelligent video management system. The CVSR would also be equipped with a perimeter detection system and a perimeter position system with intelligent analytics able to distinguish between different signal events and locations.

To avoid or reduce emergencies, the Applicant would provide access and circulation for fire protection and emergencies; implement a CAL FIRE-approved Fire Safety Plan; stop work during times of high wildfire risk; install fire sprinklers, a water tank, and hydrants for fire suppression; install electrical safety signage; coordinate traffic during emergencies; and designate an Emergency Response Liaison. The Applicant would also enter into an agreement with San Luis Obispo County to ensure adequate funding to

[6] In this instance, the CVSR Project area refers to the San Luis Obispo County Interior Valleys.

offset anticipated impacts on San Luis Obispo County public service staffing (see Section 3.12, Public and Occupational Health and Safety).

2.1.3.10 Maintenance

Once installation is complete and the site is fully operational, preventative maintenance would occur every day throughout the CVSR's lifetime. Inspections, testing, maintenance, and repairs would be performed on a continual basis, with most activities occurring once per year for each tracker or major piece of equipment.

To optimize performance, the solar PV panels would be washed approximately two times per year during daytime hours. No solvents or other chemicals would be used. Panels would be sprayed with high-pressure water and agitated with a brush to loosen dust and dirt, then sprayed again to wash clean. Panel washing crews would traverse the site in a lightweight to medium-duty truck which would be fitted with the pressure washer sprayer and cleaning brush system. Panel washing activities would be short in duration in any one area on the CVSR site and noise-reducing features would be implemented to limit noise from panel washing activities (see Section 3.4, Noise). No routine O&M activities are planned to occur after dark. Specific activities for inspection and preventative maintenance include system testing; meter reading; repair and replacement of arrays, substation connections, and system components; and landscape and vegetation maintenance. The CVSR would require corrective maintenance in the form of minimal replacement of panels and equipment. Occasionally, a broken tracker or solar panel may need to be replaced. Inverters currently require replacement approximately every ten years.

The existing Morro Bay–Midway transmission line is inspected yearly, or as needed as a result of an incident or emergency. A detailed ground inspection is required every other year, with an aerial patrol required during in-between years. Equipment and methods typically used include off-road utility vehicles and walking to poles inaccessible by vehicle. Maintenance activities include ongoing and emergency repairs to facilities, structures, and access roads; replacement of facilities, structures, and roads, as needed; and vegetation management, including tree trimming and construction of firebreaks. Inspection and maintenance activities are not expected to change from current conditions.

2.1.3.11 Water Use

During operation, water would be stored in the on-site above ground water tank and would be used for consumption and washing in the O&M building and for maintenance purposes (panel washing, sanitary uses, and landscaping). No additional water would be needed for wheel or tire washing. Water for O&M activities would be supplied from the on-site well and water supply facilities previously described.

Approximately 10,989 gallons of water would be used daily during operations (Table 2-8). Table 2-8 also presents the annual water demand, in acre-feet, as well as the annual volume of "reject" water that would be produced by the reverse osmosis system (in acre-feet and as a percentage of total water demand). The panel washing demand was estimated based on a federally-funded research paper written by the University of Las Vegas for the Applicant and the DOE. The sanitary use was based on the San Luis Obispo County Planning and Building Department CEQA water demand calculation spreadsheet for commercial usages.

Table 2-8. California Valley Solar Ranch Water Usage During Operations

Operation Phase	Daily Demand (Gallons)	Annual Water Demand (Acre Feet)	Annual Reject Water Production (Acre Feet)	% of Total Reject Water[1]
Panel Washing	4,700	5.3	1.8	57%
Sanitary Uses	830	0.9	0.3	10%
Landscaping	2,732	3.1	1.0	33%
Reverse Osmosis Reject Water	2,726	3.1	3.1	100%
TOTAL	**10,989**	**12.4**		

Note:
[1] The total reverse osmosis reject water includes reject water produced during the production of water for panel washing, sanitary uses, and landscaping. Therefore, the amounts listed in the table for reverse osmosis reject water include 100% of all reject water generated during operations.

2.1.3.12 Wastewater

A septic tank and leach field would be constructed north of the O&M building within an area with at least 10 feet of engineered fill consisting of suitable soils necessary for system-appropriate percolation rates consistent with all county and RWQCB regulations. No surface discharges are proposed other than natural stormwater runoff, which would be diverted offsite in accordance with the SWPPP. Runoff patterns during operation would mimic pre-development conditions (see Section 3.12, Public and Occupational Health and Safety).

2.1.3.13 Waste Management

During operations, the Applicant would utilize domestic solid waste disposal services from the California Valley Community Service District, or self-haul appropriate items to licensed facilities. Recycled waste would be handled in accordance with the 50 percent San Luis Obispo County recycling requirement by using recycling facilities of the San Luis Obispo Integrated Waste Management Authority or the licensed service provider for the unincorporated county.

The lined evaporation ponds required for the reverse osmosis water treatment system would gradually fill with solids from the evaporation of the reject water. Periodic maintenance would include cleaning the ponds by removing and transporting the precipitated salts to a landfill and inspecting the protective lining system. Solids that accumulate in the reverse osmosis wastewater evaporation ponds would be removed and hauled to the Kettleman Hills Facility of Chemical Waste Management, Inc., in compliance with Waste Discharge Requirements to be issued by the RWQCB. It is permitted as a Class I, II, and III facility under the Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA).

Small quantities of hazardous materials, such as WD-40 and other commercially available cleaning and maintenance solutions, would be used for maintenance and stored in appropriate containers in an enclosed and secure location. Best management practices (BMPs) would be used to reduce the risk of spills and accidental exposure to materials and waste during operation activities (e.g., secondary containment for any bulk storage areas). While only limited quantities of hazardous waste materials would be generated during routine maintenance activities, they would be disposed of using licensed contractors in accordance with local, state, and federal standards (e.g., RCRA).

The proposed action would incorporate the following features to avoid or reduce impacts from solid waste and hazardous materials/waste: implement a Hazardous Materials Business Plan, Hazardous Waste Management Plan, Site-Specific Spill Response Plan, and Spill Prevention, Control and Countermeasure Plan; sample and test contaminated soil; prohibit standing water and trash piles; obtain weekly garbage

service; and maintain vehicles and equipment to be free of leaks (see Section 3.7, Water Resources, and Section 3.12, Public and Occupational Health and Safety).

2.1.4 Decommissioning

If, at the end of the 25-year energy sales contract, no contract extension is available or no other buyer of the energy emerges, the solar plant would be decommissioned and dismantled. Basic materials predominate in the CVSR design and include glass, aluminum, and steel. Much of the CVSR site (with the exception of the water tank and buildings) would be restorable. Therefore, decommissioning would first involve removing the panels for sale into a secondary solar PV panel market. Most components of a solar PV installation are easily removed and recycled. The tracker and low-impact penetrating foundation structures and mechanical assemblies are made from galvanized steel. It may not be economically feasible to recycle concrete due to low reuse value and the distance to potential markets from the site. Instead, concrete would be disposed of through local licensed contractors authorized to accept demolition debris waste. Equipment such as drive controllers, inverters, transformers, and switchgear can be either reused or their components recycled (see Section 3.12, Public and Occupational Health and Safety).

Underground conduit and wire would be removed by uncovering trenches, removing the conduit and wire, and backfilling the trenches when finished. Poured concrete pads from the O&M building and from the inverter and other equipment foundations would be removed for recycling or used as clean fill. Appropriate erosion control measures would be utilized throughout the decommissioning process, and a revegetation plan would be implemented to repair any temporary disturbance from decommissioning activities. This would be very similar to the detailed revegetation plan previously described, which would be implemented to repair temporary disturbance from construction and installation.

At the appropriate time, a demolition permit would be required for decommissioning, which would be subject to environmental review. In addition, prior to decommissioning, the Applicant would present the decommissioning plan to the relevant environmental permitting agencies for review. Advance notice of decommissioning activities would be given to land owners and residents, and noise-reducing practices would be implemented (see Section 3.1, Land Use and Visual Resources, and Section 3.4, Noise).

2.1.5 Twisselman Aggregate Mine (Connected Action)

Establishment of the Twisselman aggregate mine is not considered part of the proposed action for the purposes of this EA; however, information is presented throughout this document in the context of its being a connected action. The Twisselman aggregate mine is an existing approximately 10-acre borrow pit on a 160-acre site located northwest of the proposed Caliente switching station. Currently, the mine is primarily used as a borrow pit for the adjacent Twisselman Ranch holdings. The mine is owned by the Twisselman family and is under lease option by the Applicant. As part of the connected action, the borrow pit would be expanded to an approximately 24-acre surface mine, and would produce up to 100,000 tons per year of aggregate material over an approximately 30-year period. Aggregate base materials would be extracted from the Twisselman aggregate mine for CVSR Project road construction as well as other projects. The material would be transported via truck to the CVSR site. Use of the Twisselman aggregate mine would require the construction of new roadway improvements from the Caliente switching station northwest to the surface mine location; however, use of public roadways (e.g., SR-58) would be minimized. There would be no new buildings, paving, or landscaping associated with the mine's development.

The Twisselman aggregate mine would be operated on an intermittent basis. The mine has a projected total resource capacity of 1,338,000 CY, gross. Depending on demand, the mine would yield approximately 35,000 to 80,000 CY (100,000 tons) per year of siltstone and sandstone. Material considered unsuitable for production would be stockpiled onsite and later used for reclamation. The mine area would be used for processing, staging, and stockpiling of suitable construction aggregate material;

stockpiling of topsoil for future reclamation; and placement area for unsuitable material and sedimentation basins for treatment of surface water runoff.

It is estimated that the CVSR Project and Topaz Solar Farm Project would each generate 40 roundtrips per day from this mine for a total of 160 one-way trips per day. Future non-project construction use of the Twisselman aggregate mine would generate additional truck traffic on SR-58 and other local roadways. It is estimated that up to 12 loads per day (24 one-way trips per day) would be the maximum truck traffic associated with the surface mine during its remaining 30-year life.

2.1.5.1 Environmental Considerations and Other Project Design Features

To avoid or reduce impacts from reactivation of the Twisselman aggregate mine, the Applicant would reduce equipment emissions (NO_X, reactive organic gas, diesel particulate matter); implement a Dust Control Plan; protect stockpiles from wind erosion; position stockpiles to minimize impacts on sensitive species; implement a Groundwater Monitoring and Reporting Plan; install a settling pond to contain runoff during wet-season work; and enter into a roadway repair agreement with the San Luis Obispo County Public Works Department (see Section 3.3, Transportation; Section 3.5, Air Quality; Section 3.6, Geology and Soils; and Section 3.7, Water Resources). A complete listing of project design features and procedures for establishment of the Twisselman aggregate mine is presented in Appendix B.

2.1.5.2 Dust Control for Mine Operations

Although water would not be used for mining procedures or aggregate processing, two existing wells on the Twisselman aggregate mine property, in addition to the newly constructed well on the CVSR site, would be available to water access roads during the life of the mine. To minimize the need for watering during the construction period (Phase 1), soil binders may be applied along the access road from the mine to SR-58, as necessary. Binding agents would be selected from San Luis Obispo Air Pollution Control District's list of approved soil binding agents.

After completion of construction, access roads would be watered, as necessary, in order to comply with San Luis Obispo APCD dust control requirements. The volume of water used would depend on the level of operations, weather conditions, and soil moisture levels, but could range up to two 5,000-gallon water truckloads per day, with an average usage of less than 5,000 gpd. No water would be used for mining or aggregate processing, and the Applicant would implement a Dust Control Plan and protect stockpiles from wind erosion (see Section 3.5, Air Quality).

2.1.5.3 Mine Drainage and Erosion

The establishment of the Twisselman aggregate mine has been designed to reduce the potential for surface water entering the disturbed area, and no quarry dewatering has been proposed. On-site drainage would be retained in two settling ponds, with a minimum retention time of 48 hours for a 1-hour/25-year event and at least adequate capacity for a 1-hour/20-year event. Erosion or runoff control measures would be implemented near processing facilities to prevent sediment escape. The Twisselman aggregate mine was originally designed to avoid the need for redirection of existing streams; runoff would be redirected around the quarry in engineered swales and culverts under roadways to downstream sedimentation ponds. As such, drainage patterns during development and use of the mine would be designed to mimic pre-development run-off patterns to the maximum extent feasible. In addition, the Applicant would implement a Groundwater Monitoring and Reporting Plan (see Section 3.7, Water Resources).

2.1.5.4 Mine Wastewater and Solid Waste

A portable toilet would be located at the site for employees stationed at the Twisselman aggregate mine during major production periods. Solid waste would be removed on a regular basis by the operator. A metal trash bin would be available at the site for solid waste storage. No water storage tanks or other storage buildings would be located onsite. Establishment and operation of the Twisselman aggregate mine

would not involve wastewater discharges. In addition, any hazardous waste generated would be disposed of by licensed contractors in accordance with state and federal requirements (e.g., RCRA).

2.1.5.5 Mine Site Security and Fencing

The Twisselman aggregate mine is located behind a locked gate and within remote fenced ranchland, and mine security would be maintained by the mine operator. No electricity would be provided at the site; thus, no night lighting is proposed.

2.1.5.6 Mine Reclamation

Twisselman aggregate mine reclamation is regulated under SMARA, which requires mines to be reclaimed to a usable condition that is readily adaptable for a productive alternative land use that creates no danger to public health or safety. A Reclamation Plan has been submitted by the Applicant as agent for Twisselman as part of the connected action in compliance with SMARA regulations.

The reclaimed mine area would be covered with topsoil and revegetated with native vegetation. It is expected that the reclaimed land would be used for grazing. However, if mining is proposed on the subject site in the future, the topsoil would need to be removed and stockpiled prior to extracting material suitable for production of construction aggregates.

2.2 Alternatives Considered but Eliminated

2.2.1 Alternative Sites Considered by SunPower

As part of the analysis conducted for the EIR, the Applicant considered several alternative sites comparable to the proposed CVSR site in terms of size, land characteristics, and proximity to transmission infrastructure. None of the sites proved superior to the proposed CVSR Project site in terms of the avoidance of environmental effects and the full utilization of solar resources. Some sites offered strong potential for high solar energy generation, but contain important biological habitat and visual resources that could be significantly impacted by site development. Other sites would result in biological and visual impacts similar to the proposed action, or result in slightly greater visual impacts and somewhat reduced biological impacts compared to the proposed action. Another site could interfere with the same migration corridors as would the proposed site, but would likely pose significant visual impacts, as well. The following additional off-site alternatives were considered:

1. The Applicant considered an alternative site located on Cymric Road in McKittick, California, within adjacent Kern County. This region contains a disturbed site on property used for oil development. This alternative was deemed to be infeasible for development due to the lack of available land in the amount of acreage needed to satisfy the requirements of the Power Purchase Agreement (PPA) for the CVSR Project and the substandard insolation value of the site for PV energy production.
2. The Applicant considered several alternative sites located within the boundaries of the Westlands Water District in Kern, King, and Fresno counties, near the Mendota and Henrietta substations. Lands in these locations were deemed infeasible as alternatives for the CVSR Project due to the lack of available transmission capacity and the inability to develop such capacity within the term of the existing PPA or in the foreseeable future. In addition, these sites were rejected due to their status as protected agricultural lands under binding contracts with the State of California to remain in active production under the California Land Conservation Act of 1965 (Williamson Act). Removal of these contracts to assemble a comparable site for the CVSR would require a minimum of 10 years. These lands were further rejected due to the substantially reduced insolation values for production of solar energy pursuant to the PPA with PG&E.

2.2.2 Alternative Operating Parameters for the Proposed Action

Alternative solar thermal technologies were also considered by the Applicant. Similar to the solar technology included in the proposed action, these technologies would not generate air emissions, but would vary in water use requirements. The alternative solar thermal technologies considered would also have similar or greater land requirements than the proposed CVSR Project and, therefore, would not have resulted in reduced impacts associated with extensive land use.

PV solar panels mounted on SunPower T20 Tracker units were originally considered for the CVSR Project. However, the SunPower T0 tracking system was chosen over the T20 tracking system to further avoid protected habitats, reduce the use of concrete, reduce the overall footprint of the CVSR site, and allow additional areas to be set aside for conservation. SunPower's T0 tracking system would:

- Reduce loss of the proposed CVSR site's most sensitive habitat based on the biological survey results (i.e., habitat for the giant kangaroo rat and the San Joaquin kit fox);
- Reduce CVSR visibility from SR-58; and
- Allow panels to be located at a greater distance from site boundaries and nearby residences when compared to the T20 tracking system.

With respect to alternative electricity generation technologies, no other generation source installed within the Carrizo Plain could offer equivalent environmental protection qualities and energy production efficiencies as the proposed CVSR. Rooftop PV, for instance, could minimize land requirements. However, the combined rooftop PV potential in San Luis Obispo and Kern counties in the year 2016 would be less than half the generation potential of the proposed CVSR Project. Other generation technologies (wind, geothermal, biomass, tidal, wave, natural gas, and nuclear) were also examined as possible alternatives to the CVSR Project. Geothermal, tidal, and wave alternatives are not applicable to the Carrizo Plain. Wind power is not considered a feasible alternative, as the Carrizo Plain is not identified as a productive area for development of commercial wind power. Biomass would not be practical due to the need to transport biomass fuels from outside the area, which would create significant and long-term traffic impacts. A natural gas plant would contribute to GHG emissions and would not meet the CVSR Project's renewable energy generation objective. Finally, construction of new nuclear power plants is currently prohibited under California law.

2.2.3 Other Major Project Alternatives Relevant to Environmental Concerns

2.2.3.1 Reconductoring Alternatives

The Applicant's purpose of the proposed action is to deliver solar energy that maximizes existing infrastructure and relies on highly efficient, proven technology to realize county and state energy goals for renewable energy (SLO County 2011a). In addition, PG&E and the Applicant announced that all of the energy generated by the 250-MW CVSR Project would be sold under contract to PG&E in support of its requirement to meet California's Renewables Portfolio Standard of 20 percent renewable energy delivery by 2010 (Senate Bill [SB] 1078) and to help achieve California's goal of 33 percent renewable energy delivery by 2020 (Executive Order S-14-08). On March 29, 2011, the California legislature amended the state's existing Renewables Portfolio Standard to call for 33% renewable energy by 2020, and on April 12, 2011, Senate Bill X1 2 was signed into law by Governor Brown.

The 250 MW of power generated at the CVSR site must be conveyed to the energy grid. As an alternative to reconductoring the existing 230-kV transmission line, PG&E considered construction and operation of a new 230-kV transmission line, within a new ROW, to transport power from the CVSR site. The new 230-kV transmission line alternative was eliminated from detailed consideration because it would result in adverse environmental effects that would be avoided by the proposed reconductoring. In addition, a new transmission line would not meet the objectives of the CVSR Project to maximize the use of existing infrastructure.

2.2.3.2 Alternative Caliente Switching Station Sites

The proposed Caliente switching station would be located south of the existing PG&E 230-kV and 115-kV transmission corridor and would loop into both circuits of the Morro Bay–Midway 230-kV double-circuit transmission line. The switching station would be designed and constructed by PG&E. It would be based on their current standards and specifications, which meet or exceed generally accepted industry practices. The fenced switching station area would be approximately 430 feet by 478 feet, subject to final siting and engineering. It would be surfaced with a combination of concrete pads, compacted road base for internal access roads, and compacted earth. PG&E would install night lighting at the switching station for security purposes. PG&E would own and operate the permanent switching station, which would be located on a separate parcel. The switching station parcel would be created through a separate process with San Luis Obispo County.

The area of interconnection between the CVSR Project and the Morro Bay–Midway transmission line is within and adjacent to the San Andreas Fault zone. In order to avoid active fault traces, PG&E and the Applicant evaluated six alternative sites for the Caliente switching station. The six sites are generally characterized as follows:

- Site 1 (the originally proposed switching station) is adjacent to the east side of the Alquist-Priolo Fault Hazard Zone for the San Andreas Fault on relatively flat land. Of the six sites, Site 1 is nearest the hazard zone, Site 2 is approximately 600 feet from the hazard zone, and Sites 3 through 6 are 1,000 or more feet from the hazard zone.
- Sites 1, 2, and 3 are located east of the fault zone and Sites 4, 5, and 6 are located west of the zone.
- Sites 1 and 2 are at a similar elevation (approximately 200 feet higher than Sites 4, 5, and 6).
- Site 3 is located on a sloping site on a hill east of the other sites and is located between the existing 230-kV and 115-kV transmission lines, approximately 2,500 feet from the eastern boundary of the Alquist-Priolo Fault Hazard Zone for the San Andreas Fault.
- Sites 4, 5, and 6 are at approximately the same elevation and are nearly adjacent to each other.

The preferred location for the Caliente switching station is Site 3. Caliente switching station Sites 1, 2, 4, 5 and 6 were eliminated from consideration because Site 3 is located furthest from the San Andreas Fault.

2.3 No Action Alternative

DOE's regulations implementing NEPA require inclusion of a no action alternative in an EA. Under the no action alternative, DOE would not issue a loan guarantee for the proposed action. While it is possible that the proposed action could be built without DOE's support, the Applicant would have greater difficulty obtaining financing, which may result in delays, construction in smaller phases over a longer time period, or the CVSR Project not being built. Although the Applicant may still pursue the proposed action without the loan guarantee, for purposes of this NEPA analysis, it is assumed that the proposed CVSR Project would not be built if it does not receive a loan guarantee from DOE. If the CVSR Project is not built, the environmental effects discussed in Chapter 3 of this EA would not occur. Consequently, if the CVSR Project were not built, the potential environmental benefits from the CVSR Project would also not occur, such as the generation of renewable energy that could offset 255,600 to 333,558 metric tons of CO_2e per year.

The decision for DOE consideration covered by this NEPA review is whether to approve the loan guarantee for the proposed action. As detailed above, alternative locations for the solar generating facility and the Caliente switching station, alternative solar technologies, and reconductoring alternatives were explored and eliminated by the Applicant because they either did not meet the siting criteria of the CVSR Project, would result in greater or similar environmental effects, or would not achieve the objectives of the proposed action. In addition, considering the size of the CVSR Project, the DOE loan guarantee is likely the only viable option for obtaining project financing for a project of this scale utilizing the latest PV technology. Therefore, this NEPA review considers only the proposed action and the no action alternative, and does not consider alternative sites or other methods of financing.

3 Affected Environment and Environmental Consequences

This chapter describes the affected environment and potential environmental effects that could result from implementing the proposed and connected action and the no action alternative. The affected environment is the physical area that bounds the environmental, sociological, economic, or cultural features of interest that could be affected by the proposed or connected action or the no action alternative. When preparing this EA, the best available information was used to describe the existing environment and the Applicant's proposed action. This information serves as a baseline from which to identify and evaluate environmental changes resulting from all alternatives.

As explained in Chapter 1 of this EA (Section 1.2), San Luis Obispo County prepared a Final EIR for the CVSR CUP and Twisselman aggregate mine CUP/Reclamation Plan (DRC2008-00097, DRC2009-00004) pursuant to the California Environmental Quality Act (CEQA), which was issued on January 5, 2011. The San Luis Obispo Planning Commission certified the Final EIR and approved the CVSR CUP on February 24, 2011. This decision was upheld by the Board of Supervisors on April 19, 2011. The Planning Commission approved the Twisselman Aggregate Mine CUP/Reclamation Plan on May 26, 2011. CEQA requires a lead agency (in this case, the County of San Luis Obispo) to identify the criteria used to determine the significance of potential project-related impacts. A significant impact is defined by CEQA as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. In comparison, NEPA defines significance as effects or issues of sufficient context and intensity that an EIS is required.

In the Final EIR, the County analyzed the CVSR Project based on CEQA significance criteria and analysis methodology. Using the CEQA significance criteria and methodology, the County identified significant impacts to several environmental resources that could not be mitigated to a level that is less than significant for County purposes. These impacts are referred to in the CVSR Final EIR as Class I impacts. Specifically, the Final EIR concluded that the CVSR Project would result in Class I impacts on aesthetics, agriculture, transportation and circulation, and noise. However, because of the differences in the proposed project at the DOE stage and between San Luis Obispo County's and DOE's impact evaluation criteria, the impacts of the project are different when evaluated under NEPA.

DOE has carefully analyzed all resource areas that would be impacted by the CVSR Project and connected action in order to determine if any of those impacts would be significant according to NEPA. Because of the procedural and definitional differences between CEQA and NEPA, the characterization of impacts may differ between the EA and the Final EIR. Differences in the NEPA evaluation criteria, methodology, and impact conclusions are presented in detail in Section 3.1, Land Use and Visual Resources, Section 3.2, Agricultural Resources, Section 3.3, Transportation, and Section 3.4, Noise, of this EA.

Terminology

The CVSR Project includes both the construction, operation, maintenance, and decommissioning of the CVSR and the reconductoring of the PG&E 230-kV Morro Bay–Midway transmission line. However, when this document discusses the CVSR, without specifying the CVSR Project, the analysis includes only the solar arrays, gathering power lines, the CVSR substation, access roads, buildings, water treatment plant and evaporation ponds, viewing summit, O&M building, and other components located on

the CVSR site. The CVSR also includes the interconnection line, which would transmit the electrical power generated from the CVSR to the Morro Bay–Midway transmission line.

When this document discusses the reconductoring of the Morro Bay–Midway transmission line, the analysis includes equipment upgrades to existing infrastructure within the currently developed transmission line ROW owned by PG&E, such as the replacement of old conductors with new conductors, the replacement of two transmission line towers, the reinforcement of foundations and increased height of several towers, and the modification of current access roads, among other improvements. Reconductoring of the Morro Bay–Midway transmission line also includes the construction of the Caliente switching station and two new towers to connect the Caliente switching station to the transmission line.

The following terms are also used throughout this EA:

1. **Project Perimeter:** The project perimeter refers to the outline of all geographic areas included in the proposed action and connected action (the Twisselman aggregate mine), whether disturbed or not, including all land purchased for project.
2. **Project Vicinity:** The project vicinity refers to the project perimeter and the general area around the project perimeter (i.e., the greater project area).
3. **Project Footprint:** The project footprint includes all areas that would be affected by the CVSR Project. For example, the project footprint includes the larger temporary construction footprint and the smaller permanent footprint. Specific arrays are shown within the project footprint. Conservation areas are within the project perimeter but not within the project footprint.

3.1 Land Use and Visual Resources

3.1.1 Regulatory Framework

3.1.1.1 Federal

Surface Mining and Reclamation Act

The SMARA provides procedures and requirements for surface mining on private lands to ensure environmental protection, the reclamation of mined lands, and minimization of potential public health and safety hazards due to mining operations. The SMARA is implemented by the California Department of Conservation, Office of Mine Reclamation, and applies to the reactivation of the Twisselman aggregate mine and the closure of the on-site gypsum mines.

No additional federal land use or visual plans or regulations, including regulations to protect visual resources, apply to the proposed CVSR Project. The CVSR site is located approximately 2 miles from the Carrizo Plain National Monument, but it is not located within the boundaries of either the existing Carrizo Plain Natural Area Plan (BLM 1996) or the Carrizo Plain National Monument Proposed Resource Management Plan (BLM 2009).

The existing Morro Bay–Midway transmission line passes through the BLM-managed Lokern Area of Critical Environmental Concern (ACEC) in Kern County. PG&E is an authorized user of the ROW through the ACEC, and all reconductoring work would comply with the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan. Further information on the Lokern ACEC is provided in Section 3.8, Biological Resources.

3.1.1.2 State

California Public Utilities Commission

Pursuant to Article XII of the Constitution of the State of California, the CPUC is charged with the regulation of investor-owned public utilities. Under the CPUC's GO Number 131-D, no local discretionary permits (e.g., land use permits) are required for reconductoring the Morro Bay–Midway transmission line because the CPUC has preemptive jurisdiction over public utilities in California. However, PG&E would be required to obtain all necessary building and encroachment permits from local (County and incorporated cities) jurisdictions, and the CPUC would ensure that the reconductoring complies with local regulations to the greatest degree feasible to minimize conflicts with local conditions.

No other State of California land use or visual plans or regulations, including regulations to protect visual resources, apply to the proposed CVSR Project.

3.1.1.3 Local

San Luis Obispo County

Most long-term planning goals and policies for San Luis Obispo County are outlined in the San Luis Obispo County General Plan (adopted in 1980 and revised in 2010), which comprises twelve separate elements. Planning for specific areas is also accomplished through numerous area plans, design plans, and specific plans as well as zoning ordinances and regulations, which establish development standards in keeping with the goals and policies of the General Plan. The Agriculture, Land Use and Circulation, Conservation and Open Space Element of the General Plan contains goals, policies, ordinances, or regulations that are applicable to the proposed action. In addition, the Land Use Ordinance (Title 22 of the County Code, adopted in 1980 and revised in 2008), which implements the goals and policies of the San Luis Obispo General Plan (SLO County 2010c), is applicable to the proposed action.

Kern County

No Kern County land use plans or policies apply to the part of the reconductoring of the Morro Bay–Midway transmission line that would occur within Kern County. As noted in Section 3.1.1.2, PG&E would be required to obtain all necessary building and encroachment permits from local jurisdictions.

3.1.2 Affected Environment

3.1.2.1 Land Use

At a regional scale, the CVSR is located along the eastern boundary of San Luis Obispo County within the northern Carrizo region in eastern San Luis Obispo County. The CVSR would be located on approximately 4,700 acres of agricultural grazing land. The site has a range of nearly level to steeply sloping topography, and the vegetative cover is characterized as dry grassland. The existing uses at the CVSR site include cattle grazing, with an abandoned single-family residence and two idle gypsum mines. The CVSR site has been historically used for dry land farming. The California Valley residential subdivision, which is comprised of approximately 7,200 2.5-acre parcels, is located immediately south of the proposed CVSR site (Figure 2-1). The subdivision was created in 1960; however, most parcels have remained undeveloped since that time. The CVSR site is bordered on the north and west by agricultural land primarily used for grazing. The Temblor Mountain Range is to the east and SR-58 bisects the site. Other land uses within one mile of the project perimeter include rural residential homes.

All property within the project perimeter is designated in the San Luis Obispo County General Plan as Agriculture (AG), as is property to the north, east, and west. Within the AG designation, electrical energy production is an allowable use with issuance of a Minor Use Permit or CUP. The area south of the CVSR site, within the California Valley subdivision, is designated Residential Suburban.

The approximately 35-mile segment of the Morro Bay–Midway transmission line to be reconductored begins at the proposed Topaz Solar Farm site, located about 6 miles west of the CVSR site in San Luis Obispo County. The transmission line crosses the Temblor Range into Kern County, and ends at the existing Midway substation in Buttonwillow (Figure 2-1). Reconductoring would occur within PG&E's existing ROW, which passes through the BLM-managed Lokern ACEC in Kern County. PG&E is an authorized user of the ROW through the ACEC. The proposed Caliente switching station would be located on land that is zoned AG.

The area surrounding the Morro Bay–Midway transmission line corridor is primarily undeveloped along the westernmost 30 miles of the route. Two residential structures are located near the Morro Bay–Midway transmission line that would be reconductored, the closest of which is approximately 325 feet from the ROW. Petroleum settling ponds associated with active petroleum extraction activities are located directly adjacent to and south of the ROW from MP 22 to MP 24. Active grazing and dry land grain agricultural operations occur within and adjacent to the ROW west of MP 2.7, and irrigated crop production occurs east of MP 30.8. Existing land uses along the 35-mile transmission line segment are shown in Table 3.1-1 and are identified by milepost.

Table 3.1-1. Existing Land Uses Along PG&E Transmission Right-of-Way

Location	Jurisdiction(s)	Land Use Classifications	Specific Land Uses
MP 2.7	County of San Luis Obispo	Agriculture, Public Facilities and Utilities	Tracy Lane, Grazing, Dryland Grain Production, Soda Lake Road, Unnamed Drainages
MP 2.7 – 10.3	County of San Luis Obispo	Agriculture	Grazing, Unnamed Drainages
MP 10.3 – 21.7	County of Kern	Agriculture	Grazing, Salt Creek, Lost Hills Road, Petroleum Pipeline, Temblor Creek, Unnamed Drainages
MP 21.7 – 22.8	County of Kern, Caltrans (SR-33)	Agriculture, Public Facilities and Utilities	Grazing, SR-33, Lost Hills Road, Natural Gas Pipeline
MP 22.8 – 30.8	County of Kern, Caltrans (SR-58)	Agriculture, Public Facilities and Utilities	Grazing, Crop Production, SR-58, Petroleum Settling Ponds and Pipelines, Natural Gas Pipeline, California Aqueduct, Unnamed Drainages
MP 30.8 – 35.0	County of Kern, Caltrans (SR-58)	Agriculture, Public Facilities and Utilities	Crop Production, West Side Canal[1], Unnamed Canals, Elk Grove Road, Unnamed Road, Palomas Road, Buttonwillow Drive, Mirasol Avenue, Southern Pacific Railroad, SR-58, Midway substation, Individual Residences

Source: SLO County 2011b.
Note:
[1] Kern River Flood Canal.

3.1.2.2 Visual Resources

The physical setting for the proposed action is described above; this section describes the potential viewer groups and their sensitivity. No designated scenic vistas or areas are located on or adjacent to the CVSR site. The proposed action would not be located within viewsheds of any designated scenic highways or recreation areas.

Potential viewer groups and their sensitivity are described below. Viewer sensitivity considers a number of factors including the number of users, duration of views, angle of views, and viewer expectation. Viewer expectation considers, among other factors, viewer activity and any scenic designations or

protections. Viewer groups are also described in terms of their distance from the proposed action, and closer views are typically considered more sensitive. The distance zones discussed below include foreground (less than 0.5 mile), middleground (0.5 mile to 5.0 miles), and background (greater than 5.0 miles).

Carrizo Plain National Monument

The Carrizo Plain National Monument comprises 250,000 acres of land set aside for the purpose of preserving and restoring the largest undeveloped part of the San Joaquin Valley. The CVSR would be 2 miles north of the monument at its closest point and the PG&E transmission line is 5 miles from the monument at its closest point (Figure 2-1); viewing locations from 0.5 to 5 miles are considered to be within the middleground distance zone, and locations beyond 5 miles are considered to be within the background distance zone. The Carrizo Plain National Monument serves as a refuge for a number of endangered, threatened, and/or rare animal and plant species and for recreational uses and the protection of visual resources. Because the monument is managed to protect visual resources and is largely used by recreational users who would have a high expectation of a view, public views of, and from points within, these lands are considered to be highly sensitive, although views for most users of the Carrizo Plain National Monument would most likely be infrequent and of short duration.

Soda Lake Road

Soda Lake Road is an access road to the Carrizo Plain National Monument, although this is not the primary entrance road to the monument. Motorists on Soda Lake Road may experience views of the CVSR on the way to the monument. These recreational visitors of the Carrizo Plain National Monument may have high expectations of a view; however, given the infrequency of views (as compared to other viewer groups, such as residential viewers), the short duration of views (due to speed of travel), and the oblique angle of views, this view is considered to have low sensitivity. These viewers would be located within the foreground-middleground distance zone.

Seven Mile Road

Seven Mile Road intersects SR-58 at its northeast end and extends 6.5 miles in a nearly straight line to Soda Lake Road. The few residences located along or near this road are generally widely separated from one another, although there is a group of four residences near the intersection with SR-58. This viewer group is considered to have a moderate to high level of sensitivity due to the frequency and duration of views of the CVSR site, although these would be middleground to background views.

California State Road 58

The CVSR solar arrays, interconnection line, and substation would be within the foreground of some views from SR-58. The solar facility would be set back approximately 240 feet from SR-58, and the reconductored transmission line would cross SR-58. Motorists on SR-58 are considered to have a low level of sensitivity due to the short duration of views (due to speed of travel), the oblique angle of views, and the low expectation of a view (based on the fact that the motorist would likely be focused on the activity of driving and the fact that the highway does not have any scenic designations). Because motorists would be moving relative to the CVSR, these viewers would experience foreground, middleground, and background views of the proposed action.

Morro Bay–Midway Transmission Line

The Morro Bay–Midway transmission line is an existing transmission line that crosses the Temblor Range for approximately 10 miles and traverses the San Joaquin Valley for approximately 17 miles (SLO County 2011a). The Morro Bay–Midway transmission line parallels parts of SR-58. Because the Morro Bay–Midway transmission line parallels SR-58 east of the Temblor Range, viewers of the Morro Bay–Midway transmission line reconductoring would be similar to those described above for the CVSR for the segment of the reconductoring component of the project within San Luis Obispo County. Within the

Temblor Range, the transmission line has few viewers, as the line traverses undeveloped land accessible only at certain locations by unpaved roadways. Within Kern County, the transmission line crosses primarily undeveloped land with the exception of crossing the Cymric Oil Field and SR-33 before terminating in Buttonwillow, California. Viewers of the Morro Bay–Midway transmission line within Kern County would include dispersed rural residents, workers at the Cymric Oil Field, motorists on SR-33, and residents of Buttonwillow, California.

3.1.3 Environmental Effects

3.1.3.1 Proposed Action

Land Use

Methodology

The potential effects of the proposed action on land use were evaluated to determine the proposed action's consistency with applicable land use and zoning, and whether it would be compatible with surrounding uses.

Analysis

The CVSR Project would be located in the Shandon-Carrizo Planning Area of the San Luis Obispo General Plan and within the California Valley Village Reserve Line subset of the Planning Area (SLO County 2003). The proposed action does not conflict with the property's AG land use designation/zoning because energy generation is an allowable use with a CUP from San Luis Obispo County. The proposed action would not change the zoning classification or land use designation on the site. Most of the land in the vicinity of the proposed action has been used for low-level grazing, with some areas of active farming along the existing PG&E ROW. The CVSR site contains no Prime Farmland (as designated by the NRCS), and water of appropriate quantity or quality is not available for irrigation in the area. Additional information on prime farmland is discussed within Section 3.2, Agricultural Resources.

Construction

Construction would occur over a 30 to 36 month period in three distinct phases both in terms of time (each phase would be less than a year) and location (each phase would occur in a different section of the approximately 4,700-acre CVSR site). Specifically, Phase 1 construction would occur in the northwest portion of the site. Phase 2 construction would occur in the center of the site, and Phase 3 construction would occur in the southern portion of the site.

Most of the project components, including the solar generation facility and substation, would be constructed within 1,500 acres south of SR-58. As shown in Table 2-3, approximately 30 percent of the site would be temporarily disturbed by construction of the project components, including solar arrays, the electric substation, the O&M building and the interconnection line (1,389 acres), and would be restored in accordance with the project revegetation plan to its predevelopment condition. About 2 percent of the site (104 acres) would be permanently disturbed through the placement of building foundations, solar trackers, and other permanent structures. The remaining 68 percent of the site (3,233 acres) would be left undisturbed to allow for the creation of extensive environmental preservation lands within the site. While about 30 percent of the CVSR site would be temporarily disturbed during construction, construction would be conducted in phases (e.g., by array or other CVSR component), and not all areas would be subject to disturbance at the same time.

A total of 107 acres within San Luis Obispo and Kern counties would be disturbed by the reconductoring, which includes the proposed Caliente switching station (Table 2-3). Because most of the reconductoring activities would take place within the existing PG&E ROW, permanent new land disturbance would be limited to about 8 acres at the proposed Caliente switching station.

Construction-related impacts could affect some homes due to their proximity to some of the construction areas, the operation of heavy equipment, increased construction traffic on local roads, and materials entering and exiting the work areas. These temporary construction effects, including impacts related to transportation, noise, and air quality, are discussed further in Section 3.3, Transportation, Section 3.4, Noise, and Section 3.5, Air Quality, of this EA, respectively. In order to minimize construction-related impacts on rural residences within the project vicinity, the Applicant would provide a toll-free general phone number and retain a construction liaison to respond to questions and concerns of local landowners and residents. In addition, during the construction phase of the proposed action, the Applicant would provide advance notification of construction activities and provide monthly updates to potentially affected landowners, residents, and the County of San Luis Obispo.

The only designated recreational facility within the vicinity of the proposed action is the Carrizo Plain National Monument, which is 2 miles away from the CVSR site. Construction workers would not be expected to substantially increase the use of recreational facilities at the monument above existing levels given that 85 percent of the construction workforce is anticipated to be made up of workers from within San Luis Obispo and Kern counties. Temporary lane closures along SR-58 for the transport of construction-related equipment and materials could periodically increase the length of time needed for visitors to enter or exit the CPNM. However, the increased duration of visitor vehicle trips would not occur continuously and would not be expected to substantially reduce, disrupt, or preclude CPNM access or visitation throughout most of the year. During the months of April and May, the Goodwin Education Center provides weekly guided tours at a set time on Saturdays and some additional non-specific days. As part of the Traffic Control and Management Plan that would be prepared, the Applicant would coordinate road closures on SR-58 with the Education Center staff to minimize impacts on visitors of scheduled activities. Coordination may include delaying construction times until 10 a.m. on Saturdays when tours are scheduled during April and May to ensure that visitors are not precluded from participating in the guided tours. Therefore, there would be no effect on recreation facilities.

Operation and Maintenance

The solar generation facility and associated infrastructure (including the substation and interconnection line) are compatible with continued agricultural uses on adjacent lands, which currently include limited crop production and grazing. Approximately 3,233 acres of the solar generation facility site would be preserved as open space and wildlife corridors. The Applicant would implement a controlled grazing plan to manage annual grassland fuel load and height for fire deterrence, such as having sheep and/or goats graze in the array area and removing vegetation that would otherwise increase the risk of a grass fire. Implementation of this grazing plan would enable the existing agricultural use of most of the CVSR site to continue. O&M of the reconductored Morro Bay–Midway transmission line would be similar to PG&E's current activities within this area and would result in no new land use effects with the exception of land converted to use for the Caliente switching station. This would be a minor impact and would not be significant considering that only 8 acres of permanent land disturbance would be associated with the Caliente switching station.

The CVSR would be consistent with the San Luis Obispo County General Plan and land use ordinances. The proposed action would support the goals and policies to encourage sustainable and renewable energy generation that are contained in the Energy Element of the General Plan. The proposed action would also promote the goals and policies encouraging economic development and growth because the CVSR would create both temporary construction and permanent O&M jobs. Additionally, the CVSR would be consistent with the Agriculture and Land Use elements of the San Luis Obispo County General Plan that promote the preservation and conservation of agricultural lands and land with rural character.

The CVSR would be sited on land that has been historically used for low-level grazing and is not considered Prime Farmland, Farmland of Statewide Importance, or Unique Farmland by the NRCS. Reconductoring of the Morro Bay–Midway transmission line would also be constructed in compliance with all Kern County and federal BLM land use restrictions and would be consistent with current land

uses and protective of sensitive resources. Due to the Applicant's emphasis on conservation of agricultural lands and preservation of rural character, the proposed action would also be compliant with the San Luis Obispo General Plan Conservation and Open Space Element. The CVSR is an allowed use with a CUP from San Luis Obispo County, and would not conflict with any land use plans or zoning designations; therefore, effects on land use would be negligible.

Visual Resources

Methodology

The assessment of the proposed action's impacts is based on an evaluation of the changes to the existing visual environment that would result from project construction, O&M, decommissioning, and assessed anticipated viewer response to those visual changes.

Ratings of the existing and post-project contrast, dominance, and view blockage were made on the basis of field observation, review of photographic documentation, and other project information. Visual simulations from key observation points and associated visual analysis were prepared by Lawrence Headley & Associates on behalf of the Applicant. The intensity of a visual effect is determined based on a combination of both the physical changes that would occur due to project development and anticipated viewer response to those changes. In determining the extent and implications of the visual changes, a number of factors were considered, including:

- The specific changes in the affected environment's composition and character and any outstanding valued qualities;
- The context of the affected visual environment;
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration; and
- The numbers of viewers, their activities, and the extent to which the activities are related to the visual qualities affected by proposed changes.

Glare and night-lighting impacts on potential nearby residents were also considered.

Analysis

Construction

During the construction period, construction activities and materials, equipment, trucks, and parked vehicles could be visible on the CVSR site from SR-58 and, thus, would temporarily change the existing visual environment. As described in Section 3.5, Air Quality, construction activities would be conducted in a manner that would minimize visible dust emissions. Therefore, visual changes associated with construction activities at the CVSR site would be moderate and short-term.

Reconductoring of the Morro Bay–Midway transmission line would extend 35 miles. However, construction activities would occur for only a short duration in any one location, thereby minimizing viewer exposure for the 23 or more sensitive receptors located in the Carrizo Plain and in the vicinity of the community of Buttonwillow. In addition, the Applicant has designed the proposed action such that it would minimize dust during construction by watering down construction areas and enforcing reduced vehicle speeds, thereby minimizing visual impacts associated with dust. Effects from construction activities would be temporary and minor.

Further, as discussed above, viewer sensitivity in the area is low to medium. Viewer groups include users of the Carrizo Plain National Monument, motorists on Soda Lake Road (likely traveling to the monument), motorists on Seven Mile Road, and motorists on SR-58. While viewers using the monument for recreation purposes would likely have a higher expectation of a view due to the fact that scenery

greatly enhances recreation experience, these viewers would be of a low number, would likely visit the monument infrequently, and, depending on activity, would likely have a short view duration; furthermore, these viewers would be within the middleground or background distance zones. Similarly, users of Soda Lake Road for access to the Carrizo Plain National Monument would experience infrequent and distant views of short duration. These viewers would also be moving at a higher rate of speed and would be viewing the monument at an angle. Users of Seven Mile Road, which primarily comprises local residents, would have more frequent views of the proposed action, but these views would be within the middleground to background distance zones and there would be a limited number of viewers. Motorists on SR-58 would be traveling at a high rate of speed and, therefore, would have short viewing durations. Additionally, these motorists would view the project at an angle which would minimize its effect on views. Because motorists would be focused on the activity of driving and because SR-58 does not have a scenic designation or scenic eligibility, these viewers would also have a low expectation for a view.

Due to the low level of contrast that would be introduced by construction activities, the low to medium viewer sensitivity as discussed previously, and the temporary nature of the construction activities, effects from construction would be minor.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that the construction activity at the generating facility site would be a significant aesthetic impact that could not be mitigated to a less than significant level. However, the Final EIR analysis did not take into account the fact that construction activities would be taking place at different locations on the site at different times during the 36-month construction period. Because construction would occur in three distinct phases and locations throughout the CVSR site (i.e., not all areas would be subject to disturbance at the same time), this reduces the overall intensity of the visual impact of construction.

Further, the analysis in the Final EIR did not take into account the low to medium sensitivity of viewer groups and the distance of each viewer group from the project area. This EA analyzed the visual effect as a combination of not only the physical changes that would be introduced by a project but also the anticipated impacts on individual viewers, consistent with the industry-standard U.S. Department of Transportation Federal Highway Administration methodology. This methodology was used both because it is a common approach for assessing visual impacts under NEPA and is applicable to this project because viewer groups generally comprise motorists on SR-58 and on local roads used by nearby residents and visitors to the CPNM. Assessing the anticipated impact on viewer groups results in a lessened intensity of effect when compared to the EIR because, while the physical contrast introduced by the project is considered the same in both documents, the EA considers viewer exposure and sensitivity, which includes the duration of views, the angle of observation, the frequency of views, expectation of views based on activity, distance, and other factors.

For motorists who would have the closest views of the project and views of the project from higher elevations along Soda Lake Road, duration of views would be shorter due to the speed of travel. Views would also be restricted due to focus on the activity of driving, and motorists would have a lower expectation of a view than viewers engaging in activities that are greatly enhanced by the visual experience such as recreationists. Viewers with more frequent, longer, or more sensitive views such as residents and recreationists would be further from the project, and distance would lessen the impact on those viewers. Because this analysis takes into consideration both the physical contrast that would be introduced by the project and its anticipated impacts on viewer groups, the visual effect would not have the same intensity as portrayed in the Final EIR.

Operation and Maintenance

The Applicant has utilized numerous siting and design features to reduce potential impacts to the visual setting. While the CVSR would alter the appearance of the property, the PV array layout is designed to conform to the site topography and to retain several open corridors along drainages. The dominant appearance of the solar arrays would be consistent, uniform, and low-profile, which is more consistent

with agricultural features such as vineyards, orchards, row crops, frost canopies, or similar repetitive features, than with a major power plant or other industrial installation.

Other specific design features that have been incorporated into the CVSR Project to reduce visual intrusiveness include:

- Preservation of adjacent lands for agricultural and conservation purposes, retaining the natural landscape along the north side of SR-58, including the backdrop of the Temblor Range;
- Increased setbacks for all solar arrays from SR-58 to a minimum of 500 and 1,000 feet to the substation structure (Figure 2-2);
- Undergrounding 3 miles of 34.5 kV medium-voltage transmission lines throughout the CVSR site; within 3,000 feet south and 1,500 feet north of SR 58 where not already shielded from view by topography 6,000 linear feet of which is within 500 feet of SR-58;
- Undergrounding additional segments of medium-voltage lines and rerouting aboveground medium-voltage lines such that the nearest aboveground pole is approximately 3,000 feet from SR-58;
- Rerouting the aboveground medium-voltage lines such that the nearest aboveground pole is 3,000 feet from SR-58 (Figure 2-2);
- Reduction in the total number of aboveground medium-voltage poles to 200;
- Development of a visual screening program to screen views of the project occupied residences within one mile of the project boundary. This program will include installation of plants at targeted locations to screen views of the substation from SR-58 and to screen the O&M building. The tree plantings are intended to be reminiscent of hedgerow plantings around farm buildings in agricultural areas;
- Signs, monuments, walls, and other structures designed to blend into the natural environment or reflect the area's ranching background. The color pallets of the structures would be in natural tones consistent with the surrounding landscape;
- Use of Corten steel poles for the interconnection line, which appear similar to wooden poles and mimic the lines and colors visible in the existing environment;
- Installation of a water tank into the hillside; and
- Use of the minimum necessary nighttime lighting for security purposes, designed to eliminate glare or spillover to areas outside the CVSR site.

In addition, one outdoor viewing summit would be constructed to offer visitors views of the CVSR site's arrays. Access to the viewing area would be via compacted and stabilized, decomposed, granite hiking trails that would be colored to match the surrounding landscape.

After project development, when viewed from eye level, the solar field would be relatively unobtrusive due to its low-profile design and the fact that topography would obscure views from some viewing locations. From elevated locations, the CVSR would have a greater visual impact because a greater part would be visible. On sunny days, the solar collectors would create a visual impression that would resemble more closely a body of water than a power plant or other industrial facility because the solar collectors would reflect the blue sky. On cloudier days, the visual impression would appear to be gray.

The CVSR would result in increased levels of visual contrast by introducing new, permanent, aboveground structures into the landscape. However, these changes would not directly conflict with existing plans or designated special visual features in the area. Additionally, the CVSR would be designed to mimic elements currently visible in the project vicinity. Corten steel poles would be used for the 230-kV interconnection line and have a rust-like appearance resembling wooden poles. Wooden poles would be used for the collector lines. These linear elements would mimic linear elements already visible

in views of the project vicinity due to existing distribution lines and existing ranch fencing; these poles would also mimic the brown colors visible in the existing environment.

A photo simulation produced from the most critical viewpoint within the Carrizo Plain National Monument represents the highest exposure to the features of the CVSR. The visible features would include the eight tracker arrays, which would be between 5 and 7 miles away. The arrays would be planar and close to the ground, and they would have no potential for obstructing views of any features inherent to the visual character of the Carrizo Plain.

The County of San Luis Obispo's General Plan and Elements do not protect the views from SR-58, Soda Lake Road, or Seven Mile Road in the project vicinity. Except for the Carrizo Plain National Monument lands, there is no evidence that the public frequents the lands along the listed roads for recreation uses, scenic turnouts, or tourist attractions. Field investigations also did not identify publicly available historic or archeological sites in the vicinity. Therefore, there is no evidence of recognized and valued scenic views or vistas from SR-58, Soda Lake Road northwest of the monument, or Seven Mile Road.

Views from SR-58, the closest road to the site in the vicinity of the CVSR, are not deemed to be sensitive. SR-58 is comparatively less traveled, has no formal or informal scenic route status or other regulatory protection, and there is no evidence of public expectation for scenic quality for views from the part of this highway from which the CVSR features would be visible. The proposed action would be visible from SR-58 at less than 0.25 mile away; however, the duration of the view would be temporary and at an angle, and the highway is not officially designated at this time. Therefore, because the sensitivity of motorists on SR-58 is considered low, the CVSR would result in minor adverse visual effects from this viewpoint.

Permanent visual impacts could be created by the structure contrast, industrial character, view blockage, and skylining created by the switching stations or reconductoring of the transmission line. However, there are no nearby residents to the Caliente switching station. The reconductoring would increase the heights of the towers by an average of approximately 8 percent of the existing tower height. This would be a minimal long-term visual change even for sensitive receptors with an immediate foreground view of the transmission line. The increased tower heights and tower and conductor replacements would not introduce a new source of structure contrast, industrial character, view blockage, or skylining. The new conductor and towers may introduce a short-term source of specular reflection but would weather to become non-specular. Because long-term visual changes would be minimal, long-term aesthetic effects would be minor.

Design features, such as the preservation of adjacent lands, retaining the natural landscape along the north side of SR-58, use of aesthetic treatments (e.g., landscaping, entrance treatments, and a fencing plan), and use of the minimum necessary nighttime lighting would reduce the proposed action's overall intrusiveness.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that, upon completion of construction, the solar generation facility would introduce structure contrast, industrial character, view blockage skylining, and glare that would result in significant aesthetic impacts that could not be mitigated to a less than significant level.

The project has been modified from what was analyzed in the Final EIR to reduce visual effects by increasing the setbacks of all solar arrays from SR-58 to a minimum of 500 feet, by reducing the number of overhead poles associated with the medium-voltage transmission lines at the CVSR site, and by undergrounding additional segments of medium-voltage lines and rerouting aboveground medium-voltage lines such that the nearest aboveground pole is approximately 3,000 feet from SR-58.

In addition, the Final EIR did not consider the degree to which development activities have already encroached upon existing views or the quality of the existing view (from Soda Lake Road, Seven Mile

Road, and SR-58), the short-term duration of views, or viewer sensitivity. This EA analyzed the aforementioned elements consistent with industry-standard visual assessment methodology as discussed previously. Assessing the degree to which development activities have already encroached upon existing views is consistent with analyzing impacts as compared to baseline conditions under NEPA, and considering factors such as duration of views, frequency of views, angle of views, and viewer expectation of views provides an accurate assessment of not only the visual contrast that would occur as a result of the project but the effect of that contrast on viewer groups. Considering both the modifications to the project designed to minimize effects on visual resources and the low to medium level of viewer sensitivity in the project vicinity, the overall visual effects of the CVSR Project would be minor and would not be significant.

Light and Glare

Glare impacts are discussed in the Aesthetics/Visual Resources Impact Assessment by Lawrence Headley & Associates (Appendix 5 of the CVSR Final EIR). The potential for daytime glare due to solar reflection off the CVSR PV system is inherently low due to the materials from which they are constructed. By design, the PV cells capture nearly all sunlight, allowing about half the reflectance of standard residential and commercial glasses. Thus, the solar tracker panels have no potential for reflecting the sun's rays upon any ground-plane position. The solar panels inherently absorb more than 90 percent of incident sunlight and the southern tilt and east-west rotation serve to direct residual reflection skyward. The CVSR would have no adverse effect due to light and glare (Lawrence Headley & Associates 2009).

The Applicant would prepare a visual screening program to screen views of the solar generation facility from occupied residences that are within 1 mile of the of the solar generation facility site or within the area bounded by SR-58, Soda Lake Road, and Seven Mile Road, whichever is greater. Similarly, the Applicant would prepare and implement an exterior signage and lighting plan to ensure that all lighting fixtures would be positioned down and shielded to minimize light and glare. Light fixtures would be restricted to areas required for safety, security, and operations, would be directed onsite, and would be shielded from public view. Non-glare fixtures would be used, and switches, sensors, and timers would be installed to minimize the amount of time that lights not needed for safety and security would be on. These measures would substantially reduce the off-site visibility of project lighting. Lighting that might be installed to facilitate possible nighttime construction activities (if needed) would be directed toward the center of the construction site and shielded to prevent light from straying offsite, as consistent with worker safety codes.

Given the siting and design features intended to avoid or minimize potential effects on the CVSR Project's visual setting, the proposed action's effect on visual resources would be minor and would not be significant.

3.1.3.2 Twisselman Aggregate Mine Establishment

Affected Environment

The 24-acre Twisselman aggregate mine would be established on a privately owned 160-acre parcel. The site is accessed via an existing 2.8-mile dirt road north from SR-58 approximately four miles east of Soda Lake Road. The nearest residence would be approximately 2.75 miles from the existing mine location. There are no residences within 1.5 miles of the dirt road, which would be improved and used as the haul route between the mine and SR-58. The property has a zoning and General Plan land use designation of AG (SLO County 2010a, 2010b). Mines and quarries are allowable uses on lands zoned AG, subject to the land use permit required by specific use standards (SLO County 2010d). In the past, a part of the existing Twisselman aggregate mine area (10 acres) was used as a borrow pit to obtain fill material for use in agricultural operations on and near the property, and for road fill and erosion repair for private and public roads in the region. The CUP to establish and operate the Twisselman aggregate mine (Twisselman CUP; DRC2009-00004) was approved by San Luis Obispo County on May 26, 2011, and the environmental effects were analyzed in the County's EIR. The site lies at the base of the Temblor Range,

which comprise the foothills along the northeastern margin of the Carrizo Plain. Almost 90 percent of the proposed mining area includes steep slopes over 30 percent. Therefore, the mine would not be visible to most viewers described above.

Environmental Effects

The existing borrow pit at the site of the Twisselman aggregate mine has been used by the landowner for approximately 10 years for low-level material excavation. The proposed action would only use the mine during construction to maintain access roads. Operation of the borrow pit as a commercial aggregate mine would not temporarily or permanently disrupt, displace, or divide existing land uses within or surrounding the mine area. Although the volume of materials excavated and transported offsite would increase in response to the construction of the CVSR, as well as other existing and future projects that may purchase aggregate, no direct or indirect land use impacts would occur as use of the mine would be consistent with its historical use.

Construction activities at the mine site would be limited to the preparation or improvement of the access road between SR-58 and the mine location in the Temblor Range foothills. Disturbance of earth and movement of vehicles on unpaved surfaces would result in visible dust. However, the construction and operation of the mine would comply with air district rules on nuisance dust and emission. In addition, implementation of an Operational Dust Control Plan would reduce this impact. Compliance with zoning restrictions and permitting is expected to further reduce impacts to land use. As such, overall impacts to land use in the area surrounding the Twisselman aggregate mine would be minor and long-term.

With respect to visual resources, the nearest public viewpoint is naturally screened from SR-58 by local topography immediately around the Twisselman aggregate mine site. As mining progresses, a small section of the mine may become visible for a few seconds by travelers on SR-58. However, this element in the visual environment would be minor given the 2.8-mile distance from SR-58, the varied intervening topography, the relative location (base of foothills) on the Temblor Range, and the site's historical use as a mine. Thus, use of the Twisselman aggregate mine would result in minor effects on visual resources that would not be significant.

3.1.3.3 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on land use or visual resources. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.2 Agriculture

3.2.1 Regulatory Framework

3.2.1.1 Federal

Farmland Protection Policy Act

Congress passed the Farmland Protection Policy Act (FPPA) in 1981 in response to a substantial decrease in the amount of open farmland (7 United States Code [U.S.C.] 4201 et seq.). Under the FPPA, the Secretary of Agriculture established criteria for use by federal agencies to consider effects to farmland. As stipulated by the FPPA, federal agencies are to: (1) use the criteria to identify and account for the adverse effects of their programs on the preservation of farmland; (2) consider alternative actions, as appropriate, that could lessen adverse effects; and (3) ensure that their programs, to the extent practicable, are compatible with state, units of local government, and private programs and policies to protect farmland (7 CFR 658.1).

The FPPA applies to projects that would irreversibly convert farmland (directly or indirectly) to non-agricultural use and are completed by a federal agency or with assistance from a federal agency. Assistance includes the provision of financing or loans and, therefore, applies to the CVSR.

Farmland that is subject to the FPPA is defined as:

> **Prime Farmland**: Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Agriculture. Prime farmland includes land that possesses the above characteristics, but is being currently used to produce livestock and timber. It does not include land already in or committed to urban development or water storage (7 U.S.C. 4201(c)(1)(A)).
>
> **Unique Farmland**: Land other than prime farmland that is used for production of specific high-value food and fiber crops, as determined by the Secretary of Agriculture. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables (7 U.S.C. 4201(c)(1)(B)).
>
> **Farmland of Statewide or Local Importance**: Farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate state or local government agency or agencies, and that the Secretary of Agriculture determines should be considered as farmland (7 U.S.C. 4201(c)(1)(C)).

Federal agencies comply with the FPPA by completing a Farmland Conversion Impact Rating Form for submittal to the USDA NRCS.

3.2.1.2 State

Farmland Mapping and Monitoring Program

Conservation of agricultural land in California is monitored on the state level through the Department of Conservation's Division of Land Resource Protection, and specifically through the Farmland Mapping and Monitoring Program and the California Land Conservation Act of 1965, commonly referred to as the Williamson Act.

The Farmland Mapping and Monitoring Program uses NRCS soils surveys and existing land use observations to determine the nature and quality of farmland in 10-acre-minimum units across the state. The NRCS's definition of Prime Farmland and Farmland of Statewide Importance is similar to that in the FPPA with one exception—the NRCS' definition of Prime Farmland includes the availability of water. In general, Prime Farmland is defined as having an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks (NRCS 2009). The term "Prime Farmland if Irrigated" refers to land with the soil characteristics to qualify as Prime Farmland but which lacks the irrigation or water supply necessary to qualify as Prime Farmland (National Soil Survey Handbook Part 622, 2010). Farmland that is designated as Not Prime consists of soils which are characterized by severe limitations that make them generally unsuitable for cultivation and restrict their use mainly to grazing, pasture, and rangeland.

Williamson Act Program

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act (Government Code Section 51200 et seq.), enables local governments to enter into rolling, 10- or 20-year contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, restricted parcels are assessed for property tax purposes at a rate

consistent with actual farming and open space uses, as opposed to potential market value. The Williamson Act program is administered by the Department of Conservation in conjunction with local governments.

3.2.1.3 Local

San Luis Obispo County

The San Luis Obispo County classifies important agricultural soils in Table SL-2 of the Conservation and Open Space Element of the County's General Plan. Soil types are classified by the County as: Prime Farmland, Farmland of Statewide Importance, Other Productive Soils, and Highly Productive Rangeland Soils. The County bases its Prime Farmland designation on land capability classifications and Storie Index ratings, which numerically express the relative degree of suitability of a soil for general intensive agriculture. The rating is based on soil characteristics only and is obtained by evaluating such factors as soil depth, surface layer texture, subsoil characteristics, drainage, salts and alkali, and relief (UCANR 2008). The County's designation of Prime Farmland does not rely on the availability of water for agriculture.

Kern County

No Kern County agricultural policies apply to the Morro Bay–Midway transmission line reconductoring that would occur within Kern County. As noted in Section 3.1.1.2, the CPUC has exclusive jurisdiction over the siting, design, and construction of the reconductoring work and, as a result, PG&E is not subject to local discretionary land use regulations. PG&E would, however, obtain all necessary permits.

3.2.2 Affected Environment

Agricultural use of the CVSR site has been restricted by limited water supply and poor water quality. The site is currently functioning as private grazing land and habitat, but not as farmland. The site has been marginally grazed with an average 50 heads of cattle or about one cow per 80 acres (0.1 animal per acre) for the last 21 years (i.e., since at least 1989) (URS 2010). An analysis of aerial photographs from the past 50 years shows that the site has been used for dry farming and has not been irrigated in the past.

No Prime or Unique farmland is present within the CVSR site, within the interconnection line route, within the Morro Bay–Midway transmission line reconductoring route, or within the Twisselman aggregate mine. As designated by NRCS, the CVSR site contains Prime Farmland if Irrigated[1], Farmland of Statewide Importance, and other Not Prime Farmland. The severe water quality and quantity restrictions that prevent the CVSR site from being irrigated have significantly limited its agricultural potential. Water for local agricultural operations for the CVSR site is obtained primarily from the Carrizo Plain Groundwater Basin, and data suggest that groundwater supplies in this basin are inadequate to sustain irrigated use. Therefore, these areas are not considered to have access to adequate water supplies to sustain irrigated use and do not meet the Prime Farmland criteria.

The interconnection line would cross Prime Farmland if Irrigated and other Not Prime Farmland. The proposed Caliente switching station would be located on land designated as Not Prime Farmland. The Morro Bay–Midway transmission line would traverse land designated as Prime Farmland if Irrigated, Farmland of Statewide Importance, and Not Prime Farmland.

Table 3.2-1 presents the NRCS rating for soils within the CVSR site, within the interconnection line route, at the Caliente switching station site and the area within a 250-foot ROW along the Morro Bay—Midway transmission line. This information is also shown on Figure 3.2-1.

[1] The term "Prime Farmland if Irrigated" refers to land with the soil characteristics to qualify as Prime Farmland but which lacks the irrigation or water supply necessary to qualify as Prime Farmland (National Soil Survey Handbook Part 622, 2010).

Table 3.2-1. Soil Types and NRCS Ratings for Proposed Action

Soil Type	Acreage	NRSC Rating
CVSR Site		
Polonio loam, 0 to 2% slopes	867	Prime Farmland if Irrigated (1)
Polonio gravelly loam, 0 to 2% slopes	195	Prime Farmland if Irrigated (1)
Polonio-Thomhill complex, 2 to 9% slopes	609	Prime Farmland if Irrigated (1)
Yeguas-Pinspring complex, 0 to 2% slopes	52	Prime Farmland if Irrigated (1)
Yeguas-Pinspring complex, 2 to 5% slopes	7	Prime Farmland if Irrigated (1)
Thomhill loam, 2 to 5% slopes	635	Prime Farmland if Irrigated (1)
Subtotal Prime Farmland if Irrigated	**2,364**	
Polonio clay loam, 2 to 9% slopes	**913**	Farmland of Statewide Importance
Kilmer-Hillbrick complex, 50 to 75% slopes	4	Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	5	Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	628	Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	84	Not Prime Farmland
Panoza-Beam complex, 50 to 75% slopes	22	Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	239	Not Prime Farmland
Chicote complex, 0 to 2% slopes	150	Not Prime Farmland
Chicote complex, 2 to 5% slopes	1	Not Prime Farmland
Pits	289	Not Prime Farmland
Subtotal Not Prime Farmland	**1,421**	
CVSR SITE TOTAL	**4,698**	
Interconnection Line		
Sorrento Loam, 2 to 9% slopes	3	Prime Farmland if Irrigated
Polonio-Thomhill complex, 2 to 9% slopes	21	Prime Farmland if Irrigated
Padres sandy loam, 2 to 9% slopes	12	Prime Farmland if Irrigated
Subtotal Prime Farmland if Irrigated	**36**	
Aramburu-Temblor complex, 30 to 50% slopes	2	Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	27	Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	2	Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	1	Not Prime Farmland
Subtotal Not Prime Farmland	**32**	
INTERCONNECTION LINE TOTAL	**68**	
Caliente Switching Station		
Aramburu-Temblor complex, 30 to 50% slopes	7	Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	1	Not Prime Farmland
CALIENTE SWITCHING STATION TOTAL	**8**	
Morro Bay - Midway Transmission Line[1]		
Buttonwillow clay, drained	80	Prime Farmland if Irrigated
Kimberlina fine sandy loam, 0 to 2% slopes	84	Prime Farmland if Irrigated
Kimberlina gravelly sandy loam, 2 to 5% slopes	73	Prime Farmland if Irrigated
Kimberlina sandy loam, 2 to 5% slopes	56	Prime Farmland if Irrigated

Table 3.2-1. Soil Types and NRCS Ratings for Proposed Action

Soil Type	Acreage	NRSC Rating
Morro Bay – Midway Transmission Line (Cont.)		
Lokern clay, drained	72	Prime Farmland if Irrigated
Panoche clay loam, 0 to 2% slopes	103	Prime Farmland if Irrigated
Panoche clay loam, 2 to 5% slopes	39	Prime Farmland if Irrigated
Yeguas-Pinspring complex, 0 to 2% slopes	4	Prime Farmland if Irrigated
Yeguas-Pinspring complex, 2 to 5% slopes	57	Prime Farmland if Irrigated
Polonio gravelly loam, 2 to 9% slopes	7	Prime Farmland if Irrigated
Sorrento loam, 2 to 9% slopes	0	Prime Farmland if Irrigated
Thomhill loam, 2 to 5% slopes	13	Prime Farmland if Irrigated
Subtotal Prime Farmland if Irrigated	**588**	
Polonio clay loam, 2 to 9% slopes	25	Farmland of Statewide Importance
Panoche clay loam, saline-alkali, 0 to 2% slopes	63	Farmland of Statewide Importance
Subtotal Farmland of Statewide Importance	**88**	
Aido clay 30 to 50% slopes	19	Not Prime Farmland
Aido clay, 9 to 30% slopes	29	Not Prime Farmland
Aramburu-Temblor complex, 30 to 50% slopes	40	Not Prime Farmland
Aramburu-Temblor complex, 50 to 75% slopes	3	Not Prime Farmland
Aramburu very channery clay loam, 30 to 50% slopes	18	Not Prime Farmland
Aramburu very shaly clay loam, 15 to 30% slopes	34	Not Prime Farmland
Aramburu very shaly clay loam, 30 to 50% slopes	95	Not Prime Farmland
Aramburu very shaly clay loam, 50 to 75% slopes	8	Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	18	Not Prime Farmland
Cymric loam, 5 to 30% slopes	72	Not Prime Farmland
Elkhills gravelly sandy loam, 15 to 50% slopes	16	Not Prime Farmland
Elkhills gravelly sandy loam, 9 to 15% slopes	8	Not Prime Farmland
Hillbrick-Rock outcrop complex, 15 to 50% slopes	8	Not Prime Farmland
Kilmer-Hillbrick complex, 15 to 50% slopes	20	Not Prime Farmland
Lokern clay, saline-alkali, drained	12	Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	82	Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	22	Not Prime Farmland
Polonio loam, 2 to 9% slopes	20	Not Prime Farmland
Seaback-Panoza-Jenks complex, 15 to 30% slopes	23	Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	35	Not Prime Farmland
Water	1	Not Prime Farmland
Subtotal Not Prime Farmland	**581**	
MORRO BAY - MIDWAY TOTAL	**1,256**	

Source: NRCS 2003.

Notes:

[1] Represents area within 250-foot ROW.

Prime Farmland if Irrigated: Lands which lacks the irrigation or water supply necessary to qualify as Prime Farmland

Farmland of Statewide Importance: Lands of statewide importance for production of food, feed, fiber, forage, and oil seed crops.

Not Prime Farmlands : Lands with severe limitations. Generally unsuitable for cultivation; use restricted mainly to grazing, pasture, and rangeland

The CVSR site and Caliente switching station site are not currently under Williamson Act contract. A small part of the land proposed for the interconnection line would pass through 0.5 mile of a parcel (APN 072-121-018) which is currently under Williamson Act contract and is currently used for grazing. There is also land under Williamson Act contract within the existing Morro Bay–Midway transmission line ROW from MP 1.5 to MP 3, MP 7.3 to MP 10, MP 16 to MP 17, MP 17.5 to MP 18, and MP 30.8 to MP 35. Additionally, there is active cotton production within the ROW between MP 30.8 and MP 35 as well as active grazing between MP 1 and MP 30.8 and near the switching station.

3.2.3 Environmental Effects

3.2.3.1 Proposed Action

Methodology

The proposed action was assessed to determine whether the CVSR, the interconnection line, the Caliente switching station, or reconductoring the Morro Bay–Midway transmission line would result in a permanent conversion of Prime Farmland, as defined by NRCS, or conflict with a Williamson Act contract.

Prime Farmland Conversion

As discussed in Section 3.1 of this EA, Land Use and Visual Resources, the CVSR site and interconnection line would be located on land that is designated and zoned for agricultural use. The proposed action is consistent with this designation and zoning because energy generation is an allowable use with a CUP from San Luis Obispo County. The Applicant has applied to the County of San Luis Obispo for a CUP for the CVSR and for establishment of the Twisselman aggregate mine; however, the proposed action would not change the site's agricultural land use designation or zone classification.

The CVSR site, proposed interconnection route, and Caliente switching station site do not include any NRCS designated Prime Farmland. The NRCS identifies 2,364 acres of Prime Farmland if Irrigated; however, no water of appropriate quantity or quality is available for irrigation in the area. Therefore, the proposed action would not result in a permanent conversion of NRCS designated Prime Farmland.

The existing ROW for the Morro Bay–Midway transmission line passes through Prime Farmland if Irrigated for approximately 4.2 miles, and pull sites, if located within these areas, could temporarily disturb a maximum of 4.1 acres. However, reconductoring would not result in the permanent conversion of Prime Farmland because construction activities would be temporary, and temporarily disturbed land would be restored to pre-construction conditions. In the event that agricultural lands were permanently converted to non-agricultural use, PG&E would conserve, in perpetuity, off-site farmland at a 1:1 ratio.

To further reduce effects on agricultural lands, the Applicant would conserve, in perpetuity, off-site farmland located within San Luis Obispo County at a 1:1 ratio through establishment of an open space easement or other farmland conservation mechanism acceptable to the County. In addition, the Applicant would coordinate construction activities with agricultural land owners to minimize disruption to agricultural operations and restore agricultural areas disturbed by construction to pre-construction conditions.

The Applicant would provide compensation to landowners for crop loss and other reasonable and associated costs as soon as practicable after completion of construction. In addition, in order to compensate for potential crop loss due to construction activities associated with reconductoring the Morro Bay–Midway transmission line, the Applicant would coordinate with agricultural landowners and grazing operators to schedule construction activities so as to minimize disruption to agricultural operations.

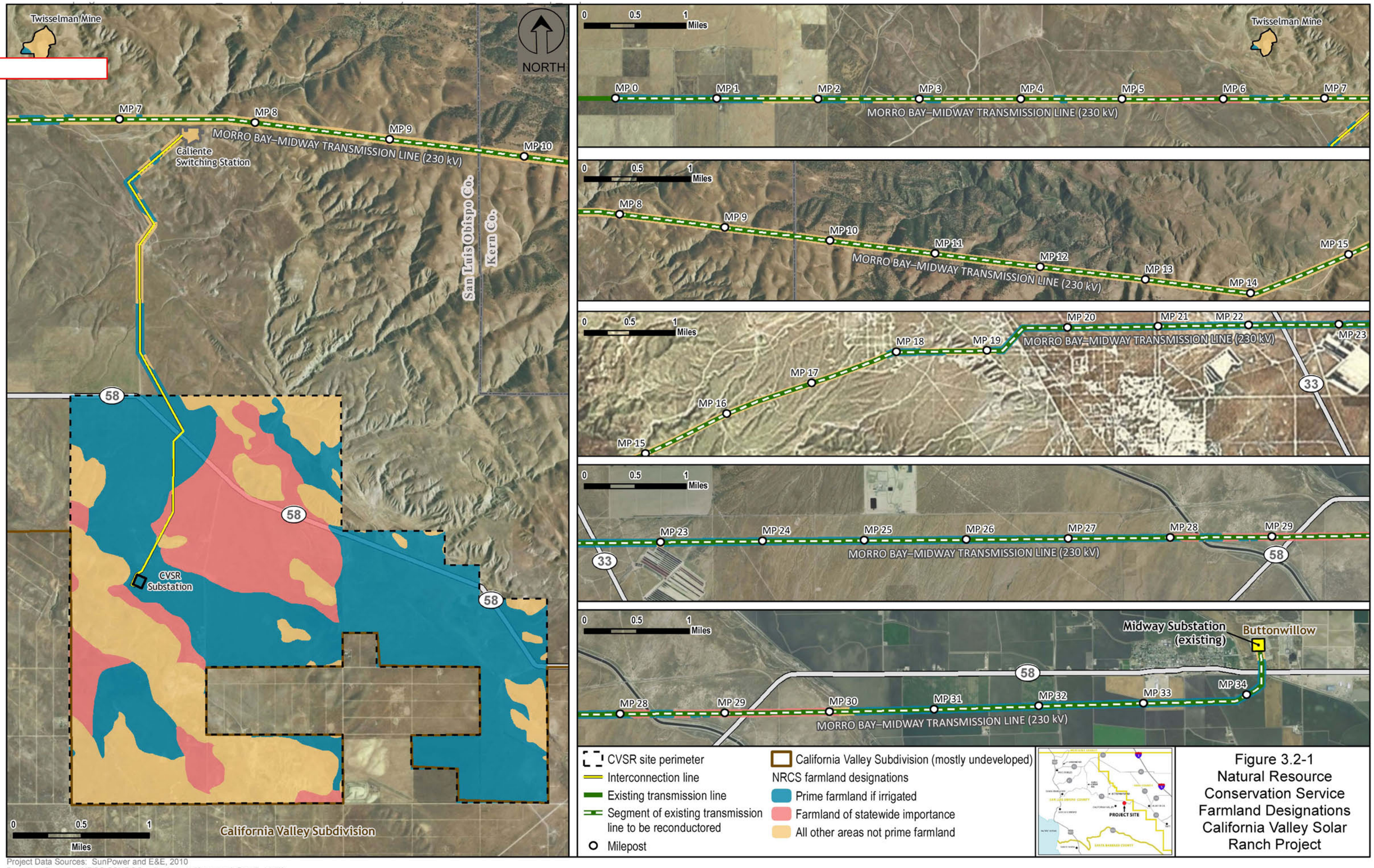

Figure 3.2-1
Natural Resource Conservation Service Farmland Designations
California Valley Solar Ranch Project

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: NRCS SSURGO soils dataset (Accessed: Dec 7, 2010)
ESRI Virtual Aerial data 2009 (http://resources.esri.com/arcgisonlineservices/virtualearth)

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In compliance with the FPPA, DOE provided the NRCS with a Farmland Conversion Impact Rating Form, maps, and project data (Appendix F-1). NRCS returned a completed NRCS Farmland Conversion Impact Rating Form on May 20, 2011 (Appendix F-2), which acknowledged that the CVSR project would not affect prime farmland. Specifically, the NRCS identified that the proposed action would directly convert 0 acres of prime farmland and gave the site a land evaluation criterion score of 65, out of a total 100 points.

In the interest of a thorough environmental analysis, the Farmland Conversion Impact Rating process was completed for the proposed CVSR Project. The results of this analysis are described below. Appendix F-3 provides the completed Farmland Conversion Impact Rating Form and a summary of how each scoring decision was derived.

Federal agencies must consider 12 site assessment criteria to evaluate the suitability of a site for protection as farmland. The maximum number of points varies for each of the 12 site assessment criteria. Scoring decisions are made by examining the site, the surrounding area, and the programs and policies of the state or local unit of government in which the site is located. The 12 site assessment criteria were evaluated for the CVSR project, and generated a score of 79 out of a possible 160 points. The land evaluation and site assessment scores were added together, which produced a total score of 144 points out of a possible 260 points. Table 3.2-2 summarizes the scoring for the CVSR site.

Table 3.2-2. Farmland Conversion Impact Rating Scores for the Proposed Action

Criterion	Maximum Points	Assigned Points
Land Evaluation	100	65
Site Assessment	160	79
1. Area in Non-Urban Use	15	3
2. Perimeter in Non-Urban Use	10	7
3. Percent of Site being Farmed	20	0
4. Protection Provided by State and Local	20	20
5. Distance from Urban Built-up Area	15	15
6. Distance to Urban support Services	15	10
7. Size of Present Farm Unit compared to Average	10	10
8. Creation of Non-Farmable Farmland	10	10
9. Availability of Farm Support Services	5	2
10. On-Farm Investments	20	1
11. Effects of Conversion on Farm Support Services	10	1
12. Compatibility with Existing Agricultural Use	10	0
Totals	**260**	**144**

As stated at 7 CFR 658.4(c) of the FPPA, the Department of Agriculture recommends that Sites receiving a total score of less than 160 need not be given further consideration for protection, and no additional sites need to be evaluated. Therefore the effects to Prime Farmland from the CVSR site would not be significant.

Because impacts associated with transmission line reconductoring would be limited and the lands would be restored to their prime qualities after construction, development of the CVSR, interconnection line, and transmission line reconductoring would result in minor, temporary effects on areas identified by the County as Prime Farmland.

Because San Luis Obispo County's designation of Prime Farmland does not rely on the availability of water for agriculture, the Final EIR for the CVSR Project determined that the CVSR site contains Prime Farmland and that significant impacts on agricultural resources would occur. In addition, although the

CVSR site would be available for agricultural use at the time of decommissioning once project facilities are removed, the County considered the proposed solar facility use to be permanent. The Final EIR did not take into account the low level of grazing that occurs on the site (about one cow per 80 acres), and that some agricultural activity (grazing) would continue within the preserved areas of the solar facility property (approximate 70%). In addition, it did not consider the conservation of off-site lands, at a ratio of 1:1, to be sufficient to reduce impacts to below a level of significance.

The analysis in this EA indicates that the proposed action would not permanently convert NCRS designated Prime Farmland to non-agricultural use because the CVSR site does not have access to adequate water supplies to sustain irrigated use and does not meet the criteria for Prime Farmland. Additionally, the land would retain its agricultural zoning to allow its return to agricultural use at the time of project decommissioning. Finally, additional lands offsite would be conserved to further reduce impacts to agricultural resources. Based on these facts, the environmental effects on agricultural resources would be minor and long-term but would not be significant.

Williamson Act Contract

The CVSR site and Caliente switching station site do not contain land that is currently under Williamson Act Contract. Part of the proposed interconnection line crosses land under Williamson Act contract and is currently used for grazing. Four single-column steel poles would be constructed on this property, which would result in approximately 145 square feet of permanent ground disturbance (36 square feet per pole). Once construction is complete, grazing could resume in this area with minimal loss of productivity. In addition, under San Luis Obispo County's Williamson Act policies, transmission lines are considered a compatible use (SLO County 2011a). Therefore, the interconnection line would not conflict with Williamson Act contracts.

The existing Morro Bay–Midway transmission line ROW passes through land with active Williamson Act contracts for approximately 10.25 miles. Several pull sites could be located within this part of the ROW; each pull site would temporarily disturb approximately 2.1 acres. Effects to Williamson Act lands would be temporary during construction, after which this land would revert to existing land uses, including grazing and/or crop production; therefore, there would be no permanent effect to lands under Williamson Act contracts.

As discussed, most of the land in the vicinity of the CVSR site has been used for low-level grazing. The CVSR site and associated infrastructure (including the interconnection line and Caliente switching station) are compatible with continued agricultural uses on adjacent lands. Construction of the CVSR would use existing access roads and would occur adjacent to SR-58. A total of 1,389 acres would be temporarily disturbed by construction of project components, including land that may currently be used for grazing activities. However, construction of the CVSR would not result in the permanent conversion of agricultural land because construction activities would be temporary, and most temporarily disturbed land would be restored to existing conditions.

Approximately 3,233 acres of the CVSR site would be left undisturbed, of which 2,450 would be preserved as open space and wildlife corridors. The Applicant would implement a controlled grazing plan to manage annual grassland fuel load and height for fire deterrence, such as having sheep and/or goats graze in the array area and removing vegetation that would otherwise increase the risk of a grass fire. Implementation of this grazing plan would constitute a continuation of the existing agricultural use for the CVSR site. Approximately 89 acres of the CVSR site would be permanently occupied by foundations for buildings, electrical equipment, roadways, and general grading. Seven single-column steel poles required for the interconnection line would be located on land designated AG by San Luis Obispo County; however, after construction, all but approximately 265 square feet of disturbed land for the steel poles would revert to existing land uses (North Coast Engineering 2011).

Reconductoring of the Morro Bay–Midway transmission line would temporarily disturb crop production during construction. However, as discussed above, PG&E would coordinate with landowners and grazing operators to minimize potential effects on property owners. Additionally, the Caliente switching station would require the permanent conversion of 8 acres of land designated as AG. PG&E would compensate for the loss of permanent state-designated prime farmland on an acre-for-acre basis and shall provide evidence to the CPUC that an open space easement or other farmland conservation mechanism has been granted in perpetuity to a qualifying entity approved by the CPUC.

With the exception of 8 acres of land at the Caliente switching station site, most impacts to land zoned AG would be temporary, and land would be restored, compensated for, or avoided to the maximum extent practicable. Therefore, the CVSR, interconnection line, and transmission line reconductoring would result in only minor long-term effects on agricultural uses which would not be significant.

3.2.3.2 Twisselman Aggregate Mine Establishment

Affected Environment

The 24-acre Twisselman aggregate mine would be established on a privately owned 160-acre parcel. The site comprises approximately three acres of Prime Farmland if Irrigated and 21 acres of Not Prime Farmland, as designated by the NRCS (Figure 3.2-1). Table 3.2-3 lists the acreage of land that would be disturbed and the NRCS rating.

Table 3.2-3. Soil Types and NRCS Ratings for the Twisselman Aggregate Mine

Soil Type	Acreage	NRCS Rating
Polonio gravelly loam, 2 to 9% slopes	3	Prime Farmland if Irrigated
Aramburu-Temblor complex, 30 to 50% slopes	21	Not Prime Farmland
Aggregate Mine Total	**24**	

Source: SLO County 2011a.

No land within the Twisselman aggregate mine site is under Williamson Act contract.

The property has an AG zoning and land use designation (SLO County 2010a, 2010b). Mines and quarries are allowable uses on lands zoned AG, subject to the land use permit required by specific use standards (SLO County 2010c). In the past, part of the existing Twisselman aggregate mine site (approximately 10 acres) has been used as a borrow pit to obtain fill material for use in agricultural operations on and near the property, and for road fill and erosion repair for private and public roads in the region.

Environmental Effects

No NRCS designated Prime Farmland is on the Twisselman aggregate mine site, and no water of appropriate quantity or quality is available for irrigation in the area; therefore, establishment of the Twisselman aggregate mine would not affect or result in the permanent conversion of NRCS-designated Prime Farmland. Because no land within the Twisselman aggregate mine site is under Williamson Act contract, no effect to Williamson Act lands would occur.

The site of the Twisselman aggregate mine has been used as a borrow pit by the landowner for approximately 10 years for low-level material excavation; therefore, establishment of an approximately 24-acre surface mine would be consistent with its historical use. Establishment of the Twisselman aggregate mine would eliminate grazing potential from the site, and 14 acres of Agricultural land would be converted for mine expansion. However, these acres could be converted back to agricultural use after mine closure. Further, the conversion of 14 acres of grazing land is considered minor when compared to the 3,233 acres of land that would be available as grazing land as part of the CVSR, or when considered within the context of the larger California Valley area, much of which is used for grazing. Therefore,

impacts to agricultural lands from the Twisselman aggregate mine would be negligible and would not be significant.

3.2.3.3 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on agriculture. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.3 Transportation

3.3.1 Regulatory Framework

3.3.1.1 Federal

According to Federal Aviation Regulations, 49 CFR Part 77, for the Safe, Efficient Use, and Preservation of the Navigable Airspace, the construction of objects (e.g., utility poles) greater than 200 feet tall from the ground surface or 200 feet above the elevation of the airport (whichever is higher) that are within 3 nautical miles (3.45 linear miles) of an airport may obstruct aviation activities. Notification by Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration, to the manager of the FAA Air Traffic Division is required for review and approval.

3.3.1.2 State

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, Caltrans endeavors to maintain a target level of service (LOS)[2] at the transition between LOS C and LOS D. LOS D is acceptable for SR-58 from the segment just east of U.S. Highway 101 to the San Luis Obispo/Kern County line, and LOS C or better is acceptable within Kern County. LOS C or better is an acceptable LOS for SR-33 and SR-46 (SLO County 2011a).

3.3.1.3 Local

All county-maintained roads are subject to county LOS standards. The San Luis Obispo County standard is LOS D or better in urban areas and LOS C or better in rural areas. LOS C or better is acceptable for roads near the CVSR site in San Luis Obispo County (SLO County 2011a). The Kern County standard is LOS D for all county roads (Kern County 2007b).

3.3.2 Affected Environment

3.3.2.1 Roadway Levels of Service

Regional roadways that may be accessed by construction and operational traffic for the CVSR site include U.S. Highway 101, I-5, SR-33, SR-41, SR-46, SR-58, Shell Creek Road, Bitterwater Valley Road, and Bitterwater Road. Locations along the transmission line segment to be reconductored would be accessed via SR-46 to Shell Creek Road to eastbound SR-58, SR-33 to Lokern Road, or I-5 to westbound SR-58. Maintenance of the roadways in this region falls under the jurisdiction of Caltrans District 5 and District 6, the San Luis Obispo County Public Works Department, Kern County, and the California Highway Patrol. Table 3.3-1 identifies current traffic volumes and LOS for roadways near the CVSR site and reconductoring route.

[2] Level of service (LOS) is a qualitative measure used to describe the operational status of transportation infrastructure. There are six levels ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (traffic flows exceed design capacity, resulting in long queues and delays).

Table 3.3-1. Current Roadway Segment Traffic Volumes and Level of Service (LOS) in the Vicinity of the CVSR Project

Roadway Segment	Traffic Volume (both directions)			Percent of Truck Traffic	LOS
	Daily	AM	PM	(daily)	
U.S. Highway 101 (Paso Robles, Jct. SR-46 East)	53,000	5,900 (Peak Hour)		NA	NA
SR-58: West of Shell Creek Road	825	67	72	21.3	B
SR-58: Shell Creek Road to Project Entry Road	780	62	68	21.3	A
SR-58: Project Entry Road to SR-33	350	28	30	21.3	A
SR-33: North of SR-58	1,800	NA	NA	26	C
SR-33: South of SR-58	2,900	NA	NA	33	C
SR 46: West of SR-41 (West Junction)	12,000	931	1,129	17	D
SR 46: East of SR-41 (West Junction)	7,700	595	672	21.6	D
San Juan Road/Shell Creek Road	383	57	52	NA	A
Lokern Road (East of Lost Hills Road)	430	NA	NA	NA	NA
Bitterwater Road	48	9	9	NA	NA
Bitterwater Valley Road	69	16	10	NA	NA

Source: SLO County 2011a.
Key:
NA = not available.

3.3.2.2 Air Transportation

The closest airport to the CVSR site is a small private airstrip located at the intersection of Black Bear Road and Belmont Trail, less than 0.25 mile from the CVSR site. Another private airport, California Valley Airport, is located along Soda Lake Road, approximately 4 miles west of the CVSR site. The California Valley Airport has a 4,200-foot paved runway and minimal traffic.

The closest airports to the Morro Bay–Midway transmission line reconductoring route are California Valley Airport and Elk Hills Buttonwillow Airport. The California Valley Airport is located approximately 4 miles south of the reconductoring route, and the Elk Hills Buttonwillow Airport is located approximately 2.5 miles south of the reconductoring route (SLO County 2011a). Elk Hills Buttonwillow Airport is a public airport owned by Kern County. It is not a commercial airport. It averages 23 flights per week (AirNav 2011).

3.3.3 Environmental Effects

3.3.3.1 Methodology

Effects of the proposed action on the local and regional transportation system were assessed by comparing existing roadway and traffic conditions to anticipated traffic increases due to construction and operation. Construction traffic estimates include worker vehicles, construction vehicles, and delivery trucks; operational traffic estimates include worker vehicles.

3.3.3.2 Proposed Action

California Valley Solar Ranch

Construction

CVSR construction traffic over a 30-month construction period would include the delivery of materials and equipment daily by, on average, 32 trucks per day (i.e., 64 trip ends), with about 45 trucks per day (i.e., 90 trip ends) during peak construction. If construction were to occur over 36 months, the average daily truck trips would be slightly less. All trucks would be 65 feet or less in length and only three trucks per day (on average) would exceed 30 feet in length and require an escort (Associated Transportation Engineers 2010). Daily worker commuter travel by private car, bus, and vanpool would generate up to 660 trip ends per day.

Truck trips between the CVSR site and Twisselman aggregate mine would be just over 5 miles each way. Use of the Twisselman aggregate mine for road base would result in less heavy truck travel on SR-58 than from the use of a mine farther away to supply the materials; the nearest aggregate mine other than the Twisselman aggregate mine is just under 25 miles away. Only the 1-mile segment of SR-58 between the CVSR site entrance and the mine access road would be affected. The Applicant would prepare a Traffic Control Plan and Truck and Bus Safety Plan and repair any damage to San Luis Obispo County roadways. An average construction workforce of between approximately 210 and 260 workers per day would be required, depending on the construction period (30 to 36 months, respectively) with a short-term peak workforce of up to about 500 workers.

Dedicated shuttle buses would be provided for workers to commute to the CVSR site, with up to about 10 bus trips per day and an estimated daily average of four trips per day. Employee shuttle bus service would be provided for employees residing in the San Luis Obispo and Paso Robles–Atascadero areas. During construction, the Applicant would require 75 percent of construction workers commuting from this area to carpool or use the shuttle bus, which would reduce the number of vehicular trips originating from communities centered along the U.S. Highway 101 corridor west of the CVSR site.

Additional incentives to reduce commuter traffic would include free lunch for workers using shuttles, restricting on-site parking during construction, and appointing a rideshare coordinator to encourage carpooling. The Temporary Construction Worker Accommodations Area, which could accommodate 50 units for temporary workers, would further reduce traffic to and from the CVSR site during construction.

Construction Traffic on State Route 58

For the CVSR site, most deliveries of supplies and equipment would be from the south, and the most direct route would be I-5 northbound to SR-58 westbound (Figure 3.3-1). SR-58 currently operates between LOS A and B (Table 3.3-1). In some areas, the LOS for SR-58 is expected to decrease from A to B as a result of construction associated with the proposed action (SLO County 2011a). LOS B is an acceptable LOS for SR-58 under state and county policies. Most workers would travel to the CVSR site via eastbound and westbound SR-58. Construction-related aggregate mine trucks would travel the 1-mile segment of SR-58 between the aggregate mine access road and the CVSR site entrance. Construction of the interconnection line could result in three approximately 10-minute closures of SR-58 over the course of a day during line stringing (installation of the conductors), and adverse effects would be negligible.

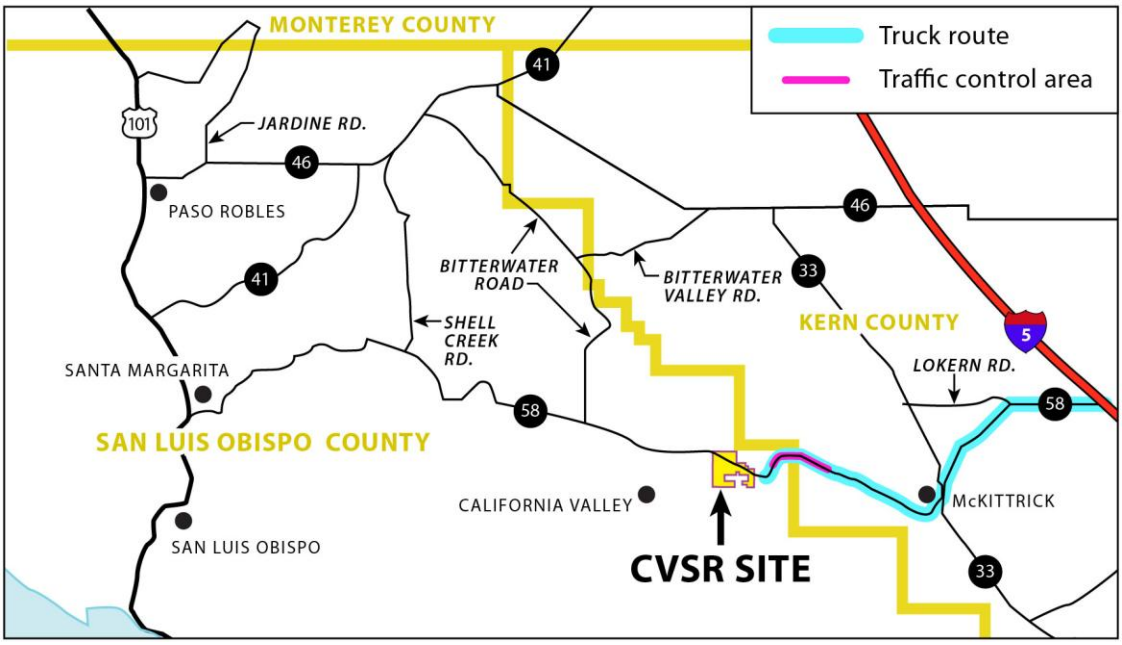


Figure 3.3-1. Traffic Control Area and Truck Route

According to the 2009 to 2010 school year bus schedules, three school buses from the Atascadero Unified School District (AUSD) travel SR-58 and SR-41 in the morning and afternoon to transport students to and from schools in Santa Margarita and Atascadero (AUSD 2010). CVSR Construction traffic would not substantially delay existing roadway traffic, and buses traveling on haul routes would generally travel in the opposite direction of construction traffic and at times when little construction traffic would be on the road. School buses would travel along relatively short segments of the construction routes. Therefore, construction traffic would not substantially delay school buses operating under the current AUSD bus routes and schedules. The Applicant would prepare and implement a School Bus Traffic Plan for construction delivery truck traffic to maximize safety and minimize delays to AUSD bus routes so that adverse effects would be negligible.

SR-58 east of the CVSR site has steep grades, sharp turns, and small shoulders in some areas. Closure of a segment of the roadway to through traffic would be required one time per day on weekdays in each direction (i.e., twice per day total) during construction to facilitate the safe passage of large trucks (trucks with wide loads or those that exceed a kingpin-to-rear-axle distance of 30 feet) via escort. Each closure of SR-58 would be for up to 35 minutes in one direction allowing escorted trucks and other vehicles to travel safely in the opposite direction. The segment of SR-58 that would be temporarily closed, the Traffic Control Area, is shown on Figure 3.3-1 and described further in Section 2.1.3.6, Truck Route.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs concluded that the closure of SR-58 for construction traffic would result in a significant impact on transportation (SLO County 2011a). The Final EIR did not include recent traffic counts along these segments of SR-58 in its analysis, however. Recent traffic counts along segments of SR-58 indicate that the number of vehicles expected to experience delays would be 10 or fewer per closure (SLO County 2011a). In addition, after the Final EIR was issued, the project was modified to incorporate Truck Route Option 3, which reduces the number of trucks that exceed the king pin to axel ratio, thereby reducing the number and duration of closures of SR-58. The Applicant would implement an outreach campaign (e.g., signage, direct mail, website, recorded telephone update line, newspaper notices) to notify the public of potential delays during truck escort periods. Truck escorts would avoid peak commute hours, and would be planned according to a set schedule so that area residents could avoid traveling this segment of SR-58 during those periods.

Furthermore, to avoid excessive closure of SR-58 where truck deliveries would be combined with those of projects constructed in the same timeframe as the CVSR Project, the Applicant would assist Caltrans with delivery coordination efforts. The Applicant would use the truck stop in Buttonwillow, California, to coordinate escorted truck groups and minimize traffic delays. Therefore, the effect of construction traffic on SR-58 would be temporary, minor, and not significant.

Construction Traffic on State Routes 33 and 46

Construction on the CVSR site would result in the contribution of a minor amount of daily truck traffic and no peak-hour truck traffic on SR-46 between Jardine Road and SR-33, and construction would not affect roads maintained by San Luis Obispo County. Up to three trucks per day would travel along SR-33 between SR-46 and SR-58. This segment of SR-33 currently operates at an acceptable LOS (LOS C). The addition of three trucks per day to this roadway segment would not reduce its LOS to unacceptable levels (SLO County 2011a).

Due to the locations of the communities along the U.S. Highway 101 corridor west of the CVSR site, the proposed employee shuttle buses would use eastbound SR-58 to the CVSR site (and westbound SR-58 when returning from the CVSR site). Employees traveling in personal autos from the communities along the U.S. Highway 101 corridor west of the CVSR site are expected to use the same route as the buses because it is the most direct route and provides the shortest travel time for commuting. Employee traffic would be reduced with implementation of the proposed Temporary Construction Worker Accommodations Area because workers who use the area would not need to commute to the CVSR site.

The Applicant would implement a Traffic Control and Management Plan that would include, but not be limited to, provisions for the use of flag persons, warning signs, lights, barricades, and cones; the placement of signage along construction haul routes that notify drivers of the presence of construction traffic on roadways; and training all construction workers to access the CVSR site using the most efficient routes, which would not include the use of SR-46. Therefore, construction of the CVSR would not adversely affect SR-33 or SR-46 (SLO County 2011a), and the effect of construction traffic on SR-33 and SR-46 would be temporary, negligible, and not significant.

Effects on Air Traffic

The private airstrip located near Black Bear Road and Belmont Trail is located at an elevation of approximately 2,000 feet, and the CVSR site ranges in elevation from approximately 2,000 to 2,200 feet. Depending on the precise location of the CVSR utility and interconnection line poles, it is possible that some poles would be located 200 feet above the elevation of the airstrip.

The Applicant would file Form 7460-1, Notification of Proposed Construction or Alteration, with the FAA for each structure located 200 feet above the elevation of the airstrip. The FAA would then complete the requisite aeronautical study and determine appropriate lighting and exterior finish for the structures for daylight marking to ensure safety. Compliance with FAA Advisory Circular 70/7460-1 would ensure incorporation of FAA requirements into CVSR design and compliance with FAA regulations. Effects on aircraft and air traffic likely would be negligible and would not be significant.

Operations

Operation of the CVSR would require a staff of about 15 permanent employees and minimal daily vehicular trips to and from the CVSR site. The CVSR would also require occasional deliveries and trash removal; however, these trips are estimated at fewer than one trip per day and would have a negligible contribution to traffic volumes on area roadways. Due to the small number of vehicular trips, effects on regional traffic from operation of the CVSR would be negligible, and impacts would not be significant.

Morro Bay–Midway Transmission Line Reconductoring

Roadways used to access the Morro Bay–Midway transmission line ROW and proposed Caliente switching station site operate at LOS C or better, except for SR-46 from Jardine Road to SR-33 which operates at LOS D during peak hours (Table 3.3-1). During construction and operations, most workers would use SR-58 to travel to and from worksites. Construction would require a maximum of about 50 workers per day. Six to eight construction-related heavy trucks (including up to two tractor trailer units) and ten medium-sized vehicles (assuming an average of 20 workers and up to two workers per car) would travel to worksites daily. Temporary road closures of 30 to 60 minutes may occur along sections of the reconductoring route that require overhead crossings.

A number of design features would be incorporated into construction activities to ensure that effects on transportation would be avoided or minimized to the extent feasible, including: encouraging construction workers to carpool; implementing Traffic Management and Traffic Control plans; and repairing public road infrastructure that may have been damaged by reconductoring activities. Construction activities would not cause the LOS of local roadways to degrade below current levels (SLO County 2011b). During operations, worker traffic would only be required for occasional maintenance of the reconductored transmission line and switching station.

In light of the implementation of a Traffic Control and Management Plan as well as other design features, the minimal impacts to air traffic, and the maintenance of LOS levels despite construction traffic, construction of the CVSR, the Caliente switching station, and reconductoring of the Morro Bay–Midway transmission line would result in temporary, minor effects on transportation. Because of the small number of vehicular trips associated with operation of these facilities, impacts from operation would be negligible and would not be significant.

3.3.3.3 Twisselman Aggregate Mine Establishment

During the 36-month CVSR construction period, an estimated 34 roundtrips per day (68 one-way trips per day) from the mine would be required. The mine is located just over 5 miles from the CVSR site. During the mine's remaining 20- to 30-year life, operation of the mine is expected to generate up to about 12 truck trips per day (24 one-way trips) on SR-58 and other local roadways that currently operate at LOS B or better. Average distances traveled by trucks during this remaining period are estimated at about 10 miles. The estimated number of truck trips related to establishment of the mine during construction and operation of the proposed action would not degrade the LOS of SR-58 or other local roadways (SLO County 2011a).

Improvements to road connections from SR-58 to the Twisselman aggregate mine (an un-named dirt road) and the CVSR site entrance (Boulder Creek Road, which is a dirt road) would be implemented pursuant to Caltrans standards to accommodate the haul trucks. In addition, the Applicant or mine operator would enter into a roadway repair agreement with the San Luis Obispo County Public Works Department. Because of these roadway improvements and because mine traffic would not degrade the LOS of SR-58 or other local roadways, the effects on transportation associated with the Twisselman aggregate mine during construction and operation of the proposed action would be negligible, and impacts would not be significant.

3.3.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on transportation. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.4 Noise

Noise is defined as any unwanted sound. Whether sound is perceived as a noise by a receiver depends on subjective factors, including the amplitude and duration of the sound (Rodgers and Manwell 2006). The frequency of a sound also greatly influences the ability of a receiver to hear a sound; people are generally more sensitive to certain higher frequency sounds than lower frequency sounds. Noise is measured in terms of sound-pressure level using units called decibels. Since the range of intensities that the human ear can detect is large, the scale is based in multiples of 10, the logarithmic scale. Each interval of 10 decibels indicates a sound energy 10 times greater. Each interval is perceived by the human ear as being roughly twice as loud.

The A-weighted sound level (dBA) is the sound level measurement (in decibels) that accounts for this preferential response to frequency and provides some correlation with the sensitivity of the human ear to that sound. Examples of A-weighted sound levels are as follows: jet takeoff at 200 feet = 120 dBA (pain threshold); heavy truck at 50 feet = 90 dBA (very loud); average traffic on street corner = 75 dBA (moderately loud); light auto traffic at 100 feet = 55 dBA (medium noise level); library = 35 dBA (quiet); hearing threshold = 10 dBA (Rodgers and Manwell 2006). A-weighted sound levels are typically measured or presented as the equivalent sound pressure level (Leq), which is defined as the average noise level, on an equal-energy basis for a stated period of time. Sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day-night period (Ldn).

The Ldn, or day-night average sound level, is equal to the 24-hour A-weighted equivalent sound level that is weighted to account for differences in noise levels and the perception of noise levels during nighttime hours (10:00 p.m. to 7:00 a.m.). The Community Noise Equivalent Level (CNEL) is a noise index that accounts for the greater annoyance of noise during both the evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.). The CNEL and Ldn scales were developed because, during the evening and at night, background noise levels are generally lower than during the daytime. Most household noise also decreases at night, and exterior noise becomes more noticeable.

3.4.1 Regulatory Framework

No federal or State of California noise policies or regulations apply to the proposed CVSR Project.

3.4.1.1 San Luis Obispo County Noise Ordinance

The San Luis Obispo County Land Use Ordinance establishes exterior noise level standards shown in Table 3.4-1. Section 22.10.120.A.4 of the Land Use Ordinance states that noise associated with construction work that occurs between 7:00 a.m. and 9:00 p.m. on weekdays and 8:00 a.m. and 5:00 p.m. on weekends is exempt from the noise standards established in the ordinance. In addition, noise sources associated with work by a private or public utility in the maintenance or modification of its facilities are exempt from noise requirements between the hours of 7:00 a.m. and 9:00 p.m. on weekdays and weekends.

Table 3.4-1. Maximum Allowable Exterior Noise Levels (San Luis Obispo County)

Sound Levels	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (dBA Leq)	50	45
Maximum level (dBA Lmax)	70	65

Source: SLO County 2010e.

Key:

dBA = A-weighted decibels; Leq = Equivalent sound pressure level or the average noise level, on an equal-energy basis, for a stated period of time; Lmax = Highest A-weighted sound level from a noise source during a single noise event.

3.4.1.2 San Luis Obispo County Noise Element

The Noise Element of the San Luis Obispo County General Plan limits noise levels from new transportation noise sources as follows: Policy 3.3.3, noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 60 dBA Ldn/CNEL daytime or nighttime within outdoor activity areas of residential land uses (i.e., at the property line of the receiving land use) (SLO County 1992).

3.4.2 Affected Environment

The proposed action would be located in a rural area with few residences or other sensitive noise receptors. Ambient noise levels in the vicinity of the CVSR site were determined to be between 30 and 66 dBA Leq during the day and 24 and 50 dBA Leq at night (SLO County 2011a). During the day, existing noise sources in the area include vehicle traffic on SR-58, natural sounds, and an occasional aircraft overflight (SLO County 2011a). Several occupied residences that may be sensitive receptors are located within 2,000 feet of the nearest tracker row in a solar array at the CVSR site (see Table 3.4-2; Figure 3.4-1).

Table 3.4-2. Sensitive Receptors Nearest to the Proposed Solar Arrays at the CVSR Site: Approximate Distances and Noise Levels

Sensitive Receptors	Distance (feet)[1]	Lmax (dBA)[2]
Receptor #4	570	64
Receptor #17[3]	1,775	54
Receptor #18	1,285	57
Receptor #19	225	72
Receptor #22	1,490	56
Receptor #24	1,795	54

Source: SunPower 2010 and Ecology and Environment 2011.

Notes:

1 Distance from the nearest tracker row in a solar array to a sensitive receptor.

2 Assuming a noise level of 90 dBA Lmax occurring at the nearest tracker row in a solar array to the sensitive receptor.

3 Receptor #17 located between Arrays 7 and 11 (see Figure 3.4-1)

The closest structures to the route along which the Morro Bay–Midway transmission line would be reconductored for the CVSR Project are located within 2,000 feet of the transmission line, between MP 25 and MP 32.5. Some of these structures may be occupied residences. The closest sensitive receptor to the proposed Caliente switching station would be more than 2 miles away (SLO County 2011b). The closest sensitive receptor to the Twisselman aggregate mine is located approximately 2.75 miles away. No sensitive receptors are located within 0.5 mile of the mine's haul route (SLO County 2011a).

3.4.3 Environmental Effects

3.4.3.1 Methodology

The following evaluation of the effects of noise and vibration from construction and operation of the CVSR Project included a review of San Luis Obispo County and Kern County noise standards, the existing noise environment in the CVSR Project area, the location of sensitive receptors in proximity to CVSR site, and projected noise levels from equipment, vehicles, and activities that would be associated with the CVSR Project.

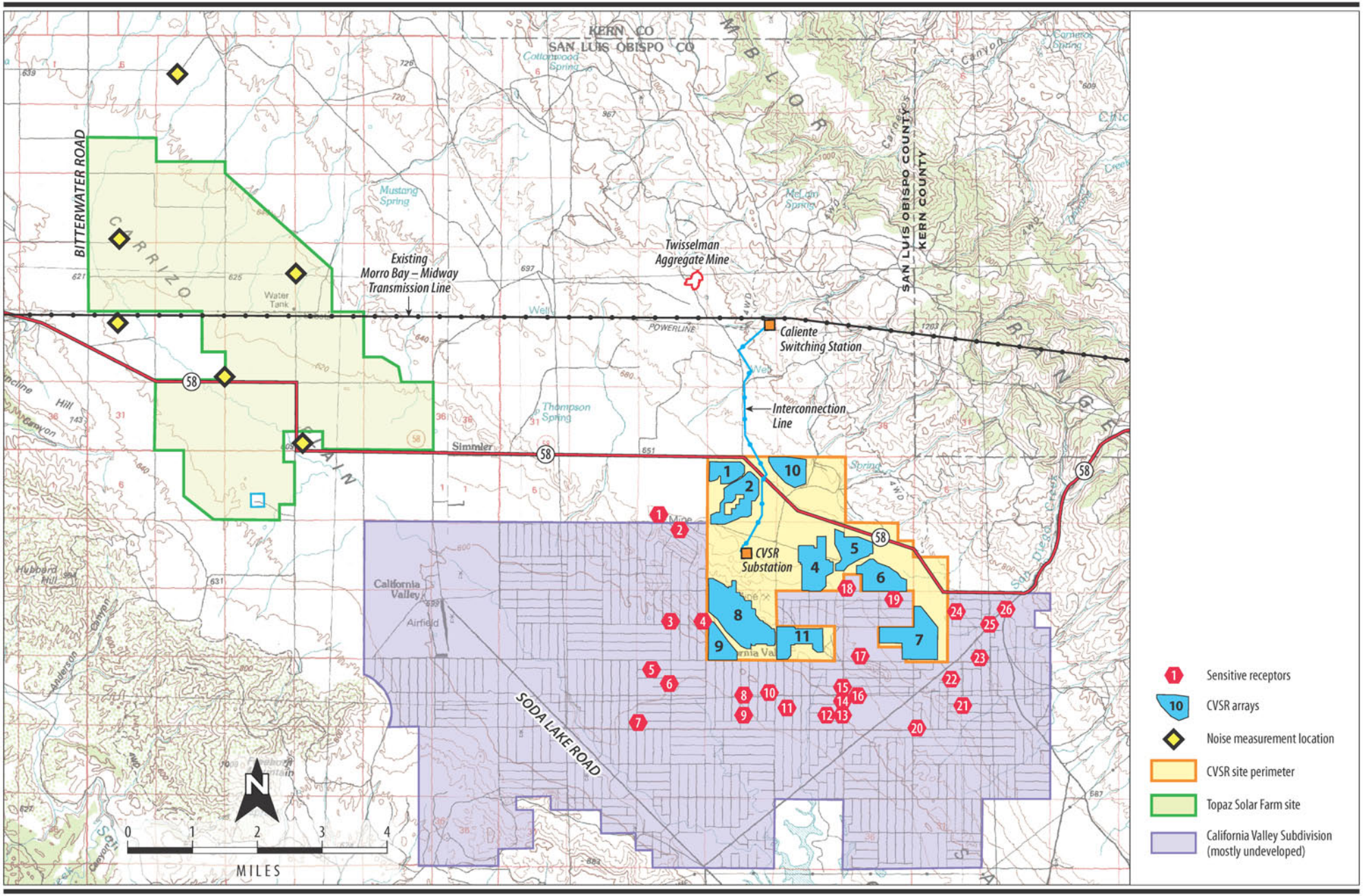


Figure 3.4-1

Sensitive Receptors and Noise Measurement Locations

California Valley Solar Ranch Project

3.4.3.2 Proposed Action

California Valley Solar Ranch

Noise associated with grading and scraping equipment, the construction of buildings and structures, and traffic would occur during construction, which would last for 30 to 36 months. During the construction period, construction workers are projected to be onsite in three shifts: 7:00 a.m. to 4:00 p.m., 8:00 a.m. to 5:00 p.m., and 9:00 a.m. to 6:00 p.m., five days a week, year-round, except on standard U.S. holidays. If construction work is required on Saturdays or Sundays, it would be between 8:00 a.m. and 5:00 p.m. Due to extreme weather in the summer months (June 1 through September 30), the construction crews may shift hours to start as early as 5:00 a.m. and end as late as 9:00 p.m. Noise from any construction activities occurring between 5:00 a.m. and 7:00 a.m. would not exceed 45 dBA at the perimeter property boundaries.

The CVSR would operate seven days per week during daylight hours with 24-hour on-site security personnel. Operational noises would be limited to the sound of electrical equipment and light-duty vehicle traffic for security patrols, maintenance staff, and panel wash crews.

Construction Noise

The design of the proposed action specifies the use of rotary drilling equipment that would range in size from a small unit mounted on a Bobcat®-sized vehicle to larger drilling rigs mounted on specialty trucks. Noise generated from motor exhausts and the mechanical noise of rotary drills is anticipated to be the greatest noise source during construction activities. The peak noise level for this equipment is approximately 90 dBA Lmax at 10 feet, which is similar to noise levels associated with typical construction vehicles. A noise level of 90 dBA Lmax at 10 feet would attenuate to 70 dBA Lmax at approximately 100 feet. Peak noise levels within 50 feet of construction vehicles that would be used for construction of the proposed action are shown in Table 3.4-3.

Table 3.4-3. Construction Equipment Peak Noise Levels

Equipment	Noise Level at 50 feet (dBA Lmax)
Scraper	84
Grader	83
Bulldozer	82
Excavator	81
Pad Drum Vibratory Roller	80
Dump Truck	76

Source: SLO County 2011a.

Noise would occur at different locations within the CVSR site during the construction period. The loudest source of combined composite construction noise sources would generate approximately 84 dBA one-hour Leq at 75 feet (the minimum distance to the CVSR site perimeter) and approximately 75 dBA one-hour Leq at 200 feet (the estimated distance to the closest sensitive receptor) (SLO County 2011a). A level of 84 dBA one-hour Leq would attenuate to 50 dBA Leq[3] at approximately 3,700 feet (SLO County 2011a). Therefore, a distance or buffer between project activities and the property line of approximately 3,700 feet would be required to reduce construction noise to a level of 50 dBA Leq.

[3] 50 dBA Leq is San Luis Obispo County's one hour exterior noise limit for stationary sources.

These peak noise levels could be noticeable at receptors located near the CVSR site perimeter because they would be more than 10 dBA above the existing ambient noise level. Construction noise, however, is exempt under San Luis Obispo County Noise Ordinance if construction work occurs between 7:00 a.m. and 9:00 p.m. on weekdays and 8:00 a.m. and 5:00 p.m. on weekends. Furthermore, if construction activity is planned outside the exemption period (e.g., from 5:00 a.m. to 7:00 a.m. during the summer to avoid hot weather), the Applicant would limit noisy construction activities[4] to times when construction noise is exempt under the noise ordinance. The Applicant would also install temporary noise barriers around stationary equipment at the primary construction staging area to reduce noise levels.

Construction would occur over a 3-year period in three distinct phases both in terms of time (each phase would be less than a year) and location (each phase would occur in a different section of the approximately 4,700-acre CVSR site). Because of the phasing, the exposure of sensitive receptors to peak composite noise levels would occur at different times. Furthermore, few sensitive receptors are located within 2,000 feet of the CVSR site (Table 3.4-2), and noise generated would attenuate quickly the farther it radiates from its source. Sensitive receptors would be exposed to peak composite (worst-case scenario) noise for short periods during hours when noise associated with construction is allowed (Section 3.4.1, Regulatory Framework) and would perceive this noise at a lower level than at the source.

Noise from the 50 spaces provided for construction workers within the Temporary Construction Worker Accommodation Area would be expected to be approximately 50 to 60 dBA Ldn/CNEL, similar to the typical noise level from mobile homes. This noise level would be below the noise limits of the County of San Luis Obispo General Plan, Noise Element and would not be significant (SLO County 2011a).

Although construction activities conducted between 7:00 a.m. and 9:00 p.m. on weekdays and 8:00 a.m. and 5:00 p.m. on weekends are exempt from San Luis Obispo County Land Use Ordinance's exterior noise standards shown on Table 3.4-1, due to the 30 to 36 month construction period, the Final EIR considered construction at the CVSR site to be a stationary noise source rather than a construction noise source. Thus, the Final EIR determined that the CVSR would result in a significant impact because construction noise would exceed San Luis Obispo County's General Plan policy for daytime noise from a stationary noise source of 70 dBA Lmax or 50 dBA Leq at the property line of the receiving land use.

Additionally, although construction noise could be as high as 73 dBA Lmax at the closest sensitive receptor (located approximately 200 feet from a solar array as shown in Table 3.4.2), when construction occurs within 3,700 feet of the CVSR site perimeter, the San Luis Obispo County Environmental Monitor would monitor noise levels. Should noise level thresholds be exceeded within 3,700 feet of the CVSR site perimeter, all noise-related work would stop until adequate noise attenuation measures were implemented to meet San Luis Obispo County limits. Because the Applicant would limit noisy construction activities to the hours exempt from the noise limits specified in the ordinance, monitor noise levels within 3,700 feet of the CVSR site perimeter, and implement noise attenuation measures that meet established limits, temporary increases in noise levels from construction would be minor and not significant.

Construction Truck Traffic

CVSR construction traffic would include 64 truck trip ends per day on average. In addition, daily workers would commute to the site by private car, bus, and vanpool, generating an average of 328 roundtrips per day. Traffic noise studies conducted by San Luis Obispo County have estimated that sensitive receptors located at 50 feet from the road centerline along the proposed truck haul route would be exposed to approximately 59 Ldn from construction truck traffic noise, which could be a noticeable increase over traffic noise levels existing without the proposed action of 30 to 66 dBA Leq daytime and 24 to 50 dBA Leq nighttime (SLO County 2011a). However, the noise levels from construction truck traffic would be

[4] Noisy construction activities refer to those activities that would be likely to exceed 70 dBA Lmax or 50 dBA Leq at the CVSR site perimeter during daytime hours, or 65 dBA Lmax or 45 dBA Leq during nighttime hours (see Table 3.4-1).

below the County standard for maximum allowable noise exposure to residential land uses from transportation noise sources of 60 dBA Ldn/CNEL. In addition, the Applicant would implement noise-reducing features and practices, such as using mufflers and engine shrouds. Therefore, the temporary effects of noise from construction truck traffic on sensitive receptors would be negligible, and impacts would not be significant.

Construction Groundborne Vibration/Groundborne Noise

Construction of the proposed action would not require blasting or impact pile-driving that could cause vibration impacts at close distances. Construction activities would result in minor amounts of groundborne vibration resulting from the use of large construction equipment and haul trucks. However, such groundborne noise or vibration would attenuate rapidly from the source and would not be perceptible outside of construction areas. Groundborne vibration due to construction truck traffic would not be substantially greater than existing levels at sensitive receptors located near haul routes, and construction truck traffic would be limited during evening and night hours. Sources of groundborne vibration and noise would not adversely affect sensitive receptors, and persons would not be exposed to excessive groundborne vibration or noise; therefore, impacts would not be significant.

Permanent Noise Levels During Operations

Noise during operations would be generated by the 250 to 500 inverters located throughout the solar generation facility. Noise from the inverters would be controlled by housing them in steel and concrete enclosures. Transformers would be located with the inverters, either inside or outside the inverter enclosure. Noise measurements were taken at an existing SunPower facility located at Nellis Air Force Base in Las Vegas, Nevada on August 5, 2009. This facility uses SunPower's T20 Tracker systems (though the tracker foundations vary) and similar inverters as those proposed for the CVSR. These measurements resulted in noise levels of 73 dBA Leq immediately adjacent to the inverter enclosure, where two inverter enclosures were side-by-side, 55 dBA Leq at 50 feet from the inverter enclosures, and 44 dBA Leq at 50 feet from the solar arrays (SLO County 2011a).

Noise levels associated with the substation have been estimated based on the noise levels of a large transformer to be approximately 40 dBA Leq at 200 feet (SLO County 2011a). Substation transformer noise would be generated approximately 0.5 mile from the CVSR site perimeter. Solar array, inverter, transformer, and substation operational noise levels would be below the daytime exterior noise standard established in the San Luis Obispo County Noise Ordinance of 50 dBA Leq (see Table 3.4-1). Therefore, the effects of noise on sensitive receptors from operating the solar arrays, associated inverters and transformers, and the substation would be negligible and impacts would not be significant.

Noise from Routine Inspection and Maintenance Vehicles During Operations

Light trucks or automobiles that travel at low speed would be used for routine operational activities, including security patrols, from within the CVSR site perimeter. According to the Technical Noise Supplement (Caltrans 2009) of the Caltrans Traffic Noise Analysis Protocol (Caltrans 2006), at 15 miles per hour, automobiles, including light trucks, emit approximately 53 dBA Lmax. This noise level would be below the maximum allowable exterior noise standard established in the San Luis Obispo County Noise Ordinance of 70 dBA Lmax daytime and 65 dBA Lmax nighttime (see Table 3.4-1). In addition, trucks and other engine-powered equipment would include noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. Regardless, the noise ordinance states that noise sources associated with work performed by a private or public utility in the maintenance or modification of its facilities are exempt from noise requirements between the hours of 7:00 a.m. and 9:00 p.m. on weekdays and weekends. With the use of equipment that incorporates noise reduction features, the effects of noise on sensitive receptors from routine inspection and maintenance vehicles would be negligible, and impacts would not be significant.

Noise from Panel Washing During Operations

Panels would be washed no more than twice per year during daylight hours. Panel washing would be of short duration in any one area and would be further limited to the hours of 10:00 a.m. to 5:00 p.m. when occurring within 1,100 feet of the CVSR site perimeter. At 200 feet, the distance from the closest sensitive receptor to a tracker row in a solar array (see Table 3.4-2), the noise level from a single crew would be approximately 42 dBA Leq. At 75 feet, a single crew would generate a noise level of approximately 50 dBA Leq. A single crew would wash a row of 40 panels in approximately 3.3 minutes, or 5 seconds per panel (SunPower 2010). In addition, maintenance activities for public and private utilities are exempt from the San Luis Obispo County Noise Ordinance maximum allowable exterior noise level standards between the hours of 7:00 a.m. and 9:00 p.m. on weekdays and weekends.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that noise from three panel washing crews operating simultaneously could generate a noise level of approximately 73 dBA Leq at 75 feet, which would violate the San Luis Obispo County General Plan's policy for maximum allowable noise exposure from stationary noise sources of 50 dBA Leq at the property line of the receiving land use (SLO County 2011a).

However, the Final EIR did not consider noise reductions that would result from reducing the number of panel washing crews operating simultaneously. In addition, the Final EIR assumed that an industrial air compressor that would produce a noise level of 73 dBA Lmax would be part of the panel washing system. However, such a powerful industrial air compressor would damage the solar panels and therefore would not be used. The Applicant proposes to use a pressure washer model (such as a HY-SPEC Hydraulik HYSJDCM170 pressure washer) that typically generates noise levels of 60 dBA or less. The Applicant would ensure that noise generated from panel washing does not exceed 50 dBA Leq at sensitive receptors by using only one panel wash crew with one light truck and one pressure washer within 250 feet of sensitive receptors. In addition, the pressure washer models used for panel washing would be designed by the manufacturer to generate less than 60 dBA Lmax at 50 feet. Therefore, the effects of noise on sensitive receptors from panel washing would be negligible, and impacts would not be significant.

Morro Bay–Midway Transmission Line Reconductoring

Reconductoring Construction Noise

Construction noise from the Morro Bay–Midway transmission line reconductoring would occur from the use of equipment for the reestablishment of roads, tower replacement, tower raises, conductor installation, switching station construction, and site restoration activities. Construction would last for 20 months with successive activities taking place as described in Section 2.1.3. Reconductoring work would be distributed over a 35-mile distance, minimizing the duration of construction noise impacts on sensitive receptors. The Caliente switching station site would be cleared, graded, and constructed during the first year of construction of the proposed action.

During construction, portable barriers would be used to minimize noise from small construction equipment (e.g., compressors) in proximity to sensitive receptors, and quieter models of equipment would be used wherever possible. Equipment exhaust would be directed away from buildings, truck traffic would be routed away from sensitive receptors, and local residents would be notified of the timeframe for construction activities. In addition, noise from construction activities would not violate local rules, standards, or ordinances. With the implementation of these measures to reduce noise, the temporary effects of noise on sensitive receptors from transmission line reconductoring and construction of the Caliente switching station would be negligible, and impacts would not be significant.

Construction Groundborne Vibration/Groundborne Noise

Construction activities would result in minor groundborne vibration from the use of large construction equipment and haul trucks; however, such groundborne noise or vibration would attenuate rapidly at short distances from the source and would not be perceptible outside of construction areas. It is not anticipated that blasting or impact pile-driving would be required. If required, these activities would be limited to the mountainous Temblor Range area, which has no sensitive receptors near the transmission line route. There are no sensitive receptors located close enough to the Caliente switching station site to be impacted by groundborne vibration or groundborne noise. Therefore, sources of groundborne vibration or groundborne noise would not adversely affect sensitive receptors, and impacts would not be significant.

Permanent Noise Levels During Operations

During operations, sound energy would be generated by the transmission line due to the corona effect. During wet weather conditions, water droplets collect on conductors and increase corona activity, which results in a crackling sound. Audible noise levels from corona activity would be less than 55 dBA within the transmission line ROW. Under fair weather conditions, noise levels would be less than 30 dBA. Breakers at the Caliente switching station would generate noise levels of approximately 80 dBA Leq at 3 feet, and less than 45 dBA Leq at 200 feet. The maximum noise level from the breakers would be approximately 105 dBA Lmax at 50 feet. This noise level could occur when a breaker gets thrown, which occurs infrequently (PG&E 2010). Breaker noise would diminish to below the maximum allowable exterior noise levels established in the San Luis Obispo County and Kern County noise ordinances over a distance of less than 1 mile. The nearest sensitive receptor would be approximately 2 miles away. Therefore, the effects of noise on sensitive receptors from the reconductored transmission line and completed Caliente switching station would be negligible, and impacts would not be significant.

Noise from Routine Inspection and Maintenance During Operations

Routine inspection and maintenance of the transmission line occurs under existing baseline conditions, and these activities would not increase after transmission line reconductoring. The new Caliente switching station would require maintenance, but there are no sensitive receptors within 2 miles of the Caliente switching station. Therefore, the effects of noise on sensitive receptors from routine inspection and maintenance would be negligible, and impacts would not be significant.

3.4.3.3 Twisselman Aggregate Mine Establishment

During Phase 1 of the CVSR Project, the Twisselman aggregate mine would operate intermittently Monday through Friday from 6:00 a.m. to 9:00 p.m. or dusk, whichever is earlier. Mining operations during Phases 2 and 3 would occur Monday through Friday between 7:00 a.m. and 7:00 p.m. Mining operations for other projects would be self-serve with purchasers loading their own trucks from stockpiles of material processed and available for pickup. Up to two employees would be onsite on an intermittent basis during major production runs and loading periods. Equipment used for mining operations would include a bulldozer, scraper, front-end loader, and water truck. Peak noise levels within 50 feet of typical construction equipment are shown in Table 3.4-3. No blasting would occur. The closest sensitive receptor would be approximately 2.75 miles (14,520 feet) away. No new construction would be associated with mine establishment.

Noise from Mine Truck Traffic Along Haul Routes

Trucks would make approximately 42 roundtrips per day (30 associated with the proposed action and 12 associated with other projects in the region). Following construction of the proposed action, up to 12 roundtrips per day are likely during the mine's remaining 20- to 30-year life, which would be similar to the number of roundtrips for past mine operations. The maximum noise levels from trucks and equipment traveling to and from the mine would be approximately 76 dBA Lmax at 50 feet (assuming light trucks and dump trucks). This noise level would reduce to approximately 41 dBA Lmax at 0.5 mile or 37 dBA Leq at 0.5 mile from the road servicing the CVSR site. These levels would be within existing ambient

levels and not violate San Luis Obispo County's maximum allowable noise levels from transportation sources (60 Ldn/CNEL for residential land uses). Therefore, the effects of this noise source on sensitive receptors would be negligible, and impacts would not be significant.

Noise from Activity at the Mine Site

Noise from heavy equipment and truck traffic at the Twisselman aggregate mine would lead to increased ambient noise levels in the immediate vicinity similar to those occurring when the mine was previously operated. Operation of the mine would result in estimated noise levels of less than 39 dBA Leq at the closest sensitive receptor (approximately 2.75 miles away). Noise levels from operation of the Twisselman aggregate mine as perceived at the closest sensitive receptor would be within existing ambient noise levels and not violate San Luis Obispo County's maximum allowable noise levels from transportation noise sources (60 Ldn/CNEL for residential land uses). The effects of this noise source on sensitive receptors would be negligible, and therefore, impacts would not be significant.

Routine inspection and maintenance activities would include inspections by the San Luis Obispo County's Environmental Monitor during the 2.5 to 3 years of CVSR constwruction and yearly inspections during operations, as required under the SMARA. The maximum pass-by noise levels from light trucks traveling to and from the mine would be 63 dBA Lmax at 50 feet and 30 miles per hour (FHWA 1995). A noise level of 63 dBA at 50 feet would be reduced to less than 45 dBA at 1,000 feet based on geometric spreading of sound. Noise from light trucks used for intermittent inspection and maintenance would not violate San Luis Obispo County's maximum allowable noise levels from transportation noise sources (60 Ldn/CNEL for residential land uses). The effects of this noise source on sensitive receptors would be negligible, and therefore, impacts would not be significant.

3.4.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with noise from the proposed action. However, the no action alternative would not contribute to assisting the State of California to meet its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.5 Air Quality

3.5.1 Regulatory Framework

3.5.1.1 Federal

National Ambient Air Quality Standards

The Federal Clean Air Act directs the United States Environmental Protection Agency (EPA) to develop, implement, and enforce environmental regulations to ensure clean and healthy ambient air quality. The EPA has set National Ambient Air Quality Standards (NAAQS) for seven principal pollutants (criteria pollutants): carbon monoxide (CO); lead; nitrogen dioxide (NO_2); ozone; particulate matter less than or equal to ten microns in diameter (PM_{10}); particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$); and sulfur dioxide (SO_2) (see Table 3.5-1). Ozone is created at near-ground level by a chemical reaction between NO_X and volatile organic compounds (VOCs) in the presence of sunlight. Thus, NO_X and VOCs are often referred to as ozone precursors.

Table 3.5-1. Summary of National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary	Secondary	
CO	8-hour	9 ppm	–	9 ppm
	1-hour	35 ppm	–	20 ppm
Lead	3-month (rolling avg.)	0.15 µg/m^3	0.15 µg/m^3	–
	Quarterly	1.5 µg/m^3	1.5 µg/m^3	–
	30-Day	–	–	1.5 µg/m^3
NO_2	Annual	0.053 ppm	0.053 ppm	0.030 ppm
	1-hour	0.100 ppm(3)	–	0.18 ppm
Ozone	8-hour	0.075 ppm(4) (0.08 ppm[5])	0.075 ppm(4) (0.08 ppm[5])	0.070 ppm
	1-hour	–	–	0.09 ppm
PM_{10}	Annual	–	–	20 µg/m^3
	24-hour	150 µg/m^3 (6)	150 µg/m^3 (6)	50 µg/m^3
$PM_{2.5}$	Annual	15.0 µg/m^3 (7)	15.0 µg/m^3 (7)	12 µg/m^3
	24-hour	35 µg/m^3 (8)	35 µg/m^3 (8)	–
SO_2	Annual	0.03 ppm	–	–
	24-hour	0.14 ppm	–	0.04 ppm
	3-hour	–	0.5 ppm	–
	1-hour	0.075 ppm (9)	–	0.25 ppm
Sulfates	24-hour	–	–	25 µg/m^3
Hydrogen Sulfide	1-hour	–	–	0.03 ppm
Vinyl Chloride	24-hour	–	–	0.01 ppm
Visibility-Reducing Particles	8-hour	–	–	– (10)

Sources: 40 CFR Part 50; 17 California Code of Regulations (CCR) Section 70200.

Notes:

1 Times of 24 hours or less for CO and SO_2 are not to be exceeded more than once per year.

2 Standards for ozone, CO, SO_2 (1 and 24 hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

3 The 3-year average of the 98th percentile of the daily maximum 1-hour average must not exceed 0.100 ppm.

4 The 3-year average of the 4th highest daily maximum 8-hour average concentration must not exceed 0.075 ppm per year.

5 1997 standard; the 3-year average of the 4th highest daily maximum 8-hour average concentration each year must not exceed 0.075 ppm.

6 Not to be exceeded more than once per year on average over 3 years.

7 The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations must not exceed 15.0 µg/m^3.

8 The 3-year average of the 98th percentile of 24-hour concentrations within an area must not exceed 35 µg/m^3.

9 The 3-year average of the 99th percentile of the daily maximum 1-hour average must not exceed 0.075 ppm.

10 Extinction coefficient of 0.23/km visibility of 10 miles or more due to particles when relative humidity is less than 70%.

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

General Conformity Rule

Section 176 of the 1990 Federal Clean Air Act amendments required the EPA to promulgate rules to ensure federal actions conform to the appropriate State Implementation Plan (SIP). These rules, known together as the General Conformity Rule (40 CFR 51.850–.860 and 40 CFR 93.150–.160), require any federal agency responsible for an action in a nonattainment area to determine that the action conforms to the applicable SIP or is exempt from the General Conformity Rule requirements. The General Conformity Rule applies only to emissions caused by federal actions that occur in a federal nonattainment or maintenance area (see Section 3.5.2.1 for more information on these designations). Further, only

emissions that equal or exceed the General Conformity Rule's *de minimis* thresholds would require the need for a General Conformity determination.

3.5.1.2 State

California Ambient Air Quality Standards

Under the California Clean Air Act, and through the California Air Resources Board (CARB), the California Ambient Air Quality Standards (CAAQS) establish standards, in addition to NAAQS, for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

EPA/CARB Off-Road Mobile Sources Emission Reduction Program

The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources, including construction equipment, in order to attain California standards. These standards and ongoing rulemaking jointly address emissions of NO_X and diesel particulate matter.

3.5.1.3 Local

The CVSR site is located within San Luis Obispo County, which is part of the South Central Coast Air Basin. Local air quality management is administered by the San Luis Obispo County Air Pollution Control Division (APCD). The western section of Kern County, where reconductoring would occur, is part of the San Joaquin Valley Air Basin. Local air quality management is administered by the San Joaquin Valley APCD.

3.5.2 Affected Environment

3.5.2.1 Air Quality

The EPA and CARB designate areas as attainment, nonattainment, or unclassified for the NAAQS and CAAQS, respectively. Designation by criteria pollutant for San Luis Obispo County and San Joaquin Valley Air Basin (Kern County) are provided in Table 3.5-2. In addition, the Applicant and the San Luis Obispo County APCD reviewed the potential for naturally occurring asbestos within the CVSR site and Twisselman aggregate mine and found that, while asbestos deposits occur in the surrounding area, they do not occur within the CVSR site or mine (SLO County 2011a).

3.5.2.2 Greenhouse Gases

GHGs are gases in the Earth's atmosphere that are opaque to short-wave incoming solar radiation, but absorb long-wave infrared radiation re-emitted from the Earth's surface warmed by the incoming solar radiation. In simple terms, GHGs are chemical compounds in the Earth's atmosphere that trap heat. GHGs allow sunlight to enter the atmosphere freely, but limit the amount of infrared radiation (heat) that bounces back into space after striking the Earth's surface. Most studies indicate that the Earth's climate has warmed over the past century due to increased emissions of GHGs, and that human activities affecting emissions to the atmosphere are likely an important contributing factor.

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor ($H_2O_{(g)}$), CO_2, methane (CH_4), and nitrous oxide (N_2O) are examples of GHGs that have both natural and manmade sources, while other GHGs, such as chlorofluorocarbons and sulfur hexafluoride (SF_6), are exclusively manmade. In the United States, GHG emissions come mostly from energy use. Such emissions result from combustion of fossil fuels used for electricity generation, transportation, industry, heating, and other needs. Energy-related CO_2 emissions represent 82 percent of total manmade GHG emissions in the United States (U.S. Energy Information Administration 2009).

Table 3.5-2. CVSR Project Attainment Status for Criteria Pollutants

Criteria Pollutant	Designations / Classification			
	San Luis Obispo County		San Joaquin Valley Air Basin	
	NAAQS	CAAQS	NAAQS	CAAQS
Ozone – 1 Hour	–	Nonattainment	– [(1)]	Nonattainment/ Severe
Ozone – 8 Hour	Unclassified/Attainment	Nonattainment	Nonattainment/ Extreme	Nonattainment
Respirable Particulate Matter (PM_{10})	Unclassified/Attainment	Nonattainment	Attainment / Maintenance Area	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassified/Attainment	Attainment	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Unclassified/Attainment	Attainment	Unclassified/ Attainment	Unclassified/ Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment	Unclassified/ Attainment	Attainment
Sulfur Dioxide (SO_2)	Unclassified/Attainment	Attainment	Unclassified/ Attainment	Attainment
Lead (Particulate)	Unclassified/Attainment	Attainment	No Designation	Attainment
Hydrogen Sulfide	–	Attainment	–	Unclassified
Sulfates	–	Attainment	–	Attainment
Visibility Reducing Particles	–	Attainment	–	Unclassified
Vinyl Chloride	–	No Designation	–	Attainment

Sources: 40 CFR Part 81, CCR Title 17 Sections 60200–60210.

Note:

[1] Although the 1-hour ozone standard was revoked in 1995, this area continues to remain subject to certain requirements for the standard through anti-backsliding provisions in the EPA's rule implementing the 8-hour ozone standard.

Computer-based modeling suggests that rising GHG concentrations generally produce an increase in the average temperature of the Earth, which may produce changes in sea levels, rainfall patterns, and intensity and frequency of extreme weather events. Collectively, these effects are referred to as "climate change" (National Energy Information Center 2008). The Intergovernmental Panel on Climate Change (IPCC), in its Fourth Assessment Report, stated that warming of the earth's climate system is unequivocal and that warming is very likely due to anthropogenic GHG concentrations (IPCC 2007). Current operation and maintenance activities associated with the Morro Bay–Midway transmission line generate small amounts of GHGs in the project vicinity.

3.5.3 Environmental Effects

3.5.3.1 Methodology

The effects on air quality were assessed by developing emission estimates associated with proposed construction and operational activities. Emission calculations were based on anticipated on-road vehicle use, off-road equipment use, and land disturbance. Calculations were based on published emission factors GHG emissions are reported in units of CO_2e to account for the global warming potential of each GHG. For example, since CH_4 has a global warming potential of 21, direct CH_4 emissions were converted to CO_2e emissions by multiplying the CH_4 emissions by a factor of 21.

3.5.3.2 Proposed Action

California Valley Solar Ranch

Construction

The CVSR would be constructed over a period of approximately 3 years. Emissions would occur from the combustion of fuel by vehicles and construction equipment. Emissions of fugitive dust would be generated by grading activities and vehicle travel for construction of the proposed action. Since solar arrays can be successfully installed on relatively uneven ground, only limited grading is expected over the CVSR site. Construction-related traffic generation would include equipment delivery, on- and off-site vehicle and construction equipment, and automobile trips for construction workers in personal vehicles. A summary of estimated construction emissions is provided in Table 3.5-3.

Table 3.5-3. Total CVSR Construction Criteria Pollutant Emissions

Emission Source	3-Year Total Criteria Pollutant Emissions[1] (tons)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Off-Road Equipment Exhaust	12.9	44.4	106.5	0.13	4.7	4.7
On-Road Vehicles	13.1	107.8	51.4	0.18	3.0	2.3
Fugitive Dust (Grading)	–	–	–	–	47.2	9.9
Fugitive Dust (Roads)	–	–	–	–	49.6	3.8
Batch Plant	–	–	–	–	0.45	0.45
TOTAL	**26**	**152**	**159**	**0.31**	**105**	**21**

Note:
[1] For detailed calculations, refer to Appendix C of this EA.
Key:

VOC = Volatile Organic Compounds.
CO = Carbon Monoxide.
NO_X= Oxides of Nitrogen.
$PM_{2.5}$= Particulate Matter (2.5 microns in diameter or less).
PM_{10} = Particulate Matter (10 microns in diameter or less).
SO_2 = Sulfur Dioxide.

A number of design features would be incorporated into the proposed action to ensure that air pollutant emissions generated during construction would be reduced below the levels presented in Table 3.5-3 to the maximum extent feasible, including: use of on-site Portland cement concrete batch plant(s) to reduce heavy-duty truck trips; dedicated shuttle buses and/or van pools for workers to reduce overall traffic to the CVSR site; water use to control dust; and methods to reduce exhaust emissions (e.g., limiting idling time).

These design features and other measures would be outlined in the Construction Activity Management Plan, which would be submitted to the San Luis Obispo County APCD for approval. The Plan would include the following elements: a dust control management plan specifying fugitive dust control measures; tabulation of on- and off-road construction equipment emissions; methods to reduce construction equipment exhaust; a schedule of construction truck trips during non-peak hours to reduce peak-hour emissions; limits on the length of construction work days, if necessary; and the phasing of construction activities, if appropriate. The Applicant would also implement or fund a program for off-site mitigation of ozone precursors (NO_X and VOCs) and fugitive dust from existing sources in surrounding communities based on final engineering and approval by the San Luis Obispo County APCD.

Through implementation of design features, other measures, and feasible emission controls, the temporary emissions of NO_X, VOCs, and fugitive dust during construction would be reduced and would not be significant. To further reduce impacts, the Applicant would also implement or fund a program for off-site mitigation of ozone precursors (NO_x and VOC) from existing sources in surrounding communities based on final engineering and approval by the San Luis Obispo County APCD.

A discussion of emissions subject to the General Conformity Rule as it applies to federal standards (NAAQS) is provided below.

Operations

It is expected that the CVSR would remain productive for 25 years or more before decommissioning. A summary of the estimated unmitigated annual operational emissions are presented in Table 3.5-4.

Table 3.5-4. CVSR Annual Operational Emissions

Emission Source	Annual Emissions (tons/yr)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Off-Road Equipment	0.19	0.52	2.0	<0.01	0.07	0.07
On-Road Vehicles	0.34	2.9	0.69	<0.01	0.04	0.04
Fugitive Dust – Roads	–	–	–	–	10.1	1.0
TOTAL	**0.53**	**3.5**	**2.7**	**0.01**	**10.2**	**1.1**

Source: SLO County 2011a.
Key:

VOC = Volatile Organic Compounds.
CO = Carbon Monoxide.
NO_X = Oxides of Nitrogen.
$PM_{2.5}$ = Particulate Matter (2.5 microns in diameter or less).
PM_{10} = Particulate Matter (10 microns in diameter or less).
SO_2 = Sulfur Dioxide.

A number of design features would be incorporated into the proposed action to ensure that air pollutant emissions generated during operations would be reduced below the levels presented in Table 3.5-4 to the maximum extent feasible, including: developing an operational dust control plan; maintaining grassland vegetation beneath arrays and along interior access rows; implementing energy conservation features into building design; and implementing or funding a program for offsite mitigation of fugitive dust as required by the San Luis Obispo County APCD.

Through implementation of design features and other feasible dust control measures that would be incorporated into operational activities associated with the proposed action, fugitive dust generated during the life of the CVSR would be reduced and would not be significant.

A discussion of emissions subject to the General Conformity Rule as it applies to federal standards (NAAQS) is provided below.

Morro Bay–Midway Transmission Line Reconductoring

Construction

Reconductoring would be completed by PG&E in approximately 2 years. Emissions would be generated from the combustion of fuel by off-road construction equipment and on-road vehicles. Fugitive dust would be generated by grading activities and vehicle travel. Tables 3.5-5 summarize the estimated total criteria pollutant emissions for reconductoring of the Morro Bay–Midway transmission line.

A number of design features would be incorporated in the proposed action to ensure that emissions generated during reconductoring would be reduced below the levels presented in Table 3.5-5 to the maximum extent feasible, including: maintaining equipment according to manufacturer specifications; limiting idling; using equipment that meets lower emission standards; locating staging areas as far as practicable from sensitive receptors; limiting vehicle speed, using water to control fugitive dust, and encouraging carpooling.

Table 3.5-5. Construction Emissions for Morro Bay–Midway Transmission Line Reconductoring

Year	Emissions by Year (tons)					
	VOC	NO_X	PM_{10}	$PM_{2.5}$	CO	SO_2
2011	0.89	3.44	3.88	0.91	5.71	<0.01
2012	1.53	9.24	0.94	0.42	8.17	0.01
Total	**2.42**	**12.7**	**4.82**	**1.33**	**13.9**	**<0.02**

Sources: SLO County 2011a.
Key:
CO = Carbon Monoxide. $PM_{2.5}$= Particulate Matter (2.5 microns in diameter or less).
NO_X = Oxides of Nitrogen. PM_{10} = Particulate Matter (10 microns in diameter or less).
ROG = Reactive Organic Gas. SO_X = Sulfur Oxides.

It is estimated that construction emissions would exceed San Luis Obispo County APCD significance thresholds for NO_X, and VOCs for only limited periods over the entire construction period. However, through implementation of design features and feasible emission controls, the temporary emissions of these pollutants during construction would be reduced to a level below the significance thresholds. In addition, construction emissions are not expected to exceed thresholds of significance established by the San Joaquin Valley APCD

A discussion of emissions subject to the General Conformity Rule as it applies to federal standards (NAAQS) is provided below.

Operations

Operational emissions in San Luis Obispo County would result from infrequent vehicle travel to the Caliente switching station by maintenance crews. The level of maintenance required for the transmission line would not change due to reconductoring. Based on these criteria, effects on air quality during operation of the Caliente switching station and reconductored Morro Bay–Midway transmission line would be negligible, and therefore, impacts on air quality would not be significant.

Greenhouse Gases and Global Climate Change

DOE is not aware of any methods to correlate exclusively the CO_2 emissions resulting from the proposed action to any specific impact to global warming; however, studies such as those performed by IPCC support the premise that CO_2 emissions from the CVSR Project, together with global GHG emissions, would likely result in a cumulative impact to global warming. Although the CVSR Project would likely contribute incrementally to GHG emissions and climate change, GHG emissions from the CVSR Project would be minimal, resulting from slight increases in vehicular travel, the use of SF_6 in gas-insulated switchgear, and temporary construction emissions.

Further, the CVSR Project may help local utilities fulfill mandatory state renewable energy requirements. The CVSR Project would also assist in meeting any potential growth in California's demand for electricity with far fewer GHG emissions than an equivalent capacity fossil fuel-fired generator. PV panels generate electricity without producing significant GHG emissions. The facility is expected to generate electricity each year and would yield approximately 679,000 gross megawatt hours per year (MW-hrs/yr) of output. By potentially displacing natural gas and other fossil fuels used to produce electricity, PV installations reduce the generation of CO_2 and other GHGs.

There would also be GHGs emitted as a result of construction and transportation activities related to the facility. The GHG emissions generated by construction activities would be short-term (over the construction period of three years).

The three-year total estimated GHG emissions that would be generated from construction of the CVSR are estimated at 27,900 metric tons of CO_2e emissions. Annualized over the 25-year life of the project, the

GHG emissions generated from CVSR construction activities would be equivalent to approximately 1,116 metric tons of CO_2e per year.

The two-year total estimated GHG emissions that would be generated from construction activities associated with the Morro Bay–Midway transmission line reconductoring are estimated at 1,709 metric tons of CO_2e emissions. Annualized over the 25-year life of the project, the GHG emissions generated from reconductoring construction activities would be equivalent to approximately 68 metric tons of CO_2e per year.

There would also be small amounts of GHG emissions generated by operational activities, primarily emissions from vehicles used for panel maintenance. Vehicle and equipment use at the CVSR would generate an estimated 535 metric tons of CO_2e per year. In addition, SF_6, used in gas-insulated switchgear, may leak from equipment at the Caliente switching station at a maximum annual rate 0.5 percent, resulting in a maximum emission of approximately 62 metric tons of CO_2e per year.

As stated above, the project would potentially displace emissions from fossil fuel-fired power plants. The GHG emissions decrease that would result from the expected 25-year operation of this proposed renewable energy project has been estimated using the eGRID estimate (EPA 2007) of CO_2 emissions per megawatt hour (MWh). Assuming that the capacity of the CVSR Project displaces electricity produced by conventional fossil-fueled power plants, the potential estimated CVSR Project-related reduction is 333,558 metric tons of GHG emissions annually, or an estimated total displacement of 8,338,950 metric tons of GHG over the 25-year life of the CVSR Project.

The CVSR Project's use of energy would correspond to an estimated 1,796 metric tons per year of CO_2e emissions. As a connected action, establishment of the Twisselman aggregate mine would also produce an estimated 534 metric tons per year of CO_2e emissions (see Section 3.5.3.3). When this and the estimated GHG emissions from operations are deducted from the reductions estimated from the CVSR Project's displacement of fossil fuel generation, it would result in a potential net reduction of 331,243 metric tons of GHG emissions annually during operations. This net reduction is illustrated in Table 3.5-6.

Table 3.5-6. Net Change in GHG Emissions Due to the CVSR Project[1]

Description of GHG Emission Increase/Decrease	CO_2e Increase or Decrease (metric tons/year)
GHG Emissions from Construction (Amortized Over a 25-Year Period)	
California Valley Solar Ranch[2]	+ 1,116
Morro Bay–Midway transmission line reconductoring[3]	+ 68
Annual GHG Emissions from Operational Activities	
California Valley Solar Ranch	+ 535
Caliente Switching Station	+ 62
TOTAL ANNUAL GHG EMISSION INCREASES	**+1,781**
Twisselman Aggregate Mine[4]	*+534*
Annual GHG Emissions Potentially Avoided from Baseline Electrical Generation Due to Operation of the California Valley Solar Ranch	- 333,558
NET CHANGE	**- 331,243**

Notes:
[1] For detailed calculations, refer to Appendix C of this EA.
[2] Based on 28,277 metric tons CO_2e amortized over a 25-year period.
[3] Based on 1,709 metric tons CO_2e amortized over a 25-year period.
[4] Included as a connected action (see Section 3.5.3.3).

Key:
CO_2e = Carbon Dioxide Equivalents.

Over its 25-year life, the CVSR Project would displace approximately 8,281,075 metric tons of GHG (25 years of the annual net reduction minus the GHG generated during construction). This could help to reduce overall GHG emissions and would also be consistent with state and federal policies and regulations to promote greater reliance on renewable energy.

Furthermore, regional and statewide air quality potentially would experience reduced pollution based on the CVSR's ability to contribute substantially to the electrical grid without high levels of air emissions associated with conventional fossil fuel power plants. For example, the proposed action potentially would result in the displacement of approximately 20 to 100 tons per year of smog-producing NO_X over its expected service life.

General Conformity Analysis

The CVSR would be located in San Luis Obispo County, which is not designated as a federal (NAAQS) nonattainment or maintenance area for any pollutant; therefore, direct and indirect emissions caused by constructing and operating the CVSR are not subject to the General Conformity Rule (EPA 2010).

Reconductoring of the Morro Bay–Midway transmission line would take place in San Luis Obispo County as well as western Kern County, which is located within the San Joaquin Valley Air Basin. The San Joaquin Valley Air Basin is designated as a federal nonattainment area for ozone and $PM_{2.5}$ and a federal maintenance area for PM_{10} .Therefore, reconductoring emissions of NO_X (as an ozone and $PM_{2.5}$ precursor), VOCs (as ozone precursors), $PM_{2.5}$, PM_{10}, and SO_2 (as a $PM_{2.5}$ precursor) that occur in the San Joaquin Valley Air Basin need to be evaluated under the General Conformity Rule to determine whether or not these emissions exceed the General Conformity Rule's *de minimis* thresholds.

The use of non-road equipment and vehicles during reconductoring construction would generate direct and indirect emissions. Estimated emissions of NO_X, VOCs, $PM_{2.5}$, PM_{10}, and SO_2 from reconductoring that would take place within the San Joaquin Valley Air Basin are presented in Table 3.5-7. Construction-related emissions of NO_X, VOC, $PM_{2.5}$, PM_{10}, and SO_2 are estimated to be below *de minimis* thresholds. Given that maintenance vehicle operation is already required to maintain the electrical line, no new operational emissions of criteria pollutants in Kern County are expected as a result of the reconductoring. Because emissions from reconductoring would be less than the *de minimis* thresholds, the proposed action is presumed to conform to the SIP and no further action is required.

Table 3.5-7. Comparison of Construction Emissions in San Joaquin Valley Air Basin to General Conformity *de minimis* Thresholds

Non-Attainment Pollutant	Type of Pollutant (Direct or Precursor)	Construction Emissions In the San Joaquin Valley Air Basin[2] (tons per year)		de *minimis* Threshold[3] (tons per year)
		2011	2012	
Ozone[1]	NO_X	1.7	4.4	10
	VOC	0.4	1.1	10
PM_{10}	PM_{10}	3.3	0.2	100
$PM_{2.5}$	$PM_{2.5}$	0.7	0.12	100
	NO_X	1.7	4.4	100
	SO_2	< 0.01	< 0.01	100

Notes:
[1] Ozone is created at near-ground level by a chemical reaction between NO_X and VOCs in the presence of sunlight. NO_X and VOC are often referred to as ozone precursors.
[2] Emissions subject to the General Conformity Rule.
[3] Federal actions are considered exempt from a conformity determination if an applicability analysis shows the total direct and indirect emissions from project construction and operation activities would be less than specified emission rates known as *de minimis* thresholds limits.

3.5.3.3 Twisselman Aggregate Mine Establishment

Establishment of the Twisselman aggregate mine would help support construction of the CVSR. Mining emissions would be generated by on-site processing and the transport of material. The emissions generated by mine operation during construction of the CVSR are detailed in Table 3.5-8. Estimated emissions from mining operations following completion of the CVSR are provided in Table 3.5-9.

Table 3.5-8. Emissions for the Twisselman Aggregate Mine Operation During Project Construction

Emission Source	3-Year Total Criteria Pollutant Emissions (tons)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Combustion Equipment	0.84	3.2	6.5	0.01	0.38	0.38
Fugitive Dust	–	–	–	–	26.0	4.2
TOTAL	**0.84**	**3.2**	**6.5**	**0.01**	**26.4**	**4.6**

Source: SLO County 2011a
Key:

VOC = Volatile Organic Compounds.
CO = Carbon Monoxide.
NO_X = Oxides of Nitrogen.
$PM_{2.5}$ = Particulate Matter (2.5 microns in diameter or less).
PM_{10} = Particulate Matter (10 microns in diameter or less).
SO_2 = Sulfur Dioxide.

Table 3.5-9. On-Going Operational Emissions for the Twisselman Aggregate Mine

Emission Source	Annual Emissions (tons/yr)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Off Road Equipment	0.28	1.1	2.2	<0.01	0.13	0.13
Operational Fugitive Dust	-	-	-	-	8.7	1.4
On Road Vehicles	0.38	1.2	3.4	<0.01	0.12	0.12
Total	**0.66**	**2.3**	**5.6**	**<0.01**	**8.9**	**1.7**

Source: SLO County 2011a
Key:

VOC = Volatile Organic Compounds.
CO = Carbon Monoxide.
NO_X = Oxides of Nitrogen.
$PM_{2.5}$ = Particulate Matter (2.5 microns in diameter or less).
PM_{10} = Particulate Matter (10 microns in diameter or less).
SO_2 = Sulfur Dioxide.

A number of design features would be incorporated into the establishment of the mine to ensure that emissions generated during operation of the mine would be reduced below the levels presented in Table 3.5-9 to the maximum extent feasible, including: implementing a Mine Equipment Emissions Control Plan and Operational Dust Control Plan and implementing or funding a program for off-site mitigation of ozone precursors and fugitive dust as required by the San Luis Obispo County APCD.

Estimated emissions from mine operations exceed the San Luis Obispo County APCD thresholds for NO_X, VOC, and fugitive dust. However, through implementation of design features, off-site mitigation, and feasible emission controls that would be incorporated into mine operation, the emissions of these pollutants would be reduced to a level below the significance thresholds.

There would also be small amounts of GHG emissions generated by operational activities at the mine through the use of vehicles and equipment. During the three-year project construction period, approximately 534 metric tons of CO_2e emissions would be generated at the mine. Following completion of the project, mine operational activities would generate an estimated 534 metric tons of CO_2e per year.

3.5.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on air quality. However, the no action alternative would not contribute to assisting the State of California to meet its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

Further, if the anticipated purpose and need of the proposed action were to be met by fossil-fueled power generation, it is estimated that emissions from electricity generation would be equivalent to approximately 20 to 100 tons/year of smog-producing NO_X and over 333,558 metric tons CO_2e/year of GHG emissions during the expected service life as the proposed action.

3.6 Geology and Soils

3.6.1 Regulatory Framework

Geologic resources and hazards are governed primarily by state and local jurisdictions. Seismic hazards are addressed by state and local requirements for identifying and avoiding faults when considering new development. Soil erosion is regulated, in part, through the National Pollutant Discharge Elimination System (NPDES) permitting process, which requires the development and implementation of a SWPPP (see Section 3.7, Water Resources).

3.6.1.1 Federal

Surface Mining and Reclamation Act

Establishment of a surface mine and reclamation of the two gypsum mines on site involves compliance with the SMARA, which was enacted in 1975. The Act has been codified into the California Public Resources Code (Sections 2207 and 2710) and Chapter 8, Title 14, of the California Code of Regulations (Section 3500 et seq.), as well as Chapter 22.36 of the San Luis Obispo County's Land Use Ordinance (Surface Mining and Reclamation), which provides county regulations as they pertain to a surface mine operation. San Luis Obispo County's SMARA inspector would inspect the Twisselman aggregate mine annually.

3.6.1.2 State

California Building Code

The California Building Code, Title 24, Part 2, provides building codes and standards for the design and construction of structures in California. Because the CVSR Project lies within Seismic Zone 4, provisions for design would follow the requirements of Chapter 16 of the California Building Code, which contains definitions of seismic sources and the procedure used to calculate seismic forces on structures. Chapter 33 of the California Building Code contains requirements relevant to the construction of underground transmission lines.

Division of Occupational Safety and Health

The Division of Occupational Safety and Health, better known as Cal/OSHA, is the regulatory agency responsible for the enforcement of worker protection laws throughout the State of California. The laws relating to mining safety are found in Title 8, Chapter 4 Division of Industrial Safety, Subchapter 17 Mine Safety Orders (Sections 6950–7283) of the California Code of Regulations. Article 12 specifically addresses requirements for ground control, including requirements that are relevant to open pit mining.

Alquist-Priolo Earthquake Fault Zoning Act, Public Resource Code, Sections 2621–2630

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While the Act does not specifically regulate solar fields, overhead transmission lines or surface mines, it does help define areas where fault rupture is most likely to occur. The CVSR and Twisselman aggregate mine would not be located within a designated Alquist-Priolo Earthquake Fault Zone. The interconnection line and the Morro Bay–Midway transmission line reconductoring route would cross the San Andreas Fault Earthquake Study Zone (SLO County 2011a, 2011b).

Seismic Hazards Mapping Act, Public Resource Code, Sections 2690–2699

The Seismic Hazards Mapping Act of 1990 (Public Resource Code Chapter 7.8, Division 2) directs the California Department of Conservation, Division of Mines and Geology (now called the California Geological Survey) to delineate Seismic Hazard Zones. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

3.6.1.3 Local

The Applicant would be required to obtain all necessary building and/or encroachment permits from local jurisdictions.

3.6.2 Affected Environment

3.6.2.1 Geology and Topography

Most of the Carrizo Plain is a gently sloping broad plain or valley with drainage from the surrounding hill and mountain areas directed to the center and then southeast toward Soda Lake, an enclosed terminal basin (i.e., surface water does not flow out of Soda Lake). The CVSR facilities would be located on the eastern side of the valley where the gently sloping plain is locally interrupted by low northwest trending hills rising 25 to 150 feet above the surrounding plain. Further east, east of SR-58, moderate slopes of the foothills of the Temblor Range give way to generally steep terrain. Terrain along the San Andreas Fault includes distinct northwest trending troughs and ridges and includes locally moderate to steep slopes (greater than a 1:1 slope in areas) facing southwest and northeast. The interconnection line alignment would cross gentle southwest sloping alluvial fan surfaces from the substation site, across SR-58, and north to the San Andreas Fault. Moderately steep slopes occur at the San Andreas Fault and at the final drainage crossing before reaching the Caliente switching station (SLO County 2011a).

The mountain ranges adjacent to the CVSR site are largely composed of Miocene conglomerate, sandstone, siltstone, and shale originally deposited in marine or freshwater environments. Thick accumulations of Quaternary alluvium (Qf and Qa) and basin deposits (Qhb1 and Qhb2) consisting of gravel, sand, silt, and clay blanket the Carrizo Plain and underlay the CVSR site (Engeo 2008). The Morro Bay–Midway transmission line reconductoring route is underlain by similar accumulations.

The near-surface geologic deposits underlying the CVSR site are described as Holocene and Pleistocene alluvial deposits, which primarily consist of silt, sand, and gravel derived from the nearby Paso Robles (QTp), Monterey (Tm), and Temblor (Tt) formations exposed in the Temblor Range to the northeast. These deposits are more coarse-grained in proximal Holocene fan deposits exposed at the mouths of drainages on the flanks of the Temblor Range. West of the Temblor Range, where slopes are flatter, the alluvial deposits are typically more fine-grained and are predominantly clay, silt, and fine sand with some scattered gravel.

The Upper Pliocene Morales Formation (Tmo) is exposed at two locations in the northeastern part of the CVSR site on the southwestern flanks of the Temblor Range along the San Andreas Fault Zone.

According to Dibblee et al. (1999), the Morales Formation comprises stratified non-marine silts, sands, and some gravels, which are generally more consolidated than the overlying Paso Robles Formation.

3.6.2.2 Soils

Soils within the CVSR site reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. The NRCS soil survey database for the San Luis Obispo County, California, Carrizo Plain Area was reviewed to identify soil units and characteristics underlying the CVSR site. The general description and select physical characteristics of erosion, expansion (shrink/swell) potential, and corrosion potential for these soils were reviewed to evaluate potential hazards to the CVSR in connection with unsuitable soil conditions (SLO County 2011a). Soil characteristics for agriculture are discussed in Section 3.2, Agriculture.

Based on the NRCS soil survey for the San Luis Obispo County, California, Carrizo Plain Area, ten soil units or complexes were identified within the solar array, substation, temporary construction worker accommodations, O&M building, and Caliente switching station sites and along the interconnection line route (see Table 3.2-1). Twenty-five soil units or complexes were identified along the Morro Bay–Midway transmission line reconductoring route (see Table 3.2-1), and two soil complexes were identified within the Twisselman aggregate mine site (see Table 3.2-3). The disturbed ground at the former gypsum mines is identified as a "pit" soil type, reflecting that the soil and residuum have been removed.

Laboratory testing indicates that the soils underlying the CVSR site and interconnection line route are moderately to highly expansive (Engeo 2008). Engeo also characterizes these soils as moderately to severely corrosive to buried metals. The corrosivity potential for concrete is characterized as low. The Polonio loam and Polonio clay loam at the O&M building site are characterized as having a severely low percolation rate (> 60 minutes per inch); the other soils are generally characterized by moderately slow to slow percolation rates. All of the soils within the CVSR site perimeter and along the interconnection line route are classified as moderately susceptible to wind erosion and sheet and rill water erosion. Erosion potential would increase where these soils would be disturbed by grading or vehicle travel that loosens the upper surface or removes protective vegetation (SLO County 2011a).

Expansion and corrosion potential for soils underlying the Caliente switching station site and along the reconductoring route is similar to that of the soils underlying the CVSR site. Loose sand or other compressible or collapsible soils underlying the switching station and reconductoring route could result in excessive settlement and low foundation-bearing capacity (SLO County 2011b).

3.6.2.3 Seismic Hazards

The San Andreas Fault is the preeminent geologic feature that crosses the northwestern part of the CVSR site. The State of California has zoned the San Andreas Fault as Active 1. The Fort Tejon Earthquake of 1857 ruptured along this segment of the San Andreas Fault on January 9, 1857. Surface rupture was reported along an approximately 220-mile-long segment of the fault from San Bernardino to Parkfield. The estimated moment magnitude of the earthquake was M7.9. Offsets of up to 30 feet were reported along the fault in the Carrizo Plain. According to the Working Group on California Earthquake Probabilities (WGCEP 2008), the southern San Andreas Fault has a 59 percent probability of generating a magnitude M6.7 or greater earthquake within the next 30 years.

Other active faults in the vicinity capable of producing significant ground shaking at the CVSR site are blind-thrust faults associated with tectonic folding at the Coalinga and Kettleman Hills anticlines. Magnitude M6.5 and M6.1 earthquakes occurred on segments of this blind-thrust fault system in 1983 (Coalinga) and 1985 (Kettleman Hills). Each of these faults could generate an earthquake capable of causing ground shaking at the CVSR site. Therefore, the CVSR would likely experience moderate to intense ground shaking from an earthquake within the design life of the structure.

Potentially active and other bedrock faults exist within the Caliente Range to the southwest and west of the CVSR site and include the San Juan Fault, Big Spring Fault, and Morales Fault. The San Juan Fault is subparallel to the San Andreas Fault and is located along the western margin of the Carrizo Plain, approximately 10 miles west of the CVSR site. San Luis Obispo County classified the San Juan Fault as potentially active; however, the State of California considers it an active source capable of a maximum moment magnitude of M7.1 (SLO County 2011a).

The Morro Bay–Midway transmission line crosses the San Andreas Fault, perpendicularly at approximately MP 8. A segment of the transmission line would be located within the Alquist-Priolo Earthquake Zone and about 200 to 400 feet east of the nearest mapped fault trace. The Caliente switching station site is located approximately 2,500 feet from the eastern boundary of the Alquist-Priolo Earthquake Zone. In addition, the transmission line crosses an area of landslide potential from MP 12 to MP 13. In terms of mineral resources, the Lokern ACEC (MP 21.5 to MP 30) is considered to have high potential for the occurrence of oil and gas; however, wells drilled to find Miocene or older oil reservoirs directly to the southwest have not resulted in oil production (SLO County 2011b).

3.6.3 Environmental Effects

3.6.3.1 Methodology

To determine the geologic baseline conditions in the CVSR Project vicinity and assess impacts of the proposed action, the following sources were reviewed: United States Geological Survey (USGS) maps, previous studies, technical studies, the NRCS soil survey, the hydrogeologic investigation (URS 2009a, 2009b), the San Luis Obispo General Plan, the Kern County General Plan, and the geotechnical report (Engeo 2008).

3.6.3.2 Proposed Action

California Valley Solar Ranch

Geologic- and soil-related impacts could result from corrosive or expansive soils, liquefaction, slope instability, landslides, or collapsible soils; seismically induced ground failure and/or ground shaking or fault rupture; and interference with access to known mineral resources.

Approximately 2 percent of the CVSR site would be permanently disturbed and occupied by foundations for buildings, trackers, electrical equipment, access roads, and other graded areas. While about 30 percent of the CVSR site would be temporarily disturbed during construction, construction would be conducted in phases (e.g., by array or other CVSR component), and not all areas would be subject to disturbance at the same time. Further, installation of the trackers would not require general vegetation clearing. In addition, the Applicant would restore disturbed surfaces and graded areas in accordance with the CVSR Revegetation Plan; implement a SWPPP, BMPs, and Habitat Restoration and Revegetation Plan; and reduce fugitive dust. Therefore, the short-term effects of wind erosion would be minor and would not be significant.

Although moderate to steep slopes occur adjacent to the CVSR site along the San Andreas Fault Zone, no grading or construction of solar array equipment or buildings would occur in these areas. Low, gently sloping hills occur within the CVSR site perimeter, including the interconnection line alignment and Caliente switching station; however, the gently sloping nature of these hills generally precludes the potential for landslides or other slope instability that could be triggered by the CVSR. Limited grading would be required for installation of T0 tracker foundations because of the relatively flat terrain and because the arms of the solar arrays would be adjustable and would, therefore, not need to be located on leveled ground. The overall topography of the CVSR site would not change. Compliance with the San Luis Obispo County grading ordinance would reduce grading impacts, and the Applicant would conduct a landslide survey and provide protection against slope instability to reduce the potential for damage to facilities and structures during landslide events.

Design-level geotechnical studies would be performed by the Applicant prior to the issuance of construction permits, which would identify the presence, if any, of potentially detrimental soil chemicals. The Applicant would then integrate appropriate design measures for protection of reinforcement, concrete, and metal-structural foundation components against corrosion. Geotechnical studies would also identify areas with potentially expansive or collapsible soils and include appropriate design features, including excavation of potentially expansive or collapsible soils during construction and replacement with engineered backfill, ground treatment processes, and redirection of surface water and drainage away from expansive foundation soils. Conducting geotechnical studies to assess and address problem soil characteristics would reduce the potential for adverse impacts to minor levels that would not be significant.

Site-specific seismic analyses would also be included in the geotechnical studies. Project structure designs would be modified/strengthened as deemed appropriate by the project engineer if anticipated seismic forces are found to be greater than standard design load stresses on CVSR structures. Seismic analyses and the resulting design modifications would reduce the potential for adverse impacts related to ground shaking or seismically induced ground failure. The solar array facilities would not be subject to hazards of surface fault rupture. Although the highly active San Andreas Fault is located near CVSR buildings and solar arrays, they are outside of the mapped Alquist-Priolo Earthquake Zone, and no known fault traces cross the CVSR site footprint.

Prior to final CVSR design and construction permit issuance, the Applicant would perform a fault evaluation study to confirm the location of mapped traces of active and potentially active faults strands of the San Andreas Fault Zone along the interconnection line alignment. Interconnection line towers or other CVSR structures would be located as far as feasible outside the areas of mapped fault traces and, as a result, would reduce the potential for adverse impacts due to ground shaking, seismically induced ground failure, or other seismic-related events to minor levels. Further, through the use of selective siting, preparation of the geotechnical studies and incorporation of findings into CVSR design minimizes the risk of structural failures due to seismic disruptions. Therefore, seismic impacts would not be significant.

The proposed action would include construction of an on-site septic and leach field for wastewater disposal for the temporary construction workers accommodations and the O&M building as well as an on-site sewage disposal system. Prior to the start of construction, subsurface exploration and percolation testing would be performed in accordance with San Luis Obispo County Department of Planning and Building requirements and under the supervision of a professional engineer licensed in California. In addition, the on-site sewage disposal system would be designed by the professional engineer in accordance with established County guidance and County building permits. San Luis Obispo County requirements related to on-site wastewater system design and the design of the on-site sewage disposal system by a professional engineer would reduce the potential for adverse impacts to soils to minor levels.

Two brine evaporation ponds are proposed on the CVSR site. The design of the on-site brine management system by a professional engineer would reduce the potential for contamination of soil or degradation of groundwater. Design of the brine management system would ensure impacts from the brine evaporation ponds would be minor and would not be significant.

The proposed action would not restrict access to any mineral deposits. The existing on-site inactive gypsum mines have not been active for many years, which is indicative that the grade/quality of the product (and proximity to market) can no longer sustain cost-effective extraction. Consequently, the construction and operation of the CVSR would not adversely impact this known mineral resource. The short- and long-term impacts to mineral resources would be negligible and would not be significant.

Morro Bay–Midway Transmission Line Reconductoring

The potential geologic and/or soil-related impacts from reconductoring of the Morro Bay–Midway transmission line include the potential for problematic soils (e.g., corrosive or expansive soils, liquefaction, slope instability, landslides, or collapsible soil) to affect project facilities, and the potential

for people or structures to be affected by seismically induced ground failure and/or ground shaking or fault rupture.

In order to reduce the potential for adverse impacts from problematic soils, protection would be provided against instability of slopes adjacent to any re-graded access or spur roads, work areas, or replacement towers during and after the reconductoring work. PG&E would also perform a fault evaluation study to confirm the location of mapped traces of active and potentially active faults at the Caliente switching station and along the transmission line where towers would be installed in order to avoid placement of structures within active fault zones and reduce the potential for adverse impacts relating to fault rupture.

In addition, reconductoring of the Morro Bay–Midway transmission line would not interfere with access to known mineral resources. Although a part of the existing ROW is located on and adjacent to areas designated as mineral and petroleum areas (MP 16 to MP 19.5), long-term access to these resources would not be affected.

Because of the design features that would be implemented as part of the Morro Bay–Midway transmission line reconductoring, long- and short-term impacts to soils and geology, as well as the risk of seismic disruption would be minor and would not be significant.

3.6.3.3 Twisselman Aggregate Mine Establishment

The Twisselman aggregate mine would be used to mine semi-consolidated sandstone, siltstone, and shale of the Gould Shale Member of the Miocene age Monterey Formation. The shale is locally hard, porcelaneous siliceous shale with interbedded softer chalky to fissile semisiliceous to clayey shale. Bedding is generally thin and laminated. Subsurface exploration in the quarry site and two adjacent exploration targets identified interbedded sandstone, siltstone, and claystone. Mined materials would meet Caltrans specifications for Class 1 and Class 2 Aggregate Subbase.

The existing quarry is not located within the State of California Earthquake Fault Zone for the San Andreas Fault. Segments of the San Andreas Fault are mapped approximately 1,700 feet to the southwest of the quarry and 1 mile northeast of the quarry site (CGS 1974a, 1974b). Two soil units are present at the Twisselman aggregate mine site: Polonio gravelly loam and Aramburu-Temblor complex of weathered sandstone and shale covering unweathered rock.

Excavation of the mine would disturb the upper soil surface and expose the underlying weathered and unweathered sandstone, siltstone, and shale bedrock. The bedrock would not be susceptible to erosion. Loose, fine grained materials placed in stock piles, such as top soil and spoil, would be protected to prevent erosion and ensure that the top soil would be reserved for mine reclamation. In addition, the placement of fill or short-term stockpiling would be in an appropriate location, thus reducing the potential for adverse impacts due to erosion and minimizing impacts on sensitive species.

Steep slope faces are likely to be created during the mining process; however, implementation of Occupational Safety and Health Administration (OSHA) regulations related to mine safety (Title 8, Chapter 4 Division of Industrial Safety, Subchapter 17 Mine Safety Orders), which include regulations regarding ground control (Article 12) and safety of workers near the mine's free face would minimize adverse impacts including those related to seismically induced ground failure.

The Twisselman aggregate mine is located about 1,700 feet east of the San Andreas Fault and Alquist-Priolo Fault Rupture Hazard Zone. No impact from fault rupture would occur at the mine. Since no permanent structures are planned for the aggregate mine, no impact would occur as a result of problematic soils. The proposed aggregate mine is currently an existing ranch borrow pit, and further expansion of an aggregate surface mine at this location would not restrict access to the mineral resource. Therefore, no adverse impacts related to mineral resource access would occur.

Given the location and design features that would be implemented during establishment of the Twisselman aggregate mine, this connected action is expected to result in long-term minor impacts to soils from mining and from water and wind erosion. Further the connected action has been sited in a manner such that impacts from seismic activity would be similarly minor and would not be significant.

3.6.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on geology and soils. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.7 Water Resources

3.7.1 Regulatory Framework

3.7.1.1 Federal

Clean Water Act

The Clean Water Act (CWA) prohibits the discharge of pollutants from point sources to waters of the United States, unless authorized under a NPDES permit. The Act regulates discharges through a permitting regime that is intended, in part, to prevent soil erosion. The NPDES permit program has been delegated in California to the SWRCB. To obtain a NPDES permit, the Applicant must prepare a SWPPP.

Safe Drinking Water Act

The Safe Drinking Water Act was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply and was amended in 1986 and 1996. The law requires many actions to protect drinking water and its sources, which are rivers, lakes, reservoirs, springs, and groundwater wells. This Act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and manufactured contaminants that may be found in drinking water. The Act also mandates that a Groundwater/Wellhead Protection Program be developed by each state to protect groundwater resources that are a source for public drinking water.

National Flood Insurance Program

The National Flood Insurance Program is administered by Federal Emergency Management Agency (FEMA), a component of the United States Department of Homeland Security. Participation in the National Flood Insurance Program is based on an agreement between local communities and the federal government. FEMA identifies flood hazard areas throughout the United States and its territories by producing Flood Hazard Boundary Maps, Flood Insurance Rate Maps, and Flood Boundary and Floodway Maps. Several types of areas with flood hazards are commonly identified, including the Special Flood Hazard Area, a high-risk area defined as any land that would be inundated by a flood having a 1 percent chance of occurring in any given year (also referred to as the base flood).

Wetlands

Executive Order 11990, Protection of Wetlands (May 24, 1977), directs federal agencies to avoid, to the extent possible, adverse impacts associated with the destruction or modification of wetlands. Under DOE regulations, a wetlands assessment is required for any action involving wetlands (10 CFR 1022).

Floodplains

Executive Order 11988, Floodplain Management and Protection (May 24, 1977), directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Under DOE regulations, a floodplain assessment is required for any DOE action conducted in a floodplain (10 CFR 1022).

3.7.1.2 State

In California, water resource supplies are regulated by the SWRCB and RWQCBs. Water quality is regulated by the California Department of Public Health Drinking Water Source Assessment and Protection Program. State water quality standards allow water bodies to be managed by establishing goals based on: (1) designated uses of the water; (2) criteria set to protect human and aquatic organism health; and (3) anti-degradation requirements to prevent current water quality from deterioration. Waters listed as "impaired" do not fully support their designated uses. Section 305(b) of the CWA requires states to submit water quality reports to the EPA every two years that provide a state-wide assessment of all waters. Section 303(d) requires states to provide a list of impaired waters only, identifying possible pollutants and prioritizing those waters for further pollution controls.

California Porter-Cologne Water Quality Control Act of 1969

This Act regulates surface water and groundwater within California and assigns responsibility for implementing CWA §401 through 402 and 303(d). It established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. The proposed action is within the area administered by the Central Coast RWQCB, Region 3. The regional board governs protection of surface waters by assessing attainment of designated beneficial uses. Currently, 23 uses are established for surface waters within the state.

Construction General Stormwater Permit

CWA §402 regulates construction-related stormwater discharges to surface waters through the NPDES program. In California, the EPA has delegated to the SWRCB the authority to administer the NPDES program through the RWQCBs, and has developed the Construction General Permit for Storm Water Discharges Associated with Construction Activities, (Water Quality Order No. 2009-0009-DWQ). An NPDES Construction General Permit from the SWRCB, which requires preparation of a SWPPP and notification of the Central Coast RWQCB (Region 3) would be needed. No specific California SWRCB regulations pertain to the treatment of fuel spills during construction, although petroleum-contaminated materials must be disposed of in accordance with applicable state and local regulations.

Wastewater Discharge

California Water Code §13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Any actions related to the proposed action that would be applicable to California Water Code §13260 would be reported to the Central Coast RWQCB. The evaporation ponds/solar evaporators included in the reverse osmosis water treatment system proposed for the CVSR solar generation facility would require a Report of Waste Discharge from the Central Coast RWQCB.

3.7.1.3 Regional and Local

Ordinance Code, Title 8, Chapter 8.68: Stormwater Pollution Prevention and Discharge Ordinance

San Luis Obispo County requires the protection and enhancement of watercourses and water bodies pursuant to the CWA. The County requires that BMPs be incorporated into project plans to effectively control water and wind erosion as well as sedimentation during construction.

Ordinance Code, Title 19: Building and Construction Ordinance

San Luis Obispo County requires that building and construction projects adhere to requirements related to site grading (Section 19.20.040 of the San Luis Obispo County Code), erosion control (Section 19.20.090 of the San Luis Obispo County Code), and sewage disposal (Section 19.20.220 of the San Luis Obispo County Code).

Ordinance Code, Title 22: Land Use Ordinance

San Luis Obispo County requires approval of a Drainage Plan by the County Engineer for all projects and activities located within an existing flood hazard zone, and/or required to have land use permit approval. In addition, Section 22.16.030 of Title 22 of the San Luis Obispo County Code (i.e., Water Efficient Landscape Methods) provides guidance on design methodologies to ensure that planting and landscaping would be water efficient. Section 22.52.050 requires that the proposed action obtain a Grading Permit, which establishes grading and excavation requirements during construction.

No Kern County water quality policies apply to Morro Bay–Midway transmission line reconductoring that would occur within Kern County. PG&E would be required to obtain all necessary building and encroachment permits from local jurisdictions.

3.7.2 Affected Environment

Surface Water

The proposed CVSR site, the interconnection line, and the Twisselman aggregate mine are located in the Carrizo Plain, which is an alluvial valley approximately 50 miles long and 6 to 10 miles wide, surrounded by rolling hills and steeper terrain of the Temblor Range to the east and Caliente Range to the west. Surface water runoff from the surrounding mountains and hills flows in ephemeral drainages towards Soda Lake. Almost 90 percent of the Twisselman aggregate mine area includes steep slopes of over 30 percent, which promotes rapid concentration of stormwater runoff. A local swale collects runoff from a small area (about 40 acres) to the east, but it is blocked by fill from the access road at the southern tip of the mine. Further to the south, the access road crosses two unnamed dry streambeds (about 0.5 mile and 1.2 miles from the southern tip of the mine). The southern stream, while ephemeral, contains wetland vegetation in a depressed area adjacent to the access road.

Groundwater

The Carrizo Plain is underlain by the Carrizo Plain Groundwater Basin, which encompasses approximately 270 square miles within San Luis Obispo County and has an estimated storage capacity of 400,000 acre-feet with a safe yield of 600 acre-feet per year (based on natural recharge). Water depths range up to 600 feet below ground surface (bgs) and average approximately 200 feet bgs (California Department of Water Resources 2004). In the vicinity of the CVSR site, groundwater has been encountered at a depth of 100 to 300 feet bgs and flows westerly (URS 2009b). At the proposed Twisselman aggregate mine, the minimum depth to groundwater is approximately 100 to 150 feet bgs.

A site-specific water supply assessment was prepared for the CVSR Project in January 2011 (Aspen 2011). It identified existing water supply entitlements and water rights, relevant to the groundwater supply, compared to projected demand. The water supply assessment concluded that sufficient water

supply would be available in the Carrizo Plain groundwater basin under varying climatic conditions to meet the demands of the proposed solar facilities for the lifetime of the project. Current demand (based on the 1998 San Luis Obispo County Water Master Plan) is 930 acre-feet per year, where approximately 200 acre-feet per year is used for agriculture and 730 acre-feet per year is used for rural purposes[5].

No groundwater would be used during reconductoring or operation of the Morro Bay–Midway transmission line.

Wetlands and Other Waters of the United States

Field surveys of the CVSR site and interconnection line were conducted in March and April 2010 to map potential waters of the United States. The Applicant performed a wetland delineation survey of the CVSR site in accordance with USACE survey protocols, and submitted the delineation to the USACE for review (H.T. Harvey and Associates 2010d). A preliminary delineation of wetlands and other waters was prepared by H.T. Harvey and Associates, to characterize wetlands within the CVSR site perimeter and identify the CVSR's watershed and drainage characteristics (Figure 3.7-1). Most of the surface water drainage features originate in the hills of the Temblor Range or in the areas of the Carrizo Plain that abut hills to the east and north. The direction of channelized flow is generally west or south, depending on the local topography in the area. The nearest named stream is San Diego Creek, which traverses the southeastern most corner of the CVSR site. According to this report, 37 ephemeral streams occur on the CVSR site and several on-site ponding areas were identified. The entire CVSR site drains into the Carrizo Plain watershed and eventually ends in Soda Lake, an undrained feature that does not have an outlet to the ocean. Five unnamed intermittent streams or "blue line" streams cross the CVSR site (North Coast Engineering 2008). Due to the shallow bank cuts on these streams, and their lack of connection to a continuous water source, there is no evidence of substantial surface water flow on the CVSR site.

On December 6, 2010, the USACE determined no jurisdictional wetlands are located on the CVSR site and a CWA 404 permit would not be required. A copy of the Jurisdictional Determination is included as Appendix D-4 of this EA.

The existing Morro Bay–Midway transmission line from MP 1 to MP 7.5 and the proposed Caliente switching station site are located within the Carrizo Plain Groundwater Basin. From MP 17 to MP 35, the existing transmission line is in the San Joaquin Valley Groundwater Basin, Kern County sub-basin. The transmission line crosses several unnamed agricultural canals, the West Side Canal (Kern River Flood Canal), several unnamed natural drainages, Salt Creek, and Temblor Creek.

Several ephemeral and intermittent streams are present in the Morro Bay–Midway transmission line reconductoring alignment; however, no wetlands, as defined the USACE, are present (ICF International 2010d). The nearest wild and scenic river is the Sisquoc Wild and Scenic River, located 32.5 miles south of the CVSR site (National Wild and Scenic Rivers 2011).

Floodplains

No floodplains are within the CVSR site footprint, interconnection line, or footprint of the proposed Caliente switching station (SLO County 2011a, 2011b). The ROW of the 35-mile segment of the existing Morro Bay–Midway transmission line crosses several Flood Hazard Zone A areas.

[5] Rural water demand refers to water demand in unincorporated areas of San Luis Obispo County that are not considered agricultural or urban (ESA 2010).

3.7.3 Environmental Effects

3.7.3.1 Methodology

The information on the extent and quality of water resources was evaluated based on the intensity of proposed land use and disturbance, and the ability of the water supply source to meet the demands of the proposed action. The San Luis Obispo County Water Master Plan (2008), as well as several hydrological and hydrogeological reports, were reviewed to determine the effects of the proposed action.

3.7.3.2 Proposed Action

Water Quality and Surface Water Discharge

The proposed action would use the existing on-site well water and would have no effect on any community water service provider. This well has been permitted by the California Department of Water Resources and has the existing capacity to meet the needs of the proposed action. However, the water quality is unsuitable for human consumption; therefore, the Applicant would use a reverse osmosis system to treat water for construction and operations. The system would discharge reject water to two on-site brine evaporation ponds, which would collect and store reject discharges in accordance with RWQCB standards. Surface discharges are not expected as part of the proposed action with the exception of the evaporation ponds. Because the reject wastewater would be stored onsite in accordance with applicable standards, it would not affect waters of the State of California. No waters of the U.S. are located on the CVSR site.

No wastewater would be discharged from the CVSR site or during Morro Bay–Midway transmission line reconductoring. Portable toilets brought to staging areas for construction crews would be emptied into septic tanks or municipal sewage systems. In addition, the septic system and leach field design would meet applicable San Luis Obispo County environmental and engineering design specifications. Wastewater management would not affect surface water or groundwater quality.

Stormwater runoff would be controlled by a series of engineered drainage channels, bioswales, and detention/retention basins that would generally retain the surface characteristics of the site. Pits remaining from the abandoned gypsum mine on the CVSR site would be reclaimed and used in the drainage system to retain current runoff patterns. The Applicant would prepare and implement a SWPPP to avoid on-site sedimentation and erosion. The SWPPP would include a site description, including a map that identifies sources of stormwater discharges on the site, anticipated drainage patterns after major grading, areas where major structural and nonstructural measures would be employed, surface waters, including wetlands, and locations of discharge points to surface waters. The SWPPP would also include design features that would be employed, including protection of existing vegetation wherever possible, plus stabilization of disturbed areas of a site as quickly as practicable, but no more than 14 days after construction activity has ceased. With the implementation of stormwater management measures and a SWPPP, impacts related to stormwater runoff would be negligible and would not be significant.

Groundwater Recharge

Permanent CVSR components would introduce approximately 107 acres of impervious surfaces to the project vicinity, or 2 percent of the site. In addition, four tower replacements during the reconductoring of the Morro Bay–Midway transmission line would require concrete foundations for footings that could interfere with groundwater recharge by reducing the amount of permeable surface area. Also, up to 7 acres of new impervious surfaces would result from construction of the Caliente switching station. PG&E would provide groundcover comprised of a pervious and/or high-roughness material to reduce infiltration and runoff impacts. The CVSR, reconductored transmission line, and switching station would not significantly alter the existing drainage pattern of the landscape in a way that would prevent groundwater recharge. Therefore, impacts on groundwater recharge would not be significant.

Twisselman Mine

MORRO BAY–MIDWAY TRANSMISSION LINE (230 kV)

Caliente
Switching Station

San Luis Obispo Co.

Kern Co.

Array 1

Array 10

Array 2

58

CVSR
Substation

Boulder Creek

Array 5

Array 4

Array 6

Array 8

Array 11

Array 7

Array 9

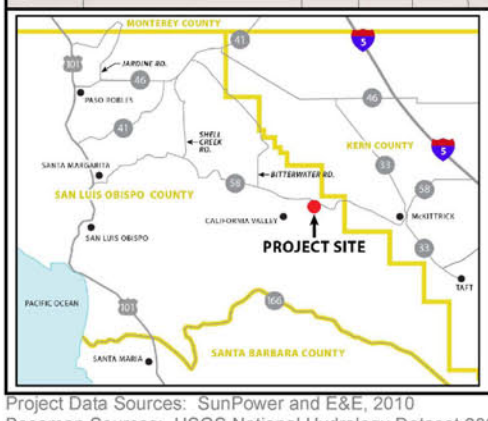
NORTH

0 0.5

Miles

Boulder Creek

California Valley Subdivision



- CVSR site perimeter
- Solar array
- Interconnection line
- Collection line, overhead
- Collection line, underground
- Existing transmission line
- Segment of existing transmission line to be reconductored
- Ephemeral drainage
- California Valley Subdivision (mostly undeveloped)
- County boundary
- Major road
- Street

Figure 3.7-1
Ephemeral Streams
California Valley
Solar Ranch Site

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: USGS National Hydrology Dataset 2009, ESRI 2009 basedata; HT Harvey & Associates, 2010
Microsoft Virtual Earth Aerial Imagery 2009 (ESRI_ShadedRelief_World_2D)

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Groundwater Supply

Water for dust control, concrete manufacturing, panel washing, sanitary uses, and landscaping during construction would be supplied by a new 400-foot-deep on-site well. A 72-hour pump test yielded a production rate of 36,000 gpd, or 50 gpm. A 271,000-gallon water tank for water supply and fire safety requirements would be used to store the pumped water and be located approximately 1 mile northwest of the O&M building (Figure 2-2).

Approximately 36,509 gpd of water would be used during construction for concrete manufacturing, dust control, panel washing, sanitary uses, landscaping, reverse osmosis reject water, and for the Temporary Construction Worker Accommodations Area (Table 3.7-1). During CVSR operations, water would be used for commercial/office purposes (including the O&M building) and maintenance purposes (panel washing and dust control). Water for operations would be supplied from the on-site well. Approximately 10,989 gallons of water would be used daily during operations (Table 3.7-1).

Table 3.7-1. Estimated Water Requirements for CVSR Construction and Operation

	Daily Demand (gallons)	Annual Water Demand (acre-feet)
Construction Total	36,509	40.84
Operation Total	10,989	12.4

Sources: SunPower 2009a and 2009b

As shown on Table 3.7-1, construction demand would exceed the yielded production rate from the well by approximately 509 gpd. However, the estimated demand from the CVSR requires what is considered to be an unrealistic assumption of continuous 24-hour per day, 365 days per year pumping schedule from one well, throughout the construction period (SLO County 2011a). If the daily yields of the well are inadequate or become inadequate during project construction (with or without the TCWAA option), interruption to project water supply could occur, and other wells in the CVSR area could be affected by over-pumping. However, the project includes features, such as developing a water supply contingency plan for construction that requires installation of an additional project well if needed, and preparation of a Groundwater Monitoring and Reporting Plan to assess any potential effects that project pumping may have on other wells in the area. Implementation of these features would ensure that impacts associated with groundwater pumping for the CVSR Project would be less than significant.

In addition, the annual water requirements for landscape establishment during construction would be 1,800,000 gallons per year. Landscaping would require approximately 514,000 gallons per year to irrigate vegetation to provide visual screening. After the landscape is established for three to five years, landscape irrigation usage is expected to drop by 75 percent. To further reduce potential water supply impacts, the Applicant would prepare a groundwater management plan, a water supply contingency plan, and a drought management plan, which, taken together would monitor groundwater levels, and describe how water would be managed in times of drought.

PG&E would require 16,000 gpd for dust control during reconductoring and 4.4 acre-feet total for dust control during construction of the Caliente switching station which would be satisfied with water tanks brought into the work area from offsite. Groundwater would not be used for reconductoring activities (SLO County 2011b).

A hydrogeology report that examined potential impacts on groundwater resources from the CVSR and the proposed adjacent Ausra and First Solar projects was completed in December 2009. The study concluded that there would be modest drawdown of the water table (approximately 2.5 feet) in the immediate vicinity of the wells. This report also concluded that within the 30-year study period, wells on the CVSR site and the other two solar project wells would have no effect on groundwater supplies (URS 2009b).

Impacts on groundwater supply from construction of the CVSR and transmission line reconductoring are expected to be negligible given the projected minimal water use of the proposed action. Impacts would, therefore, not be significant.

Wetlands, Other Waters of the United States, and Floodplains

No jurisdictional wetlands would be impacted by the proposed action. Any impacts to ephemeral streams and other sensitive aquatic resources occurring within and around the proposed action would be avoided to the maximum extent practicable through implementation of the proposed design features such as the minimization of disturbance within stream channels, and implementation of drainage and erosion control BMPs. In addition, the Applicant would prepare a SWPPP and an Erosion Control and Sediment Transport Plan in order to minimize erosion and sedimentation from activities such as road grading, construction of the switching station, and tower installation, thus ensuring that water quality would not be degraded during the wet season. Impacts would, therefore, not be significant.

Access roads would cross ephemeral stream corridors at approximately 22 proposed locations. In these areas, impacts to stream features would be minimized by designing overcrossing to avoid disrupting the flow of the corridor, and placing culverts to follow the natural drainage patterns. In addition, the Applicant has designed the CVSR to avoid impacts to sensitive habitats found in ephemeral drainages to the maximum extent practicable. Nonetheless, if impacts to sensitive resources cannot be completely avoided through project design and operational controls, the Applicant has included a variety of project design features and BMPs in the project proposal that would reduce impacts, as described in Appendix B. Impacts on sensitive resources would, therefore, not be significant.

In addition, the CVSR would not be sited within a 100-year floodplain, and the Morro Bay–Midway transmission line, while it would cross several Flood Hazard Zone A areas, is an existing line; therefore, there would be no impacts related to floodplains.

3.7.3.3 Twisselman Aggregate Mine Establishment

The proposed Twisselman aggregate mine site is located north of the CVSR and SR-58. In accordance with SMARA permitting requirements, the limits of the quarry were delineated by the Applicant to prevent redirection of the existing streams. Prior to initiating mining activities, two sedimentation basins would be constructed to intercept and detain runoff from all disturbed areas and to minimize the discharge of sediment to downstream areas. Additionally, an existing drainage course would be improved along the south and southeast side of the mining area, and topsoil would be stripped and placed in a designated topsoil stockpile area. Surface water runoff from the stockpile and processing area would be directed to a sedimentation basin, while temporary swales and/or berms would be constructed to control the direction of runoff within the active areas of the mine. Basins have been designed to include an emergency spillway that could accommodate a 100-year storm event. The maximum total surface area to be drained by the basins is 24.5 acres.

Two existing wells on the Twisselman aggregate mine site, in addition to the existing well on the CVSR site, would be available to water the access roads to control dust during the life of the mine. The amount of water necessary for dust control would depend on the level of operations, weather conditions, and soil moisture levels, but could range up to two 5,000-gallon water truckloads per day, with an average usage of less than 5,000 gpd. Long-term records of groundwater wells in the region indicate little or no change in groundwater elevations from the 1960s to the present day (URS 2009b). Therefore, the amount of available groundwater storage and recharge in the vicinity is considered adequate to meet temporary requirements during construction. Additionally, a Groundwater Monitoring and Reporting Plan would determine aggregate mine pumping impacts from changes in background conditions and would ensure that potential effects associated with pumping to meet dust-control needs are reduced. In addition, because establishment of the Twisselman aggregate mine does not include any wet processing activities

and, therefore, would not require a water source for mining or processing, the effects of groundwater pumping on groundwater recharge would not be significant.

Establishment of the Twisselman aggregate mine would not result in the contamination of groundwater sources. The estimated maximum depth of proposed excavation at the aggregate mine would be approximately 95 feet, while the minimum depth to groundwater is approximately 100 to 150 feet bgs. It is not expected that mining activities would encounter groundwater resources; however, if groundwater is encountered, dewatering activities would be implemented in accordance with the California Stormwater BMP Handbook for Construction (California Stormwater Quality Association [CASQA] 2009). Spill and release prevention measures are incorporated into the project to assure that the mine does not result in contamination to surface or groundwater bodies; therefore, impacts to water quality would not be significant.

The aggregate mine would not be within a FEMA designated 100-year floodplain or Flood Hazard Zone and is not expected to be inundated by the 100-year flood (FEMA 2008a, 2008b). Establishment of the Twisselman aggregate mine would not alter the existing drainage pattern of the aggregate mine in a manner that would result in flooding onsite or offsite. The access road would cross a stream onsite where a culvert and fill of conventional design would be used to maintain the drainage pattern. In accordance with Section 402 of the CWA, a SWPPP would be developed for the aggregate mine operations and would include BMPs to prevent material from entering streams or watercourses by erosion, siltation, or sliding. With implementation of these project design features, off-site flooding resulting from on-site drainage patterns would be minimized or avoided. In addition, in order to ensure that the construction roads required for the aggregate mine do not substantially alter the existing drainage pattern of the site, a drainage plan would be prepared and construction would be limited to the dry season. Therefore, flooding impacts related to the establishment of the Twisselman aggregate mine would not be significant.

In addition, on June 9, 2011, the USACE determined no jurisdictional wetlands are located on the Twisselman aggregate mine site and a CWA 404 permit would not be required. A copy of the Jurisdictional Determination is included as Appendix D-5 of this EA.

3.7.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on water resources. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.8 Biological Resources

This section describes the existing biological resources in the project vicinity and potential impacts to those resources from constructing the CVSR Project. In this section, the term CVSR refers to the solar generation facility site, interconnection line route, and Caliente switching station site. The term Twisselman aggregate mine refers to the mine site, and the term reconductoring route refers to the land underlying the segment of the Morro Bay–Midway transmission line to be reconductored.

3.8.1 Regulatory Framework

3.8.1.1 Federal

Federal Endangered Species Act

The ESA (16 U.S.C. 1531–1544, 87 Statute 884) protects federally-listed threatened and endangered species and their habitats from *take* and ensures that federal actions do not jeopardize the continued

existence of a listed species or result in the destruction or adverse modification of designated *critical habitat*.[6] The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering the ESA. Activities that may result in take of individuals are regulated by the USFWS. If any aspect of an agency action may affect a listed species or designated critical habitat, consultation with the USFWS is required.

Consultation is initiated by drafting a Biological Assessment (BA) and submitting the BA to the USFWS for review. After review of the BA, USFWS issues a Biological Opinion (BO) that includes: (1) the opinion of the USFWS as to whether or not the federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat [50 CFR Section 402.02, 50 CFR Section 402.14(h)]. Section 7 of the ESA requires federal agencies, in consultation with and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to insure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The BO is provided in Appendix D-3.

USFWS Recovery Plan for Upland Species in the San Joaquin Valley, California

This recovery plan applies to 34 species of plants and animals that occur in San Joaquin Valley (USFWS 1998). The ultimate goal of the Plan is to delist 11 threatened and endangered species and ensure the long-term conservation of the remaining 23 species.

Migratory Bird Treaty Act, Raptors, and Bald and Golden Eagle Protection Act

The Federal Migratory Bird Treaty Act (16 U.S.C. 703–712, July 13, 1918, 40 Statute 755) prohibits killing, possessing, or trading migratory birds. The Act applies to whole birds, parts of birds, and bird nests and eggs. In addition, raptors (e.g., eagles, hawks, and owls) and their nests are protected under both federal and state regulations (USFWS 2010a). The Federal Bald and Golden Eagle Protection Act (16 U.S.C. 668, 54 Statute 250, 50 CFR Subchapter 668d) prohibits take, possession, and commerce of such birds and establishes civil penalties for violations. Take of bald and golden eagles may include agitating or disturbing eagles (16 U.S.C. 668–668).

Section 404 of the Clean Water Act

Areas meeting the regulatory definition of Waters of the United States (jurisdictional waters) are subject to the jurisdiction of the USACE under provisions of Section 404 of the CWA (1972) and Section 10 of the Rivers and Harbors Act (1899). Section 404 establishes a permit program administered by the USACE for regulating the discharge of dredged or fill material into Waters of the United States (including special aquatic sites such as wetlands). These waters may include tributaries of waters otherwise defined as Waters of the United States and wetlands adjacent to Waters of the United States (33 CFR Part 328, Section 328.3). Construction activities within jurisdictional waters are regulated by the USACE. The placement of fill into such waters must comply with permit requirements of the USACE. To prevent the degradation and overall loss of Waters of the United States, no USACE permit would be effective in the absence of State water quality certification pursuant to Section 401 of the CWA. As a part of the permit process, the USACE works directly with the USFWS to assess potential project impacts on biological resources.

[6] Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting. Critical habitat is the specific areas within the geographical area occupied by the species on which are found those physical or biological features essential to the conservation of the species.

3.8.1.2 State

California Endangered Species Act

The CESA (Fish and Game Code Sections 2050 to 2097) establishes legal protection for threatened and endangered plants and wildlife and is administered by the CDFG (California Fish and Game Code Section 2050 et seq.). Additionally, the California Fish and Game Code contains lists of vertebrate species designated as "fully protected" (California Fish & Game Code Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], 5515 [fish]). Such species may not be taken or possessed. The CDFG also identifies *species of concern*—species that may become listed as threatened or endangered due to loss of habitat, limited distributions, and diminishing population sizes, or because the species is deemed to have scientific, recreational, or educational value (California Fish and Game Code Section 2050 et seq.). The CDFG recognizes that plants on CNPS Lists 1A, 1B, and 2 and some of the plants on Lists 3 and 4 may qualify for listing under CESA (California Natural Diversity Database [CNDDB] 2011, CNPS 2011). In addition, the Wildlife Branch Game Management Programs of CDFG manage game species throughout the state for conservation and hunting opportunities.

California Fish and Game Code Sections 3503 and 3503.5

California Fish and Game Code (Section 3503.5) states that it is unlawful to take, possess, or destroy any birds of prey (in the order Falconiformes or Strigiformes) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered *take* by the CDFG.

Under Sections 3503 and 3503.5 of the California Fish and Game Code, activities are prohibited that would result in the taking, possessing, or destroying of any birds-of-prey, taking or possessing of any migratory nongame bird as designated in the Migratory Bird Treaty Act, or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the Migratory Bird Treaty Act, or the taking of any non-game bird pursuant to Fish and Game Code Section 3800.

California Fish and Game Code Sections 1600–1603

Activities that result in the diversion or obstruction of the natural flow of a stream or which substantially change its bed, channel, or bank; or which utilize any materials (including vegetation) from the streambed may require a Streambed Alteration Agreement with the CDFG (California Fish and Game Code Section 1600 et seq.).

California Fish and Game Code Section 1801

The CDFG's general wildlife conservation policy is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State, including management of game species for the sport of hunting (California Fish and Game Code Section 1801).

3.8.1.3 Local

San Luis Obispo County General Plan

The Agriculture and Open Space Element of the San Luis Obispo County General Plan was developed in 1972 and revised in 2010. One of the key issues identified in the element is the identification, protection, and management of open space while encouraging public education and participation.

San Luis Obispo County San Joaquin Kit Fox Mitigation Procedures

The County, in cooperation with the CDFG, has developed standard mitigation measures to reduce impacts on San Joaquin kit fox habitat occurring within County limits to an insignificant level (SLO

County 2008, 2011a). The measures only apply to project sites of less than 40 acres located within kit fox habitat area and with no kit foxes present on the site (SLO County 2008). The CVSR Project does not fall under the guidelines for the mitigation procedures as the CVSR site would be greater than 40 acres, and kit fox are present onsite. The establishment of the Twisselman aggregate mine may be subject to the measures. The Twisselman aggregate mine site is designated for 4:1 mitigation.

3.8.2 Affected Environment

This section describes the baseline conditions for biological resources in the vicinity of the CVSR site, Twisselman aggregate mine, and Morro Bay–Midway transmission line reconductoring route. The information is summarized from biological resources surveys and reports conducted to comply with the requirements of the FESA and CESA as well as other relevant information associated with biological resources. The BO describes the habitats and species potentially affected by the proposed action; evaluates the effects after restoration, preservation, and management activities; and makes formal determination statements on take and likelihood of the proposed action to jeopardize the continued existence of the species or inhibit these species' recoveries. The Applicant has incorporated all project design features identified in the BO into the proposed action. The BO was issued on June 24, 2011 and is provided in Appendix D-3. The BO includes a summary of onsite and offsite conservation lands that would be included as part of the proposed action. In addition, a complete list of surveys and biological reports prepared for the CVSR Project is provided in Appendix D-1.

For discussions within this section (Section 3.8.2, Affected Environment), descriptions of vegetation and habitat, wildlife, and special status species are first provided for the CVSR and Twisselman aggregate mine sites, and second for the Morro Bay–Midway transmission line reconductoring route. The CVSR and Twisselman aggregate mine affected environments are described in conjunction because the Twisselman aggregate mine site was assessed as part of the Biological Study Area (BSA) evaluated in the BO for the CVSR, interconnection line, Caliente switching station, and Twisselman aggregate mine sites (issued on June 24, 2011, Appendix D-3).

3.8.2.1 Vegetation and Habitat

<u>California Valley Solar Ranch and Twisselman Aggregate Mine Sites</u>

The CVSR and Twisselman aggregate mine sites are dominated by slightly sloping grasslands intergrading into the moderate and steeper slopes of the Temblor Range and associated scarps and drainages. Reconnaissance and protocol-level botanical surveys, general habitat assessment surveys, and habitat mapping were conducted to characterize habitat types. In addition, a delineation of jurisdictional waters and wetlands on the CVSR site was conducted by the Applicant in 2008, 2009, and 2010 and confirmed by reconnaissance level site surveys conducted in 2009 and 2010 by San Luis Obispo County's biological team (SLO County 2011a).

The USACE determined that there are no waters of the United States as defined by Section 404 of the CWA and no navigable waters of the United States as defined by Section 10 of the Rivers and Harbors Act within the boundaries of the CVSR site (USACE 2010). A delineation of jurisdictional waters and wetlands of the Twisselman aggregate mine site was conducted by the Applicant in 2010. The Twisselman aggregate mine delineation was submitted to the USACE for verification in February 2011 and a field verification survey by the USACE is scheduled for March 16, 2011. More detail on wetland impacts can be found in Section 3.7, Water Resources.

The vegetation community-landform types present within the CVSR and Twisselman aggregate mine sites include annual grassland, interior coast range saltbush scrub, wildflower field, desert sink scrub, tamarisk scrub, alkaline seasonal wetlands-wildflower field complex, and ephemeral drainages (H.T. Harvey and Associates 2010b). Annual grassland, interior coast range saltbush scrub, desert sink scrub, and tamarisk scrub are considered common community types and are found in relative abundance in nearby areas. Two sensitive community types, wildflower field and alkaline seasonal wetlands-wildflower

field complex, were documented within the CVSR site. Wildflower fields are considered sensitive vegetative communities by the CDFG. Wetland habitats, regulated by the EPA and USACE, often provide habitat for listed and/or common invertebrates, breeding and nesting birds, and various waterfowl. The existing Twisselman aggregate mine comprises 10 acres of open quarry that is considered developed, and an additional 2 acres of disturbed area beyond the developed mine. Almost 32 percent of the proposed mining area includes slopes of over 16 percent.

Annual Grassland

Annual grassland is the dominant vegetation community on the CVSR and Twisselman aggregate mine sites and is particularly prevalent south of SR-58. The onsite annual grassland vegetation community is characterized by a variably dense cover of annual grasses with some select areas containing native annual forbs. Annual grassland on these sites include the following grasses: slender wild oats (*Avena barbata),* wild oats (*Avena fatua),* soft chess (*Bromus hordeaceus),* ripgut brome (*Bromus diandrus),* and red brome (*Bromus madritensis).* Characteristic forbs include broad leaf filaree (*Erodium botrys),* redstem filaree (*Erodium cicutarium*), fiddleneck (*Amsinckia menziesii),* and common peppergrass (*Lepidium nitidum).* Two perennial grasses observed onsite include nodding needlegrass (*Nasella cernua)* and one-sided blue grass (*Poa secunda)* (H.T. Harvey and Associates 2010b).

Interior Coast Range Saltbush Scrub

Interior coast range saltbush scrub comprises the second most abundant type on the CVSR site and is the dominant habitat north of SR-58, east of the interconnection line route. The onsite interior coast range saltbush scrub vegetation community is associated with the foothills of the Temblor Range. Much of this community has been type-converted to annual grassland by year-round grazing, both on the CVSR site and throughout its range. This vegetation community is characterized by moderate to dense, shoulder-high scrub dominated by allscale (*Atriplex polycarpa),* Mormon tea (*Ephedra californica),* and bladderpod (*Isomeris arborea),* usually with a grassy understory dominated by red brome. Other characteristic species include Mt. Diablo milkvetch (*Astragalus oxyphysus),* California buckwheat (*Eriogonum fasciculatum),* and alkali goldenbush (*Isocoma acradenia)* (H.T. Harvey and Associates 2010b).

Wildflower Field

The wildflower field vegetation community on the CVSR site occurs most extensively in the foothills north of SR-58, but several locations south of SR-58 support this community type as well. This vegetation community is usually found on nutrient-poor, shallow, and rocky soil sites and may be surrounded by productive sites dominated more heavily by non-native species. Characteristic species include California poppy (*Eschscholzia californica),* common tidy-tips (*Layia platyglossa),* miniature lupine (*Lupinus bicolor),* narrow leaved owl's clover (*Castilleja attenuata),* and purple owl's clover (*Castilleja exserta)* (H.T. Harvey and Associates 2010b).

Desert Sink Scrub

This vegetation community typically occurs in moist valley bottoms and seasonally dry lakebeds. Desert sink scrub is characterized by widely spaced plants with most species being succulent chenopods. Characteristic species include four-wing saltbush (*Atriplex canescens),* alkali heath (*Frankenia salina),* alkali weed (*Cressa truxillensis),* greasewood (*Sarcobatus vermiculatus),* and bush seepweed (*Suaeda moquinii)* (H.T. Harvey and Associates 2010b). Desert sink scrub is found in several locations within the CVSR site. The area of desert sink scrub in the northeastern part of the CVSR site is a wetland sink with a large (approximately 4-acre), unvegetated playa pool in the center.

Tamarisk Scrub

Tamarisk scrub is found in four locations within the CVSR site, where this community type is heavily influenced by anthropogenic activities, such as excavation of areas near a groundwater seep, excavation of a basin to contain tail water from the gypsum mine, or artificial hydrology from a leaking water tower. The habitat surrounding the excavated seep and the gypsum mine mainly comprise salt cedar (*Tamarix ramosissima)* stands, while the scrub near the abandoned farmhouse consists of one large athel tamarisk (*Tamarix aphylla)* tree (H.T. Harvey and Associates 2010b).

Alkaline Seasonal Wetlands-Wildflower Field Complex

Approximately 14 acres of alkaline seasonal wetlands-wildflower field complex are found in the southwest corner of the CVSR site. Unlike areas onsite mapped as desert sink scrub, this area conforms to the characteristics of a wetland fed by surface precipitation. The alkaline seasonal wetlands in the southwest corner of the CVSR site were previously farmed, which has disturbed and muted the native topography of the area and contributed to spreading of the alkaline-scalded soils from their more discrete historic distributions. Some areas are still depressed enough to pond shallowly for short periods in the winter and spring (e.g., 1 to 2 weeks or less following rain events). During years when successive rain events occur with sufficient frequency, this can lead to a longer-term ponding period for these pools.

Unlike typical vernal pools, which have a direct hydrologic connection to a subsurface water table perched above a restrictive layer, the pools on the southwestern part of the CVSR site were not found to overlay any restrictive soil layer such as a claypan or hardpan (H.T. Harvey and Associates 2010b). Instead, these pools appear to function as alkaline rain pools (Preston 2010), which are shallow pools in alkaline soil that only become ponded after sufficient rain saturates and seals off the alkaline surface layer. This may require as much as 0.75 to 1.2 inches over a span of several days (Preston 2010). There is no connection to a subsurface water table, and thus even after initial ponding occurs, frequent rain events are required to support continuous ponding for extended periods. Therefore, these pools would not be expected to pond water long enough to support habitat for aquatic invertebrates such as branchiopods every year.

Due to prior farming activities and lower water-holding capacity associated with the muted topography, ponding of pools on the CVSR site is expected to be of even shorter duration and less predictable than otherwise similar but undisturbed pools located offsite. Like Preston's (2010) description of alkaline rain pool habitat, and unlike typical vernal pools, the pools on the CVSR site do not support much, if any, vegetation within the alkaline-scalded areas subject to ponding. Instead, species such as goldfields, crownscale (*Atriplex coronata*) and shining pepperweed (*Lepidium nitidum* var. *nitidum*) occur around the pool or scald edges.

Ephemeral Drainages

Forty-two ephemeral drainages occur within the CVSR and Twisselman aggregate mine sites. These drainages are mostly unvegetated or contain vegetation resembling that of the surrounding vegetation community. Such areas are typified by incision, often with loose, gravelly, sandy, or cobbly soils within the bed and banks (H.T. Harvey and Associates 2010b).

Morro Bay–Midway Transmission Line Reconductoring

The vegetation communities identified and mapped during habitat assessment surveys for Morro Bay–Midway transmission line reconductoring are described below.

Annual Grassland

Annual grassland occurs along the entire reconductoring route. Annual grassland along the route is dominated by ripgut brome, barley (*Hordeum murinum),* filaree species (*Erodium cicutarium, E. moschatum, E. botrys),* fiddleneck species (*Amsinckia menziesii* var. *menziesii, A. menziesii* var.

intermedia), peppergrass, Sierra tidytips (*Layia pen tachaeta* ssp. *albida),* pygmy weed (*Crassula connata),* and goldfield species (*Lasthenia californica, L. debilis).* Additional common native plant species include blue dicks (*Dichelostemma capitata),* lupine species (*Lupinus* spp.), California mustard (*Guillenia lasiophylla),* common monolopia (*Monolopia lanceolata),* popcorn flower (*Plagiobothrys* sp.), and bracted alkali goldenbush (*Isocoma acradenia* var. *bracteosa)* (ICF International 2010d).

Oak Woodland

Oak woodland dominated by Tucker's oak (*Quercus john-tuckeri)* occurs along a segment of the reconductoring route within the Temblor Range. Additional species observed occurring within this community type include oak gooseberry (*Ribes quercetorum),* linear-leaved goldenbush (*Ericameria linearifolia),* bush lupine (*Lupinus albifrons),* one-sided bluegrass, common lomatium (*Lomatium utriculatum),* and California poppy. Additional common herbaceous species include lupine species, blue dicks, slender tropidocarpum (*Tropidocarpum gracile),* and fiddleneck species (ICF International 2010d).

Saltbush Scrub

Saltbush scrub stands occur along the entire reconductoring route but are primarily concentrated and best represented within the lower, eastern segment of the reconductoring route, east of the Temblor Range. Saltbush scrub along the reconductoring route is dominated by allscale (*Atriplex polycarpa)*. The herbaceous understory in these stands commonly supports plant species such as ripgut brome, barley, filaree species, Arabian schismus (*Schismus arabicus),* fiddleneck species, pepper-grass, and several commonly occurring native annual plant species, including Sierra tidytips, pygmy weed, goldfield species, tansy leafed phacelia (*Phacelia tanacetifolia),* and slender tropidocarpum (ICF International 2010d).

California Juniper woodland

California juniper (*Juniperus californica*) woodland occurs along a segment of the reconductoring route within the Temblor Range. Additional species observed occurring within this community type include bracted alkali goldenbush, linear-leaved goldenbush, one-sided bluegrass, fiddleneck species, common lomatium, blue dicks, slender tropidocarpum, pepper-grass, and bush lupine (ICF International 2010d).

Irrigated Row and Field Crops

Irrigated row and field crop habitat consists of currently cultivated lands (i.e., row crops) and fallow fields. This habitat occurs along the western and eastern segments of the reconductoring route. Dominant vegetation in irrigated row and field crop habitat along the reconductoring route consists of agricultural cultivars such as alfalfa, cabbage, onions, and lettuce (ICF International 2010d).

Disturbed Areas

Disturbed areas are distinct along the reconductoring route. Disturbed habitats are mostly bare areas that support ruderal species with life histories enabling quick colonization of areas that have been disturbed. Disturbed areas typically provide low habitat value for many wildlife species, although there are exceptions, as in the case of burrowing owls (*Athene cunicularia)* (ICF International 2010d).

Ephemeral Drainages

Segments of ephemeral Salt Creek and three unnamed ephemeral drainages, comprising less than 0.5 acres (0.42 acre), were identified within the reconductoring route. The drainages occur in the foothills of the Temblor Range, with two drainages draining to the Carrizo Plain. Two other drainages drain east toward the Central Valley, occurring as sheet flow upon reaching the valley floor. In addition, the drainages all occur in annual grassland habitats and have little or no vegetation in the channels.

Irrigation Canals

The Eastside Canal and six unnamed irrigation canals occur within the eastern segments of the reconductoring route. These canals are well defined by a clear-cut bed and bank with little or no vegetation in the channels.

3.8.2.2 Wildlife

The CVSR and Twisselman aggregate mine sites support a variety of common wildlife species. Table 3.8-1 lists these common species.CDFG Managed Game Species

Tule elk (*Cervus elaphus nannodes)* and pronghorn antelope (*Antilocapra americana)* are game species in California that have been reintroduced and are actively managed by the CDFG within the Carrizo Plain. Although these species hold no federal or state listing status, the CDFG considers these ungulates to be a valuable resource and has provided a large amount of financial support for restoration of their historic populations.

Tule Elk

General biological surveys of the CVSR site resulted in the incidental observations of elk during biological surveys in 2008 and 2009. These observations included the sighting of a bull and cow elk just north of SR-58 within and adjacent to the CVSR site; however, none were observed in habitat south of the highway, on the proposed CVSR site (H.T. Harvey and Associates 2010b).

Pronghorn Antelope

Data from 2000 through 2008 on the regional distribution of pronghorn antelope depict the presence of one antelope population northwest of the CVSR site and one that is partially in the Carrizo Plains National Monument to the south. General biological surveys conducted on the CVSR site from March to December 2009 observed pronghorn antelope on site on six different occasions. These observations ranged from individuals to a group as large as 11 antelope (H.T. Harvey and Associates 2010b; Penrod et al. 2010).

3.8.2.3 Special Status Species

Special status species include those federally listed as endangered, threatened, proposed, or candidate species under the ESA; and those state listed as endangered, threatened, or candidate under the CESA, or species of special concern or state fully protected. Special status plant species may also have CNPS rankings. Qualified biologists used USFWS species lists, relevant literature, database searches, and findings from biological surveys to determine which special status species were known to occur, or could occur, within the CVSR and Twisselman aggregate mine sites (Appendix D-3).

<u>California Valley Solar Ranch and Twisselman Aggregate Mine Sites</u>

A series of biological surveys and habitat assessments including protocol-level surveys were conducted on and within the vicinity of the CVSR and Twisselman aggregate mine sites (see listing in Appendix D). The surveys identified the presence of two federally listed special status species within the CVSR site: San Joaquin kit fox and giant kangaroo rat (*Dipodomys ingens*). Additionally, seven federally listed special status species that could or are known to occur within the vicinity of the CVSR site were identified. These species include California jewel-flower, San Joaquin woollythreads, longhorn fairy shrimp, vernal pool fairy shrimp, blunt-nosed leopard lizard, California condor, and Kern primrose sphinx moth (Table 3.8-2).

Table 3.8-1 Common Wildlife Species with the Potential to Occur within the CVSR and Twisselman Aggregate Mine Sites

Mammals			
Black-tailed hare (*Lepus californicus*) Bobcat (*Lynx rufus*) Botta's pocket gopher (*Thomomys bottae*) California pocket mouse (*Chaetodipus californicus ochrus*)	Coyote (*Canis latrans*) Deer mouse (*Peromyscus maniculatus gambeli*) Desert cottontail (*Sylvilagus audubonii*) Desert woodrat (*Neotoma Intermedia*)	Long-tailed weasel (*Mustela frenata*) Red fox (*Vulpes fulva*) Heermann's kangaroo rat (*Dipodomys heermanni swarthi*)	California ground squirrel (*Spermophilus beecheyi*) Striped skunk (*Mephitis mephitis*) McKittrick pocket mice (*Perognathus inornatus neglectus*) Tule elk (*Cervus elaphus*)
Birds			
Turkey vulture *(Cathartes aura)* Red-tailed hawk (*Buteo jamaicensis*) Ferruginous Hawk (*Buteo regalis*) Prairie Falcon (*Falco mexicanus*) American kestrel (*Falco sparverius*)	Great horned owl (*Bubo virginianus)* Mourning Dove (*Zenaida macroura)* Say's Phoebe (*Sayornis saya*) Western Kingbird (*Tyrannus verticalis*) Common Raven (*Corvus Corax*)	Horned lark (*Eremophila alpestris*) European Starling (*Sturnus vulgaris*) American Pipit (*Anthus rubescens*) Lark sparrow (*Chondestes grammacus*)	Savannah sparrow *(Passerculus sandwichensis)* Western meadowlark (*Sturnella neglecta*) Brewer's Blackbird (*Euphagus cyanocephalus*) House Finch (*Carpodacus mexicanus*)
Reptiles and Amphibians			
Side-blotched lizard (*Uta stansburiana*) California whiptail (*Aspidoscelis tigris mundus*) Western fence lizard (*Sceloporus occidentalis*) Western red-tailed skink (*Plestiodon gilberti rubricaudatus*)	California alligator lizard (*Elgaria multicarinata multicarinata*) Northern Pacific rattlesnake (*Crotalus oreganus*) Pacific gopher snake (*Pituophis catenifer catenifer*) California glossy snake (*Arizona elegansoccidentalis*)	Western yellow-bellied racer (*Coluber constrictor mormon*) Western skink (*Eumeces skiltonianus*) Gilbert's skink (*Eumeces gilberti*) California nightsnake (*Hypsiglena torquata nuchalata*) Long-nosed snake (*Rhinocheilus lecontei*)	Valley garter snake (*Thamnophis sirtalis fitchii*) Western toad (*Bufo boreas halophilus*) Pacific chorus frog (*Pseudacris regilla*) California kingsnake (*Lampropeltis getula californiae*)
Invertebrates			
Northwest striate (*Striatura pugetensis*)	Versatile Fairy Shrimp (*Branchinecta lindahli*)	Quick gloss (*Zonitoides arboreus*)	

Source: SLO County 2011a.

Table 3.8-2 Special Status Wildlife and Plant Species with the Potential to Occur within or near the CVSR and Twisselman Aggregate Mine Sites

Common Name	Scientific Name	Potential of Occurrence	Federal Status	State Status
Invertebrates				
Longhorn fairy shrimp	*Branchinecta longiantenna*	Present	Endangered	None
Vernal pool fairy shrimp	*Branchinecta lynchi*	Moderate	Threatened	None
Kern primrose sphinx moth	*Euroserpinus euterpe*	Moderate	Threatened	None
Conservancy fairy shrimp	*Branchinecta conservatio*	Absent	Endangered	None
Amphibians				
Western spadefoot toad	*Spea hammondii*	Present	None	Species of Special Concern
California tiger salamander	*Ambystoma californiense*	Absent	Threatened	Threatened
Southern Pacific pond turtle	*Actinemys marmorata pallida*	Absent	None	Species of Special Concern
Reptiles				
Blunt-nosed leopard lizard	*Gambelia sila*	Low	Endangered	Endangered, State Fully Protected
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	Present	None	Species of Special Concern
Coast horned lizard	*Phrynosoma blainvillii*	Present	None	Species of Special Concern
Silvery legless lizard	*Anniella pulchra pulchra*	Low	None	Species of Special Concern
Birds				
California condor	*Gymnogyps californianus*	Low	Endangered	Endangered, State Fully Protected
Mountain plover	*Charadrius montanus*	Present	Candidate	Species of Special Concern
Bald eagle	*Haliaeetus leucocephalus*	Low	None	Endangered, State Fully Protected
American peregrine falcon	*Falco peregrinus*	Moderate	None	Endangered, State Fully Protected
Burrowing owl	*Athene cunicularia*	Present	None	Species of Special Concern
Northern harrier	*Circus cyaneus*	Present	None	Species of Special Concern
Long-eared owl	*Asio otus*	Present	None	Species of Special Concern
Loggerhead shrike	*Lanius ludovicianus*	Present	None	Species of Special Concern
Oregon vesper sparrow	*Pooecetes gramineus affinis*	Present	None	Species of Special Concern
Grasshopper sparrow	*Ammodramus savannarum*	Present	None	Species of Special Concern

Table 3.8-2 Special Status Wildlife and Plant Species with the Potential to Occur within or near the CVSR and Twisselman Aggregate Mine Sites

Common Name	Scientific Name	Potential of Occurrence	Federal Status	State Status
Tricolored blackbird	*Agelaius tricolor*	Present	None	Species of Special Concern
Short-eared owl	*Asio flammeus*	Moderate	None	Species of Special Concern
Swainson's hawk	*Buteo swainsoni*	Low	None	Threatened
Lesser sandhill crane	*Grus canadensis canadensis*	Low	None	Species of Special Concern
Le Conte's thrasher	*Toxostoma lecontei*	Low	None	Species of Special Concern
Golden eagle	*Aquila chrysaetos*	Present	None	State Fully Protected
White-tailed kite	*Elanus leucurus*	Low	None	State Fully Protected
Mammals				
Giant kangaroo rat	*Dipodomys ingens*	Present	Endangered	Endangered
San Joaquin kit fox	*Vulpes macrotis mutica*	Present	Endangered	Threatened
San Joaquin antelope squirrel	*Ammosperm-ophilus nelsoni*	Present	None	Threatened
Pallid bat	*Antrozous pallidus*	Present	None	Species of Special Concern
American badger	*Taxidea taxus*	Present	None	Species of Special Concern
Short-nosed kangaroo rat	*Dipodomys nitratoides brevinasus*	Low	None	Species of Special Concern
Tulare grasshopper mouse	*Onychomys torridus tularensis*	Low	None	Species of Special Concern
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	Absent	Endangered	Endangered
Plants				
California jewel-flower	*Caulanthus californicus*	Low	Endangered	Endangered, CNPS 1B.1
San Joaquin woollythreads	*Monolopia congdonii*	Moderate	Endangered	CNPS 1B.2
Kern mallow	*Eremalche kernensis*	Absent	Endangered	None
Parish's sidalcea	*Sidalcea hickmanii* ssp. *parishii*	Absent	Candidate	None
Pale-yellow layia	*Layia heterotricha*	Present	None	CNPS 1B.1
Round-leaved filaree	*California macrophylla*	Present	None	CNPS 1B.1
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	Present	None	CNPS 1B.1
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*	Low	None	CNPS 1B.1
Showy golden madia	*Madia radiata*	Low	None	CNPS 1B.1

Table 3.8-2 Special Status Wildlife and Plant Species with the Potential to Occur within or near the CVSR and Twisselman Aggregate Mine Sites

Common Name	Scientific Name	Potential of Occurrence	Federal Status	State Status
Recurved larkspur	*Delphinium recurvatum*	Present	None	CNPS 1B.2
Munz's tidy-tips	*Layia munzii*	Present	None	CNPS 1B.2
Jared's pepper-grass	*Lepidium jaredii* ssp. *Jaredii*	Present	None	CNPS 1B.2
Heartscale	*Atriplex cordulata*	Low	None	CNPS 1B.2
Lost hills crownscale	*Atriplex vallicola*	Low	None	CNPS 1B.2
Lemmon's jewel-flower	*Caulanthus coulteri* var. *lemmonii*	Low	None	CNPS 1B.2
Temblor buckwheat	*Eriogonum temblorense*	Low	None	CNPS 1B.2
La Panza mariposa	*Calochortus simulans*	Low	None	CNPS 1B.3
California androsace	*Androsace elongata* ssp. *acuta*	Present	None	CNPS 4.2
Crownscale	*Atriplex coronata* var. *coronata*	Present	None	CNPS 4.2
Gypsum-loving larkspur	*Delphinium gypsophilum* ssp. *gypsophilum*	Present	None	CNPS 4.2
Ferris' goldfields	*Lasthenia ferrisiae*	Present	None	CNPS 4.2
Oval-leaved snapdragon	*Antirrhinum ovatum*	Low	None	CNPS 4.2
Hoover's eriastrum	*Eriastrum hooveri*	Low	None	CNPS 4.2
Cottony buckwheat	*Eriogonum gossypinum*	Low	None	CNPS 4.2
Salinas milk-vetch	*Astragalus macrodon*	Low	None	CNPS 4.3

Source: H.T. Harvey and Associates 2010b.
Notes:
California Native Plant Society (CNPS) Ranking System:
1B = Rare, threatened, or endangered in California and elsewhere.
2 = Rare, threatened, or endangered in California but more common elsewhere.
4 = Limited distribution and on a watch list.
0.1 = Seriously threatened in California.
0.2 = Fairly threatened in California.
0.3 = Not very threatened in California.

Critical Habitat

Critical habitat has been designated for longhorn fairy shrimp, vernal pool fairy shrimp, and California condor. Critical habitat Unit 30 for vernal pool fairy shrimp and longhorn fairy shrimp includes the southwestern part of the CVSR site (USFWS 2006). No critical habitat for the California condor is present on or close to the CVSR or Twisselman aggregate mine sites. The nearest designated critical habitat for the species is the East Unit of the Hi Mountain-Beartrap Condor Area, 13 miles west of the CVSR site, where captive-raised condors were formerly released (H.T. Harvey and Associates 2010b).

Morro Bay–Midway Transmission Line Reconductoring

General habitat assessment surveys were conducted along Morro Bay–Midway transmission line route to characterize wildlife habitat types and evaluate the potential for occurrence of federally listed wildlife

species identified by PG&E (ICF International 2010d). Additionally, botanical surveys were conducted in all areas proposed for disturbance as well as access roads that may be graded or improved as part of the reconductoring work. Focused surveys for federally listed wildlife species were not conducted for the Morro Bay–Midway transmission line reconductoring route.

Special status species that are known to occur or could occur along the Morro Bay–Midway transmission line reconductoring route were identified based on the assessment of biological resources on and in the vicinity of the route. A list of all the special status wildlife and plant species that could occur along the reconductoring route is provided in Tables 3.8-3 and 3.8-4.

The survey efforts identified the presence of two federally listed special status species from Tables 3.8-3 and 3.8-4 within the Morro Bay–Midway transmission line reconductoring route, the San Joaquin kit fox and Kern mallow. Additionally, five federally-listed special status species presented in Tables 3.8-3 and 3.8-4 were identified that could occur along the Morro Bay–Midway transmission line reconductoring route, including Kern primrose sphinx moth, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, and California condor (ICF International 2010d). Ten elderberry shrubs occur approximately 20 feet down slope of an access road to a tension/pull site at tower 65 (ICF International 2010d), but these shrubs are outside of the known range of the valley elderberry longhorn beetle. No specimens or observations of living valley elderberry longhorn beetles exist that support the assertion that the species occurs in Kern County (Talley et al. 2006). Four records occur in the CNDBB (CNDDB 2011), but all of the locations are in the vicinity of Oildale on the eastside of the San Joaquin Valley, and the nearest record in the CNDDB is 50 miles east of the shrubs observed along the access road to tower 65.

The California tiger salamander (*Ambystoma californiense)* is known to travel large distances from breeding ponds into upland habitats and are thought to require dry season refuge sites within approximately 1 mile of suitable breeding habitat (ICF International 2011a). This species was not expected to occur in or within 1.24 miles of the Morro Bay–Midway transmission line reconductoring ROW because the closest known occurrence is approximately 19 miles northwest of the project area and the southern extent of the range of the Central Valley population of California tiger salamander is approximately 15 miles northwest of the project area (ICF International 2011a). However, on January 25, 2011, CDFG requested that larval surveys be conducted within the pond that occurs near the work areas at Tower 071 and Tower 073. The first survey was conducted on April 1, 2011, and possible salamander eggs and an embryo were observed (ICF International 2011a). Photographs were taken of the embryo and sent to two experts capable of identifying California tiger salamander during this part of their life cycle. Both experts were of the opinion that the embryo photographed is that of a tiger salamander. No tiger salamander larvae were observed during subsequent surveys conducted on April 22, May 12, and June 9, 2011(ICF International 2011a, ICF International 2011c). Based on the identification of a California tiger salamander embryo, the presence of California tiger salamanders in the action area is assumed (ICF International 2011a). If presence of California tiger salamanders is ultimately confirmed at the pond near the work areas at 071 and 073, it is possible that other aquatic sites and upland areas within 1.24 miles of the project work areas at LZ 048, TP 065, and TP 090 could support California tiger salamanders; and presence at one site may indicate that California tiger salamanders are established in the area (ICF International 2011a).

Table 3.8-3 Special Status Wildlife with Potential to Occur along the Morro Bay–Midway Transmission Line Reconductoring Route

Common Name	Scientific Name	Suitable Habitat	Federal Status	State Status
Invertebrates				
Longhorn fairy shrimp	*Branchinecta longiantenna*	Absent	Endangered	None
Vernal pool fairy shrimp	*Branchinecta lynchi*	Absent	Threatened	None
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Absent	Threatened	None
Kern primrose sphinx moth	*Euproserpinus euterpe*	Low	Threatened	None
Amphibians				
California Tiger Salamander	*Ambystoma californiese*	Present	Threatened	Threatened
Western Spadefoot	*Spea (Scaphiopus) hammondii*	Absent	None	Species of Special Concern
Western Pond Turtle	*Actinemys marmorata*	Absent	None	Species of Special Concern
Reptiles				
Blunt-Nosed Leopard Lizard	*Gambelia sila*	Present	Endangered	Endangered & Fully Protected
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	Present	None	Species of Special Concern
Coast (California) Horned Lizard	*Phrynosoma coronatum frontale*	Present	None	Species of Special Concern
Western Patch-Nosed Snake	*Salvadora hexalepis virgultea*	Absent	None	Species of Special Concern
Birds				
Tricolored Blackbird	*Agelaius tricolor*	Low	None	Species of Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Present	None	Species of Special Concern
Golden Eagle	*Aquila chrysaetos*	Present	None	State Fully Protected
Long-Eared Owl	*Asio otus*	Present	None	Species of Special Concern
Western Burrowing Owl	*Athene cunicularia*	Present	None	Species of Special Concern
Swainson's Hawk	*Buteo swainsoni*	Low	None	Threatened
Mountain Plover	*Charadrius montanus*	Present	Candidate	Species of Special Concern
Northern Harrier	*Cirus cyaneus*	Present	None	Species of Special Concern
White Tailed Kite	*Elanus leucurus*	Present	None	State Fully Protected
American Peregrine Falcon	*Falco peregrinus anatum*	Moderate	Delisted	Endangered & State Fully Protected

Table 3.8-3 Special Status Wildlife with Potential to Occur along the Morro Bay–Midway Transmission Line Reconductoring Route

Common Name	Scientific Name	Suitable Habitat	Federal Status	State Status
Lesser Sandhill Crane	*Grus canadensis canadensis*	Low	None	Species of Special Concern
Greater Sandhill Crane	*Grus canadensis tabida*	Low	None	Threatened & State Fully Protected
California Condor	*Gymnogyps californianus*	Low	Endangered	Endangered & State Fully Protected
Bald Eagle	*Haliaeetus leucocephalus*	Low	Delisted	Endangered & State Fully Protected
Loggerhead Shrike	*Lanius ludovicianus*	Present	None	Species of Special Concern
Oregon Vesper Sparrow	*Pooecetes gramineus affinis*	Present	None	Species of Special Concern
Purple Martin	*Progne subis*	Low	None	Species of Special Concern
Le Conte's Thrasher	*Toxostoma lecontei*	Present	None	Species of Special Concern
Yellow-Headed Blackbird	*Xanthocephalus xanthocephalus*	Low	None	Species of Special Concern
Mammals				
Nelson's (San Joaquin) Antelope Squirrel	*Ammospermophilus nelsonii*	Present	None	Threatened
Pallid Bat	*Antrozous pallidus*	Present	None	Species of Special Concern
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	Low	None	Species of Special Concern
Giant Kangaroo Rat	*Dipodomys ingens*	Present	Endangered	Endangered
Short-Nosed Kangaroo Rat	*Dipodomys nitratoides brevinasus*	Present	None	Species of Special Concern
Tipton Kangaroo Rat	*Dipodomys nitratoides nitratoides*	Present	Endangered	Endangered
Western Mastiff Bat	*Eumops perotis californicus*	Low	None	Species of Special Concern
Western Red Bat	*Lasiurus blossevellii*	Low	None	Species of Special Concern
Tulare Grasshopper Mouse	*Onychomys torridus tularensis*	Present	None	Species of Special Concern
American Badger	*Taxidea taxus*	Present	None	Species of Special Concern
San Joaquin Kit Fox	*Vulpes macrotis mutica*	Present	Endangered	Threatened

Sources: ICF International 2010d and ICF International 2011a.

Table 3.8-4 Special Status Plant Species with Potential to Occur along the Morro Bay–Midway Transmission Line Reconductoring Route

Common Name	Scientific Name	Potential for Suitable Habitat	Federal Status	State Status
Oval-Leaved Snapdragon	*Antirrhinum ovatum*	Low	None	CNPS 4.2
Indian Valley Spineflower	*Aristocapsa insignis*	Low	None	CNPS 1B.2
Heartscale	*Atriplex cordulata*	Low	None	CNPS 1B.2
Lost Hills Crownscale	*Atriplex vallicola*	Low	None	CNPS 1B.2
Round-Leaved Filaree	*California macrophylla*	Present	None	CNPS 1B.1
Dwarf Calycadenia	*Calycadenia villosa*	Low	None	CNPS 1B.1
California Jewel-Flower	*Caulanthus californicus*	Low	Endangered	Endangered, CNPS 1B.1
Lemmon's Jewel-Flower	*Caulanthus coulteri* var. *lemmonii*	Low	None	CNPS 1B.2
Hall's Tarplant	*Deinandra halliana*	Low	None	CNPS 1B.1
Recurved Larkspur	*Delphinium recurvatum*	Moderate	None	CNPS 1B.2
Kern Mallow	*Eremalche kernensis*	Present	Endangered	CNPS 1B.1
Hoover's Eriastrum	*Eriastrum hooveri*	High	None	CNPS 4.2
Temblor Buckwheat	*Eriogonum temblorense*	Low	None	CNPS 1B.2
Tejon Poppy	*Eschscholzia lemmonii* spp. *kernensis*	Low	None	CNPS 1B.1
Diamond-Petaled California Poppy	*Eschscholzia rhombipetala*	Low	None	CNPS 1B.1
Coulter's Goldfields	*Lasthenia glabrata* ssp. *coulteri*	Low	None	CNPS 1B.1
Pale-Yellow Layia	*Layia heterotricha*	Low	None	CNPS 1B.1
Munz's Tidy-Tips	*Layia munzii*	Low	None	CNPS 1B.2
Jared's Pepper-Grass	*Lepidium jaredii* spp. *jaredii*	Low	None	CNPS 1B.2
Showy golden Madia	*Madia radiate*	Moderate	None	CNPS 1B.1
San Joaquin Woollythreads	*Monolopia congdonii*	Moderate	Endangered	CNPS 1B.2
Oil Neststraw	*Stylocline citroleum*	Low	None	CNPS 1B.1
Golden Violet	*Viola aurea*	Moderate	None	CNPS 2.2

Source: ICF International 2010d.

Notes:

California Native Plant Society (CNPS) Ranking System:

1B = Rare, threatened, or endangered in California and elsewhere.
2 = Rare, threatened, or endangered in California but more common elsewhere.
4 = Limited distribution and on a watch list.
0.1 = Seriously threatened in California.
0.2 = Fairly threatened in California.
0.3 = Not very threatened in California.

Critical Habitat

No critical habitat for the longhorn fairy shrimp, vernal pool fairy shrimp, California condor, or valley elderberry longhorn beetle is present along the Morro Bay–Midway transmission line reconductoring route (Appendix D-3). There is also no critical habitat for the California tiger salamander present along the Morro Bay–Midway transmission line reconductoring route (Appendix D-3). The nearest critical habitat for the California tiger salamander is located approximately 15 miles north of the western end of the Morro Bay–Midway transmission line reconductoring route (ICF International 2011a).The nearest critical habitat for the valley elderberry longhorn beetle is in the Sacramento region approximately 250 miles north of the CVSR site. The critical habitat for the longhorn fairy shrimp, vernal pool fairy shrimp, and California condor is described above in the Critical Habitat section for CVSR and Twisselman aggregate mine sites.

3.8.3 Environmental Effects

3.8.3.1 Methodology

Biological surveys were conducted within the CVSR and Twisselman aggregate mine sites and along the Morrow Bay–Midway transmission line reconductoring route from 2008 through 2010. Prior to conducting field surveys, existing and readily available information was collected and reviewed to establish lists of special status plant and wildlife species and other sensitive biological resources likely to be present in the vicinity of the CVSR Project (H.T. Harvey and Associates 2010b, ICF International 2010d).

BAs and Incidental Take Permit applications for the CSVR, Twisselman aggregate mine establishment, and reconductoring of the Morro Bay–Midway transmission line were then prepared and reviewed with the USFWS and CDFG, respectively, to determine the effects from construction and operation of the CVSR Project. A copy of the letter initiating consultation with the USFWS as required by Section 7 of the Federal Endangered Species Act and the complete USFWS BO are provided in Appendices D-2 and D-3, respectively.

3.8.3.2 Proposed Action

California Valley Solar Ranch

Vegetation and Habitat

Temporary and permanent disturbance to vegetation communities are presented in Table 3.8-5 below. Habitat occupying approximately 71.5 acres of land (approximately 1 percent of the CVSR site) would be temporarily disturbed by the installation of solar arrays, grading, construction of associated infrastructure, construction of drainage features, laydown/staging areas, and trenching during construction (H.T. Harvey and Associates 2010b). Habitat occupying approximately 1,684 acres of land (approximately 36 percent of the CVSR site) would be permanently disturbed by the installation of solar arrays, grading, access roads, and foundations (H.T. Harvey and Associates 2010b). Although vegetation under the solar arrays would not be removed except where grading is otherwise required, vegetation under the solar arrays is included in the acreage of permanent disturbance in the effects analysis.

Approximately 93 percent of the temporary and permanent site disturbance (approximately 1,631 acres) would occur in annual grasslands. Impacts to other vegetation community-landform types includes wildflower fields (approximately 48 acres, 3 percent), interior coast range saltbush scrub (approximately 46 acres, 3 percent), and desert sink scrub (approximately 30 acres, 2 percent). Minor disturbance (<1 percent) would occur to the other vegetation communities within the CVSR site (Table 3.8-5).

Table 3.8-5. Direct Effects on Vegetation Communities

Vegetation Community	Permanent Loss[1] (approximate acres)	Short-term Disturbance (approximate acres)
Annual Grassland	1,560	70.9
Desert Sink Scrub	29.7	—
Interior Coast Range Scrub	45.1	.04
Wildflower Field	48.1	.02
Tamarisk Scrub	—	—
Alkaline Seasonal Wetlands-Wildflower Field Complex	—	—
Ephemeral Drainages	1.1	—
TOTAL	**1,684**	**71**

Source: H.T. Harvey and Associates 2010b.

Note:

[1] The area under the arrays and within 100 feet of the arrays, comprising 1657 acres, would remain vegetated but is considered a permanent impact with regard to biological resources.

Vegetation removal and permanent loss within the CVSR site would be minimized by a number of design features. Photovoltaic arrays would use foundations and supporting structures that preserve most of the existing annual grassland ground cover. Except where grading is otherwise required, vegetation would not be removed to install the solar trackers. If necessary, native vegetation would be flagged for protection. A revegetation plan is being prepared for areas of native habitat temporarily affected during construction. The revegetation plan would incorporate California annual grassland species in areas of temporary disturbance. Personnel would avoid affecting wetlands, streambeds, and banks of any streams to the maximum extent practicable; and development would maintain or improve existing hydrologic patterns with respect to runoff supporting seasonal wetlands. Additionally, dust would be suppressed during construction in compliance with air quality standards.

Biological monitors approved by the USFWS and CDFG would be assigned to the CVSR site. The monitors would be responsible for ensuring that impacts to special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible consistent with project design features intended to avoid or reduce impacts (Appendix B). Where appropriate, monitors would flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special status species. These restricted areas would be monitored to ensure their protection during construction. An environmental education program would be presented to personnel by a qualified biologist provided by the Applicant. Impacts to high-quality habitat for listed species would be reduced considerably by these efforts and would therefore be minor and not significant.

During operations, permanent disturbance to vegetation at the CVSR site would be caused by the access roads, structures, parking areas, tracker foundations, tie-line tower pads, equipment pads, hiking trails, substation, water supply facilities, and security stations.

Permanent loss of habitat for listed species as a result of the replacement of habitat with facilities and the presence of solar arrays would be compensated by the preservation, enhancement, and management in perpetuity of suitable lands outside the CVSR site's immediate impact areas. The compensatory habitat proposed by the Applicant varies among species depending on the quality of habitat on the CVSR site and the likelihood of replacement of lost functions and values through the preservation, enhancement, and management of habitat outside the impact areas. For more information regarding the onsite and offsite conservation areas, see Effects of Habitat Conservation as Determined by the USFWS in Section 3.8.3.2. A Habitat Management and Monitoring Plan would be developed and implemented for both onsite (Figure 2-2) and offsite conservation areas. Details of the Compensatory Conservation Guidelines can be found in the BO (Appendix D-3).

All temporarily disturbed areas would be restored to pre-construction conditions or better through implementation of the Habitat Restoration and Revegetation Plan, which includes a 75 percent vegetative cover criteria for Annual Grassland. CVSR site personnel would use BMPs including those for prevention of soil erosion and sedimentation of streams and prevention of the introduction and spread of invasive plant species (Appendix B). These practices would be identified prior to construction and incorporated into the construction operations.

Additionally, an invasive species control plan and a site management plan for the parts of the CVSR site that would be subject to ongoing disturbance by O&M activities, including the solar array areas, would be developed. These design features would be identified prior to construction and incorporated into O&M activities. See Appendix B for details on the invasive species control plan and site management plan. Therefore, because adverse effects on vegetation and habitat from construction and operation of the proposed action would be avoided or minimized through incorporated project design features (Appendix B), effects would be minor and not significant.

Common Wildlife Species

Direct effects to wildlife species would result during construction and operation from the long-term loss and/or modification of approximately 1,684 acres of wildlife habitat within the CVSR site. An additional 71 acres of habitat would be temporarily impacted by construction, grading, staging areas, temporary access roads along tracker rows, and trenching, but would be stabilized and re-vegetated following grading. Direct effects would include injury or mortality if wildlife species are hit by moving vehicles. Support structures for photovoltaic arrays would affect wildlife species that utilize burrows if anchors are driven into areas that disrupt burrows and could result in mortality or injury through direct contact or crushed burrows. Indirect effects on wildlife species could result from noise generated by heavy equipment, which could result in temporary threshold shifts in hearing sensitivity. There is also potential for disturbance to habitats or individuals due to recreational use of conservation lands by CVSR Project personnel.

Pre-construction biological clearance surveys by qualified biologists would be performed at all activity areas to minimize impacts on special status plants or wildlife species. Biological monitors approved by the USFWS and CDFG would be assigned to the CVSR site. The monitors would be responsible for ensuring that impacts to special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special status species. These restricted areas would be monitored to ensure their protection during construction.

An environmental education program would be presented to personnel by a qualified biologist provided by the Applicant. Vehicles and equipment would be parked on pavement, existing roads, and previously disturbed areas; and would not exceed a speed limit of 15 miles per hour while on the CVSR site. No vehicles or equipment would be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Grading and construction activities would be confined to adopted operational periods (SLO County 2011a) unless coordinated with and approved by San Luis Obispo County, the USFWS, and the CDFG.

No firearms or pets would be allowed on the CVSR site. All food-related trash items would be disposed of in tightly covered and secured trash containers. Use of chemicals, fuels, lubricants, or biocides would comply with all federal, state, and local regulations to minimize the possibility of contamination of habitat or poisoning of wildlife. No rodenticides or rodent trapping would be permitted on the CVSR site. Information about the ban of rodenticides and traps would be provided to occupants of the temporary construction trailer park. Signs prohibiting the recreational use of onsite conservation lands by occupants at the Temporary Construction Worker Accommodations Area and other CVSR personnel would be installed at all potential public entrances to these lands at 0.25-mile intervals.

Additionally, A CVSR representative would be appointed as the contact for any employee or contractor who inadvertently harms or finds a dead, injured, or entrapped individual. This representative would contact the appropriate agency (USFWS, CDFG, or both depending on listing status) by the end of the day and follow agency direction.

All steep-walled holes or trenches in excess of 6 inches in depth would be covered at the close of each working day by plywood or similar materials, or provided with an escape ramp. Excavations would be inspected each morning before construction begins.

The source of base aggregate would be the Twisselman aggregate mine. Because the mine is located near the CVSR site, use of aggregate from the mine would minimize road travel by trucks and thus, minimize potential road mortality of wildlife species. New light sources would be minimized, and lighting would be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.

A revegetation plan would be prepared for areas of wildlife habitat temporarily affected during construction. The revegetation plan would incorporate California annual grassland species in areas of temporary disturbance. Permanent loss of wildlife habitat because of the replacement of habitat with facilities and the presence of solar arrays would be compensated by the preservation, enhancement, and management in perpetuity of suitable lands outside the CVSR site's immediate impact areas. The conservation of onsite and offsite land would result in the permanent protection of wildlife habitat and would functionally replace the lost habitat through restoration and/or enhancement. For more details on the conservation strategy, see Effects of Habitat Conservation as Determined by the USFWS in Section 3.8.3.2. The project design features would ensure that the long-term adverse effects on common wildlife species would be minor, and impacts would not be significant during construction or operations.

Migratory Birds and Raptors

Construction activities are numerous, and direct effects to migratory birds and raptors could result from disturbance and habitat loss of approximately 1,684 acres due to earth moving and grading, habitat and vegetation removal, array installation, the creation of noise and vibration, the creation of artificial sources of light, the placement and use of access roads, traffic, and the creation of waste. An additional 71 acres of habitat would be temporarily impacted by construction, grading, and staging areas but would be stabilized and re-vegetated following grading. Based on the amount of light that would still penetrate the solar arrays, however, the ground underneath the arrays would be expected to continue to be vegetated, and small mammalian and insect prey would be likely to remain within the solar arrays. As a result, there is a strong possibility that some avian species would utilize the areas in and around the solar arrays.

Direct effects would include injury or mortality if birds or raptors are hit by moving vehicles. Direct effects could include breeding interference or abandonment of burrows or nests due to construction noise and activity. Indirect effects on wildlife species could result from noise generated by heavy equipment, which could result in temporary threshold shifts in hearing sensitivity. Direct effects to raptors could include injury or mortality due to electrocution and collision with power lines.

In addition to the design features for Common Wildlife Species described above, to reduce impacts to migratory birds and raptors, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads. If breeding birds are detected prior to or during construction, a 300-foot buffer would be established around nests. If nesting raptors are detected, a 500-foot buffer would be established around the nests. If nesting golden eagles are detected, a 0.5-mile no-activity buffer would be established. The prescribed buffers may be adjusted in consultation with CDFG and USFWS.

To reduce potential impacts from electrocution and collision with power lines, the Applicant would implement Avian Power Line Interaction Committee guidelines. Further, the Applicant would implement

a long-term avian mortality study of the CVSR site, documenting the level of avian mortality and taking corrective measures if mortality is deemed excessive by the CDFG and USFWS.

Migratory birds and raptors that may forage in proximity to the CVSR site include burrowing owl, California condor, mountain plover, peregrine falcon, Swainson's hawk, and white tailed kite (H.T. Harvey and Associates 2010b). The CVSR Project would include the acquisition of conservation land, which would reduce impacts associated with the loss of foraging habitat. Although adverse effects could result from making approximately 1,684 acres unsuitable for raptor foraging, these effects would be offset by the conservation of approximately 9,000 acres of habitat on lands that are currently vulnerable to conversion to land uses, such as dryland farming, that may not support raptor foraging. In addition, the implementation of a Weed Control Plan and project design features to ensure erosion control, reduction of fugitive dust, restoration of disturbed areas, minimization of sedimentation, and protection of disturbed soil from wind erosion, would reduce impacts on foraging habitat to below a level of significance.

The preconstruction surveys and avoidance measures for migratory birds and raptors, including burrowing owl, California condor, loggerhead shrike, Le Conte's thrasher, peregrine falcon, sandhill crane, Swainson's hawk, and white tailed kite, along with other design features, including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy (see Effects of Habitat Conservation as Determined by the USFWS in Section 3.8.2.3) would ensure that adverse effects on migratory birds and raptors would be negligible. Therefore, impacts would not be significant during construction or operations.

Special Status Species

Giant Kangaroo Rat

Most of the CVSR site provides suitable habitat for the giant kangaroo rat. Most of the site comprises grassland on slopes of less than 11 percent, which the USFWS (H.T. Harvey and Associates 2010b) considers highly suitable for the species. However, giant kangaroo rats currently occur within only a subset of that habitat. During focused surveys in 2009, active giant kangaroo rat precincts were found within 538 acres of the CVSR site. The results of the 2010 survey indicate that the population in these areas has increased to 1,876 individuals since the November 2009 survey, but that the acreage occupied has decreased to 426.1 acres.

Direct effects to giant kangaroo rat would result from the long-term loss and/or modification of approximately 1,625 acres of suitable giant kangaroo rat habitat within CVSR site and along the interconnection line route. Collectively, this impact area includes approximately 66 acres supporting 312 occupied giant kangaroo rat precincts (or 17 percent of the occupied precincts detected in these areas based on 2010 surveys). Impacts would also affect an additional 109 acres, which contained 211 burrows that were occupied in 2009 but not in 2010. Within the CVSR site and along the interconnection line route, the greatest concentrations of active precincts are in the area between Arrays 2 and 4. This area, however, would be largely avoided.

Direct effects could include injury or mortality if giant kangaroo rats are hit by moving vehicles; however, vehicles and equipment would be restricted to certain areas and a speed limit of 15 miles per hour would be implemented to avoid impacts on giant kangaroo rat and giant kangaroo rat habitat. Also, no domesticated animals of any kind would be permitted in any project area to avoid impacts.

To further reduce impacts on giant kangaroo rat, the Applicant modified the CVSR Project design by proposing the use of the T0 tracker, which allows for the collection of the same amount of solar energy in a smaller overall footprint, and by relocating several of the proposed arrays to areas supporting low densities of, or no, giant kangaroo rats. Support structures for photovoltaic arrays would also have minimal effects on currently occupied giant kangaroo rat habitat because pre-construction surveys would identify active burrows, and a biological monitor would be present onsite during construction to further

reduce mortality or injury. Where giant kangaroo rats are using areas that would be permanently lost, individuals would be trapped and translocated. Large contiguous habitat areas supporting the greatest densities of giant kangaroo rats within the CVSR site would be preserved and managed as giant kangaroo rat habitat, and offsite mitigation lands would be established. Indirect effects on this species could result from the array structures excluding giant kangaroo rats; however, a minimum of giant kangaroo rat habitat would be affected and would be compensated for. Additionally, photovoltaic arrays would use foundations and supporting structures that preserve most of the existing habitat for giant kangaroo rat. Because giant kangaroo rats are an important prey species of San Joaquin kit foxes, both species would benefit from these design features.

In addition, changing the grazing regime onsite could affect the occurrence and abundance of giant kangaroo rats by changing the vegetation onsite; however, a grazing plan would be implemented for compensation lands. Effects from grazing regime changes are unknown and could benefit or exclude this species from some areas. Indirect effects, in addition to those listed in the Common Wildlife section above, could include barn owls and great horned owls being able to perch on new structures, which would enhance foraging on nocturnal giant kangaroo rats along the perimeter of arrays; however, a minimum of lighting would be used to reduce impacts. In addition, because giant kangaroo rats are attracted to cavities and dens, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods would be either securely capped prior to storage or thoroughly inspected by the onsite biologist for these animals before the pipe is subsequently moved, buried, capped, or otherwise used.

The avoidance of core populations of giant kangaroo rat, micro-siting to reduce impacts to densely populated areas, and preservation of large contiguous blocks of habitat both onsite and offsite (see Effects of Habitat Conservation as Determined by the USFWS in Section 3.8.2.3), along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, would ensure that adverse effects on giant kangaroo rat would be long-term but minor.

As described in the BO (Appendix D-3), there would be a loss of suitable habitat (both occupied and unoccupied) of the giant kangaroo rat in the action area due to the proposed action. This represents 0.7 percent of the total remaining habitat of the species. However, under the proposed action, there would be habitat protection, restoration, and management of offsite lands that would provide for the continued viability of the species within the action area and would result in a net increase (approximately 60 percent) of habitat suitable for the species. In addition, the proposed action would preserve in perpetuity approximately 2,606 acres suitable for giant kangaroo rat onsite. The majority of this habitat would not be impacted at all during construction; rather, much of the onsite habitat would be undisturbed.

The unoccupied giant kangaroo rat habitat identified as conservation land is expected to contribute to the recovery of the species because the land would be maintained in a state compatible with the species' re-colonization requirements (Appendix D-3). Therefore, impacts would not be significant during construction or operations.

San Joaquin Kit Fox

Direct effects on this species would result from direct loss and/or modification of 1,685 acres of suitable San Joaquin kit fox habitat within the CVSR site. To prevent take of San Joaquin kit foxes during construction, all the construction requirements described in the USFWS Standardized Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011) would be followed during CVSR Project implementation. Disturbance to all San Joaquin kit fox dens would be avoided to the maximum extent practicable. Preconstruction surveys would be conducted no less than 14 days and no more than 30 days prior to ground disturbance in any given area to ensure no new San Joaquin kit fox dens are established in areas of disturbance.

Potential dens would be monitored as if they were known dens. Known dens occurring within the footprint of the activity would be monitored for three days with tracking medium or an infrared beam camera to determine the current use. If no San Joaquin kit fox activity is observed during this period, the den would be destroyed immediately to preclude subsequent use. If San Joaquin kit fox activity is observed at the den during this period, the den would be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Only when the den is determined to be unoccupied may the den be excavated under the direction of a qualified biologist. If the animal is still present after five or more consecutive days monitoring, the den may have to be excavated when, in the judgment of a qualified biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).

Destruction of the den would be accomplished by careful excavation until it is certain that no San Joaquin kit fox are present. Natal or pupping dens that are occupied would not be destroyed until the pups and adults have vacated and then only after consultation with the USFWS and CDFG. CVSR Project activities at natal den sites would be postponed if deemed necessary to avoid disturbance. Because San Joaquin kit foxes are attracted to cavities and dens, all construction pipes, culverts, or similar structures would be sealed or inspected as described for giant kangaroo rat. Steep-walled holes or trenches would be covered at the close of each workday as described in the Common Wildlife Species section above.

Kit foxes displaced from human activity during operation may increase competition for food and living space with kit foxes in other areas; however, the photovoltaic arrays were designed to incorporate movement pathways for San Joaquin kit fox, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site, thus maintaining the robustness of the kit fox population on the Carrizo Plain during and after CVSR Project completion. Although supporting posts for solar could affect the scent marking behavior of kit foxes already present at the CVSR site, potentially disrupting existing territorial boundaries, the arrays would not limit physical and genetic connectivity to other population centers within the Carrizo Plain or with small satellite populations connecting the Plain to core population centers to the north and east of the Plain (USFWS 2011, provided in Appendix D-3).

Escape dens would be installed in areas between the arrays identified as less permeable to facilitate movement of individuals through these areas. The number and placement of these temporary shelters would be determined during consultation with USFWS and CDFG. This design, along with the other project design features described above and in the Vegetation and Habitat and Common Wildlife Species sections, and conservation strategy, would ensure that adverse effects on San Joaquin kit fox would be long-term but minor.

As described in the BO (Appendix D-3), overall, there would be a loss of some habitat used for breeding, feeding, and sheltering of the San Joaquin kit fox on the CVSR site as a result of project construction. In addition, there would be a reduction of habitat within the north/south corridor and some reduction of movement possibilities for the San Joaquin kit fox. The CVSR Project would include land acquisition and protection for managed and restored habitat adjacent to and around the CVSR site that would provide additional (due to restoration) opportunities for breeding, feeding, sheltering, and dispersal of San Joaquin kit fox.

Currently there is estimated to be approximately 3.4 million acres of high and moderate quality habitat remaining for the San Joaquin kit fox. The CVSR's impact on remaining suitable habitat represents 0.05 percent of the total remaining range. The acquisition of conservation lands would convert cropland to permanently protected grasslands and would represent an additional approximately 0.08 percent of its total remaining range. The impacts on existing suitable San Joaquin kit fox habitat, when considered in conjunction with project design features requiring the acquisition of conservation lands, would result in an overall net increase of suitable habitat available to the kit fox in the Carrizo Plain. In addition, the Applicant would preserve in perpetuity approximately 2,946 acres suitable for San Joaquin kit fox onsite.

The majority of this habitat would not be impacted during construction and would, therefore, be undisturbed.

In total, the CVSR would include the conservation of approximately 9,000 acres of kit fox habitat in the Carrizo Plain, thus contributing to USFWS recovery goals for establishing a viable kit fox population on private lands within the Carrizo Plain. Overall impacts compared to the acreage to be restored and protected would be minimal (Appendix D-3). Therefore, impacts would not be significant during construction or operations.

California Jewel-Flower and San Joaquin Woollythreads

Neither the California jewel-flower nor San Joaquin woollythreads were located in the CVSR site during rare plant surveys conducted in 2009 and 2010. However, the footprints of the two switchyard alternative locations and the 320-acre Martin parcel supporting Array 11 were not surveyed. To confirm presence or absence in this area, surveys would be conducted in 2011. If these species are absent, the CVSR site would have no effect on these species. If they are present, there would be potential for take of these species.

Direct effects to these species could result from direct loss and/or disturbance of up to 13.8 acres of potentially suitable habitat within the Caliente switching station impact area and 120 acres of the Martin parcel (for Array 11). If present, impacts to populations of California jewel-flower and San Joaquin woollythreads would be avoided to the extent feasible. In consultation with a plant ecologist, the CVSR Project would, to the extent feasible, be redesigned, constructed, and operated to reasonably avoid direct and indirect impacts to these plants. Populations of these species that are located within temporary construction areas (that would not be directly impacted) would be fenced or flagged for avoidance prior to construction, and a biological monitor would be present to ensure compliance with off-limits areas.

Indirect impacts to occurrences that would not be directly impacted would be minimized by the creation of a buffer zone around areas of known occurrence. The buffer zone would be of sufficient size to eliminate the potential for disturbance to the plants from sources of disturbance that may negatively affect the population. The size of the buffer would depend upon the proposed use of the immediately adjacent lands and would include consideration of the plants' ecological requirements that are identified by a plant ecologist. When necessary, temporary fences would be constructed between populations and construction activities. If habitat occupied by the California jewel-flower or San Joaquin woollythreads would be temporarily impacted, the upper 4 inches of topsoil would be stockpiled separately during excavations so that it can be used to re-seed appropriate areas following the completion of soil disturbance.

During operations, direct effects to these species could result from grazing activities. Indirect effects to these species could result from shading from Array 11, which may alter soil conditions and reduce the amount of light reaching the ground; and washing of solar panels, which could spread or increase onsite noxious weed populations and increase the dominance of annual grasses. However, no direct impacts to California jewel-flower and San Joaquin woollythreads are anticipated during operation of the CVSR site. Creation of buffer zones around areas of known occurrence, if any, would minimize indirect impacts to these plant species.

The California jewel-flower and San Joaquin woollythreads have not been observed on the CVSR site. If these species are located in the areas remaining to be surveyed in 2011, the design features described to minimize and avoid impacts, including those described in the Vegetation and Habitat and Common Wildlife Species sections, and conservation strategy, would ensure that adverse effects would be long-term but negligible or minor depending on location.

According to the BO (Appendix D-3), the CVSR is not likely to adversely affect the California jewel-flower or San Joaquin wooly-threads based on surveys that have not detected these species and the

proposal to continue surveys and avoid impacts. Therefore, impacts would not be significant during construction or operations.

Longhorn Fairy Shrimp and Vernal Pool Fairy Shrimp

Potential habitat for the longhorn and vernal pool fairy shrimp is present on the CVSR site in two areas: a small complex of seasonal wetlands in the southwestern corner and a playa pool in the northeastern part of the site. Sampling of these pools revealed the presence of the common, widespread versatile fairy shrimp, but no individuals that were confirmed as longhorn or vernal pool fairy shrimp. Nevertheless, these pools have the potential to support longhorn and vernal pool fairy shrimp during the operational period of the CVSR Project. Additional surveys would be conducted for these species as part of the Section 7 consultation process with the USFWS.

No direct effects are anticipated for these species. Indirect effects to seasonal wetlands in the southwestern corner that could support these species could result from runoff from part of the CVSR site and changing the quality and quantity of water in these wetlands. This could disrupt the life cycles of these species. However, long vegetated swales that currently exist between sources of runoff and the seasonal wetlands would prevent changes in the quality and quantity of water. Additionally, to protect water quality and hydrology within the seasonal wetlands in the southwestern part of the CVSR site, an approximately 400-foot construction-free buffer would be maintained around these wetlands. The playa pool would not be impacted directly or indirectly as it is separated from the nearest array by a topographic break. Therefore, adverse effects on longhorn and vernal pool fairy shrimp would be long-term but negligible.

As described in the BO (Appendix D-3), the CVSR would impact approximately 3.7 percent of the total designated critical habitat of the longhorn fairy shrimp rangewide and 5.2 percent within Critical Habitat Unit 30. For vernal pool fairy shrimp, the CVSR would impact approximately 0.1 percent of the total designated critical habitat rangewide and 5.2 percent within Critical Habitat Unit 30. These impacts are not expected to result in a significant effect to the primary constituent elements of the habitat designation as a whole or in the project vicinity or to diminish the conservation function of the critical habitat unit (USFWS, 2011). The Applicant would contribute to recovery strategies for the species by permanently protecting and managing habitat within, contiguous to, and adjacent to designated recovery areas. Therefore, impacts would not be significant during construction or operations.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard was not detected during two years of protocol-level surveys, or during extensive surveys for other biological resources on the site. However, because some proposed impact areas, such as Arrays 9, 10, and 11, the Sunrise overlook site, and parts of the proposed Caliente switching station location, were not included in either the 2009 or 2010 surveys, the Applicant would have qualified biologists conduct protocol-level surveys in 2011 and 2012 in any areas within the CVSR site footprint that were not surveyed in 2009 or 2010. As a further precautionary feature, preconstruction surveys and, if necessary, other impact avoidance and minimization design features would be implemented, as described previously in the Vegetation and Habitat and Common Wildlife Species sections, to ensure no impacts on this species would occur.

As described in the BO (Appendix D-3), overall, the CVSR would result in a minimal amount of impacts to the blunt-nosed leopard lizard and temporary impacts to a small amount of its habitat. This would not result in a significant effect to the species as a whole or in the project vicinity. The CVSR would also conduct surveys for the species to provide additional details about the presence of blunt-nosed leopard lizard. The surveys relate to USFWS recovery actions and would contribute toward recovery of the species (Appendix D-3). Therefore, impacts to blunt-nosed leopard lizard from construction and operation of the CVSR would be negligible and not significant.

California Condor

Although currently California condors are not known to regularly use any part of the CVSR site, suitable foraging habitat is present, and there is potential for California condors to eventually use the area as foraging habitat as the population recovers. Direct effects could result from making approximately 1,684 acres unsuitable for California condor foraging. This foraging habitat represents less than 1 percent of the available natural habitat in the Carrizo Plain ecoregion, and 193,738 acres of such habitat would remain after development of the proposed CVSR Project (H.T. Harvey and Associates 2010b). There is a very low potential for individuals to be injured or killed due to collision with or electrocution by bridging medium-voltage wires on the CVSR Project-associated interconnection line or existing transmission line. In addition, all transmission and sub-transmission towers and poles would be designed to be raptor-safe. All fuels, fluids, and components with hazardous materials would be handled in accordance with applicable regulations.

According to the BO (Appendix D-3), construction and operation of the CVSR is not likely to adversely affect California condor based on the nature of the solar facility and project design features incorporated into the project. Therefore, impacts to California condor would be long-term but minor and not significant.

Kern Primrose Sphinx Moth

No adult Kern primrose sphinx moths or any other moth species were detected on or near the CVSR site during focused surveys conducted between January and April 2011 (H.T. Harvey and Associates 2011). Absence of the species indicates that the CVSR would have no effect on Kern primrose sphinx moth. Although the species' larval host plants, *Camissonia* spp., occurs in 14 locations on the CVSR site, no Kern primrose sphinx moth larvae were detected on individual plants during the 2011 focused surveys (H.T. Harvey and Associates 2011).

The CVSR site has been designed to avoid and minimize impacts to the areas supporting *Camissonia.* With the exception of a single plant within proposed Array 6 and a group of five plants within Array 11, areas supporting *Camissonia* spp. would be avoided. Most *Camissonia* on site is located in areas where no construction activities other than habitat management would occur. For *Camissonia* that cannot be avoided, a qualified biologist would determine if each plant is occupied by larval Kern primrose sphinx moth. If the plant is not occupied, it would be transplanted to a suitable site by the biologist. If a plant is occupied, no construction activities would occur within 50 feet of the plant until the moth has been allowed to mature and leave on its own volition, at which time the plant would be transplanted to a suitable site.

During operations, direct effects could result from dispersing individuals being injured or killed due to vehicular strikes. Grazing could result in loss of host plants to grazing animals. Indirect effects could result from shading from the solar arrays, which may alter soil conditions and reduce the amount of light reaching the ground. The project design features described above, along with those described in the Vegetation and Habitat and Common Wildlife Species sections, would ensure that adverse effects would be long-term but negligible.

According to the BO (Appendix D-3), the CVSR is not likely to adversely affect the Kern primrose sphinx moth based on previous surveys that have not detected this species and the project design features . Therefore, impacts would not be significant during construction or operations.

Mountain Plover

Potential wintering habitat for mountain plovers occurs throughout most of the CVSR site in the form of annual grasslands and they have been observed onsite. Direct effects would result in the direct loss of approximately 1,684 acres of suitable wintering habitat within the CVSR site vicinity because plovers are expected to avoid areas under and near solar panels or near buildings (H.T. Harvey and Associates

2010b). Loss of annual grassland from the CVSR site represent less than 2 percent of the available habitat for this species—130,000 acres of grasslands in the Carrizo Plain ecoregion. This loss of habitat is not expected to limit mountain plover populations either in the Carrizo Plain or region-wide due to the vast extent of suitable foraging habitat relative to the species' low population (H.T. Harvey and Associates 2010b).

There is a low potential for individuals to be injured or killed due to collision with CVSR Project-associated utility lines. Indirect effects could result from noise associated with construction, which could cause mountain plovers to avoid using the site. However, impact avoidance and minimization design features, as described previously in the Vegetation and Habitat and Common Wildlife Species sections, would ensure that adverse effects on this species would be long-term but minor.

According to the BO (Appendix D-3), the CVSR is not likely to adversely affect mountain plovers based on surveys of the CVSR site, documentation of known locations, measures to minimize and avoid effects during construction and operation activities, and the project design feature requiring a USFWS-approved biologist/botanist on site during construction to assure avoidance of the species. Therefore, impacts to mountain plovers would not be significant during construction or operations.

Other Special-Status Species

California Species of Special Concern with potential to occur on the CVSR site include western spadefoot toad, coast horned lizard, silvery legless lizard, and pallid bat. Direct effects on western spadefoot toad, coast horned lizard, or silvery legless lizard could occur as a result of crushing from mechanized equipment, fugitive dust, loss of habitat from increased shading, temporary disruption of foraging or aestivation[7] (western spadefoot toad) sites in adjacent upland areas, or harm to egg masses (western spadefoot toad) from impacts to water quality. In addition, the introduction of perch sites could increase predation risk from aerial predators.

Indirect effects on the toad and lizard species may be caused by soil compaction, the introduction of noxious weeds or exotic plant species, altered hydrologic conditions (western spadefoot toad), or nighttime lighting (western spadefoot toad). Trash left on the project site could attract predators such as the common raven, San Joaquin kit fox, and coyote. Increased noise levels could interfere with breeding and mask the approach of predators. Operational effects could result from collision with vehicles, vegetation and weed management activities that disrupt foraging or breeding, and the spread of weeds.

Direct effects on pallid bats could result from the loss of foraging habitat or from crushing or disturbance by vehicles driving at dusk, dawn, or during the night because pallid bats forage near the ground. Direct effects could also result from increased noise, air turbulence, dust, and ground vibration from construction activities. Indirect effects could result from increased traffic, dust, and human presence leading to bats abandoning their roosts or maternal colonies.

For toad and lizard species, design features of the proposed project include those to conduct preconstruction surveys and implement avoidance measures including habitat conservation, species relocation, and restoration management. Seasonal depressions and waterbodies would also be avoided. For bats, design features include preconstruction surveys, removing hibernacula not used for breeding, and the conservation of habitat for other species, such as the San Joaquin kit fox and giant kangaroo rat, that would also be suitable for bats. These design features would ensure that adverse effects on the toad, lizard, and bat species would be minor (SLO County 2011a). Therefore, impacts would be less than significant during construction and operations.

[7] Aestivation refers to a lack of or slowing of activity and metabolism.

Critical Habitat

A designated critical habitat unit (Unit 30) for federally-listed vernal pool species, including vernal pool fairy shrimp and longhorn fairy shrimp, is mapped south/southwest of the CVSR site and extends onto the southwestern corner of the site (H.T. Harvey and Associates 2010b); however, the proposed action would not result in adverse modification of this critical habitat. Seven slight topographical depressions ranging from 0.26 acre to 0.47 acres in size, and comprising a total of approximately 2.33 acres, occur within the part of critical habitat Unit 30 overlapping the boundary of the site. These depressions have been observed to pond water; however, vernal pool branchiopod sampling did not detect any listed vernal pool branchiopods in these pools (H.T. Harvey and Associates 2010b). As a precaution, the wetlands occurring within Unit 30 would be completely avoided through the establishment of an activity-free exclusion zone of approximately 250 feet (H.T. Harvey and Associates 2010b). Additional surveys were conducted for these species as part of the Section 7 consultation process (Appendix D-3). Therefore, adverse effects on primary constituent elements of critical habitat for these species would be long-term but negligible, and impacts on critical habitat would not be significant during construction or operations.

The nearest designated critical habitat for California condor is the East Unit of the Hi Mountain-Beartrap Condor Area, 13 miles west of the CVSR site, where captive-raised condors were formerly released; this habitat would not be affected by the proposed action. Therefore, there would be no effect on primary constituent elements of critical habitat for this species, and impacts on critical habitat would not be significant during construction or operations. Critical habitat has not been designated for the remainder of species known to occur or with potential to occur within the CVSR site.

Effects of Habitat Conservation as Determined by the USFWS

To avoid or minimize impacts to biological resources, including natural communities and federal and state endangered, threatened, proposed, petitioned, and candidate plants, the CVSR Project's biological resource conservation strategy would ensure conservation such that, overall, there would be a net benefit to species that would be impacted. The conservation strategy is described in the BO (Appendix D-3) and summarized below:

- Avoidance and minimization of impacts to individuals of these species, as described in the sections above, both to minimize take of individuals and to retain individuals on and near the CVSR Project sites as a source of colonists for preserved and enhanced onsite and offsite habitats.
- Avoidance of impacts to onsite habitat. Approximately 3,006 acres of habitat of the 4,691-acre CVSR site (of which approximately 2,946 is suitable for San Joaquin kit fox and approximately 2,606 acres is suitable for giant kangaroo rat) would be preserved in perpetuity. Most of this habitat would not be impacted at all during construction because of CVSR project design features designed to avoid direct and indirect effects during construction.
- Restoring onsite habitat temporarily impacted following the completion of construction.
- All of the un-impacted and the temporarily impacted land within the CVSR site that is subsequently restored would provide suitable habitat that could be used by kit fox during the operation of the CVSR.
- Where avoidance and restoration of temporarily impacted land is insufficient to mitigate impacts, the CVSR Project has been designed to include compensatory conservation, preservation, enhancement, and management of onsite and offsite conservation lands in perpetuity.
- When required, establishing conservation lands that are not already public land, based on the criteria described in this section and subject to availability. Off-site compensatory conservation lands would comprise areas of suitable soil, topography, hydrology, and vegetation occupied by the species being impacted to ensure the presence and enhancement (through targeted management, described below)

of populations of these species and habitat that is unoccupied and suitable, or that could be made suitable through restoration or enhancement, for these listed species.

- The ratio of acres of conservation habitat preserved to acres impacted varies by species and by project circumstances depending on a species life-history requirements and relative value of the impact and conservation sites. A multi-species approach would be used. The same lands may be used to compensate for habitat impacts to multiple species as long as those lands support all the species impacted. Final conservation ratios would be determined in consultation with the USFWS and CDFG based on an analysis of the quality of the conservation land and/or the presence of species as demonstrated by future surveys.
- The following ratios of impacted acreage to preserved (and where applicable enhanced) acreage would be applied: San Joaquin kit fox (5:1) and vegetative communities (1:1), and if determined present, federal endangered, threatened, proposed, petitioned, or candidate plants or ESA plants (1:1/0.5:1), camissonia/sphinx moth (3:1), and blunt-nosed leopard lizard (3:1).
- The following ratio of impacted acreage to preserved acreage would be applied for giant kangaroo rat: 4:1 for all permanently impacted acreage of habitat (the 4:1 ratio would comprise 3:1 of preserved occupied habitat and 1:1 of created or restored habitat that is contiguous with or biologically connected to occupied suitable habitat).

The restoration, preservation, and management activities to be undertaken on lands onsite and offsite would be described in one or more Habitat Management and Monitoring Plans. The Plans would describe a 5-year minimum monitoring plan for all preserved (including restored) acreage, describe success criteria for restored acreage, and provide for a contingency plan in the event that success criteria are not met in the first 5-year period.

A conservation easement would be recorded on all property associated with the conservation lands to protect biological resources in perpetuity. A conservation easement may be held by the CDFG or an approved land management entity and would be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired conservation lands would be monitored and maintained per the requirements set forth in the Habitat Management and Monitoring Plans prepared for the CVSR Project.

Conservation land would also be identified and acquired through the California Valley Land Acquisition Program—a program that the Applicant would work with the County of San Luis Obispo to establish for the acquisition of private lands within the California Valley subdivision that may be available at low cost because the land would not support residential uses. Acquired land would be reclaimed and aggregated into larger parcels for use by regionally important wildlife and plant species. The value of any individual parcel for acquisition would depend on several factors, including the condition of the parcel; location of parcel relative to undeveloped lands; the presence of special status species; and adjacent land uses (i.e., residential or agricultural).

The long-term goal of the California Valley Land Acquisition Program would be to consolidate contiguous blocks of habitat capable of supporting sensitive plants and wildlife. The program would include the implementation of enhancement and protective measures, which may include the management of weeds and exotic wildlife species; removal of fences; reseeding and restoration; and establishment of artificial burrows to attract wildlife. For both onsite (Figure 2-2) and offsite conservation areas, a Habitat Management and Monitoring Plan would be developed and implemented.

A summary of onsite and offsite conservation lands incorporated into the proposed action is provided in Appendix D-3.

Umbrella and Keystone Species

The San Joaquin kit fox has been designated by the USFWS as an *umbrella species* (USFWS 1998). The broad distribution and requirement for relatively large areas of habitat means conservation of kit fox habitat provides an umbrella of protection for other species that require less habitat (e.g., giant kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse). The giant kangaroo rat has been designated by the USFWS as a *keystone species* (USFWS 1998). Burrowing by giant kangaroo rats provides refuges and living places for many small animals. In addition, the areas over and around these burrows provide a favored microhabitat for the growth of California jewel-flower and San Joaquin woolly-threads. Giant kangaroo rats are generally the most abundant mammal in their community, and are the favored prey of San Joaquin kit fox. Further information about San Joaquin kit fox as an umbrella species and giant kangaroo rat as a keystone species is provided in the BO (Appendix D-3).

The CVSR Project would conserve more than 9,000 acres of kit fox habitat. According to the BO (Appendix D-3), re-establishment or population growth in areas where they have been extirpated or exist in low numbers would benefit numerous other species including the American badger, burrowing owl, San Joaquin kit fox, and San Joaquin antelope squirrels, and potentially the blunt-nosed leopard lizard, which relies on giant kangaroo rat burrows for shelter. Snakes observed within giant kangaroo rat colonies include, among others, the San Joaquin coachwhip, whose prey includes small vertebrates and mammals (International Union for Conservation of Nature and Natural Resources 2007, USFWS 1998).

Because site conditions vary, the giant kangaroo rat may not always occur with other listed species, but in the vast majority of cases, the conservation habitat would be suitable for other listed species if kit fox and/or giant kangaroo rat are present (see Appendix D-3). In addition, project design features include preconstruction surveys and worker environmental training for American badger, burrowing owl, San Joaquin coachwhip, and San Joaquin antelope squirrels. It should be noted however that San Joaquin antelope squirrel surveys, to determine the presence/absence of this species within the study area, were conducted from June to September 2010. The survey report, which was reviewed and approved by CDFG, found that no San Joaquin antelope squirrels were observed within the study area. Project design features associated with burrowing owl are further discussed in the Migratory Birds and Raptors discussion in Section 3.8.3.2. Project design features would ensure that adverse effects on special status species associated with the keystone species, giant kangaroo rat, would be temporary and minor. Therefore, impacts on American badger, burrowing owl, San Joaquin coachwhip, short-nosed kangaroo rat, Tulare grasshopper mouse, and San Joaquin antelope squirrel and their habitat would be less than significant during construction and operation of the CVSR.

Insects and Polarizing Light

Polarized light is used by at least 300 species of insects to recognize the surface of water bodies. Light that has been polarized by artificial surfaces such as smooth, solar panels alters the natural patterns of polarized light within the environment resulting in polarized light pollution (Horváth et al. 2010). The highly polarizing nature of solar panels may negatively impact the ability of insects to judge suitable habitats and egg laying sites. Pollinating species such as bees, desert ants, and beetles also utilize polarized light patters for orientation and navigation; therefore, polarized light pollution may reduce successful plant reproduction by confusing and disorienting pollinators (von Frisch 1967, Labhart and Meyer 2002, Dacke et al. 2003). This could create an indirect impact to more common species within the wildflower fields and vernal pools.

A study has found that breaking up the polarizing black surface of solar panels with nonpolarizing white borders and white grids produces a 10 to 26 fold reduction in the likelihood of aquatic insects thinking that the panels are water and depositing eggs on them (Horváth et al. 2010). Solar panels used for the CVSR Project, have as part of the design, white breaks formed by the spacing between the light receptive surfaces. Fragmenting the polarizing black surface of the solar panels with nonpolarizing white borders would significantly reduce the potential for insects to misidentify the panel surface as open water. The

white strips are estimated to reduce the effectiveness of the solar cells by approximately 1.8 percent, depending on the size of the strips (Horváth et al. 2010).

No special status insects are expected to be affected by the CVSR Project. Additionally, affects due to polarizing light would be reduced due to panel design. Therefore, adverse effects on insects due to polarizing light would be minor and not significant. Additionally, there would be no effects on pollinating insects.

Morro Bay–Midway Transmission Line Reconductoring

Vegetation and Habitat

Direct effects to vegetation and habitat during construction would result from the long-term loss and/or modification of habitat along the Morro Bay–Midway transmission line reconductoring route. Additional habitat would be temporarily impacted by construction activities but would be stabilized and revegetated following grading. To minimize temporary disturbances, all sensitive habitats would be delineated with highly visible flagging or fencing to prevent encroachment of construction personnel and equipment during work activities. Photographic documentation of preconstruction habitat conditions would occur at all major work areas, including staging areas, landing zones, and tension/pull sites, prior to the start of construction and immediately after construction activities are performed. Staging areas would be set back at least 50 feet from streams, creeks, or other water bodies to avoid impacts on sensitive habitat. All fueling of vehicles would occur at least 100 feet from wetlands and other water bodies. All vehicles would be brought into the work areas cleaned and free of weeds prior to entry. A set of BMPs would be developed to control erosion during construction. All temporarily disturbed areas would be restored as necessary.

A qualified biologist would monitor all ground-disturbing construction activity in sensitive areas and near designated resources along the reconductoring route. The biological monitor would have the ability to stop or redirect work activities to ensure protection of sensitive resources and compliance with all environmental permits and conditions of the proposed action. The biological monitor would also be the initial contact person for any employee who might inadvertently injure or kill a federally listed species or who finds a dead, injured, or entrapped individual. A communication protocol would be established between the biological monitor, PG&E, and the agencies. Additionally, an environmental education program would be conducted by a qualified biologist for construction crews prior to initiating construction of the proposed action. Impacts on high-quality habitat for listed species during construction would be reduced considerably by these efforts.

During operations, although PG&E would avoid and minimize effects to the extent practicable, some take of habitat could result from project-related activities. To reduce impacts on sensitive habitats and species, PG&E would fund the acquisition, enhancement, and maintenance of habitat to conserve and promote the recovery of sensitive species along the reconductoring route. The details for compensation, determination of compensation needs, compensation mechanisms, and attributes and management of compensation land can be found in the BO for transmission line reconductoring and construction of the Caliente switching station (Appendix D-3).

PG&E would also prepare a Habitat Mitigation Plan, which would contain a restoration plan for sensitive habitats. Impacts to high-quality habitat would be reduced considerably by these efforts. In addition, PG&E's San Joaquin Valley Operation and Maintenance Habitat Conservation Plan area includes the Morro Bay–Midway transmission line reconductoring route. The Habitat Conservation Plan covers 42 plant species for 33 routine operation and maintenance activities (SLO County 2011a). The Habitat Conservation Plan and project design features would ensure that adverse effects to vegetation and habitat would be long-term but minor not significant.

Common Wildlife Species

Direct and indirect effects to these species would be similar to those described for common wildlife species during construction and operation of the California Valley Solar Ranch above. Construction personnel would not bring firearms or pets to any project-related work areas and would not leave trash onsite during construction. A litter control program would be instituted at each of the work areas. All excavated steep-walled holes and trenches more than 6 inches deep would be covered at the end of each workday by plywood, or escape ramps would be installed. All holes and trenches would be inspected at the start of each workday. PG&E would prepare a Habitat Mitigation Plan, which would contain mitigation plans for listed species as well as a restoration plan for sensitive habitats. Impacts to high-quality habitat for common wildlife species during construction would be reduced considerably by these efforts.

During operations, direct effects would include injury or mortality if wildlife species are hit by moving vehicles. PG&E's San Joaquin Valley Operation and Maintenance Habitat Conservation Plan area includes the Morro Bay–Midway transmission line reconductoring route. The Habitat Conservation Plan covers 23 species of wildlife for 33 routine operation and maintenance activities (SLO County 2011a). The Habitat Conservation Plan and project design features described above would ensure that adverse effects to common wildlife species would be long-term but minor and not significant.

Migratory Birds and Raptors

Direct effects to migratory birds and raptors would be similar to those described in the Migratory Birds and Raptors section for the CVSR discussion and Common Wildlife Species section above. Direct effects would result in the temporary loss of about 20 acres of suitable habitat for migratory birds and raptors in Kern County and the temporary loss of about 4 acres of suitable habitat in San Luis Obispo County. Construction personnel would not bring firearms or pets to any project-related work areas and would not leave trash onsite during construction. PG&E would prepare a Habitat Mitigation Plan that would contain mitigation plans for listed species as well as a restoration plan for sensitive habitats. Impacts to high-quality habitat for migratory bird and raptor species would be reduced considerably by these efforts.

During operations, direct effects would include injury or mortality if migratory birds or raptors are hit by moving vehicles. Spillage or leakage of pollutants could result in poisoning of birds or raptors. Mortality due to electrocution or collision with power lines could occur; however, the new reconductoring would not change the location of the existing line nor would it change the configuration of the line. PG&E's San Joaquin Valley Operation and Maintenance Habitat Conservation Plan area includes the Morro Bay–Midway transmission line reconductoring route. The Habitat Conservation Plan covers 23 species of wildlife for 33 routine operation and maintenance activities (SLO County 2011a). The Habitat Conservation Plan and project design features described above would ensure that adverse effects to migratory bird and raptor species would be long-term but minor and not significant.

Special Status Species

Giant Kangaroo Rat and Tipton Kangaroo Rat

Direct effects would result in the temporary loss of 11.85 acres of suitable habitat for giant kangaroo rat (USFWS 2011) along the reconductoring route. Construction of the Caliente switching station would result in long-term impacts to 3.4 acres of giant kangaroo rat habitat (Appendix D-3). Tipton kangaroo rat occurs only on the Kern County portion for the reconductoring project and direct effects would result in the temporary loss of 1.14 acres of habitat suitable for this species. Overall, direct and indirect effects on this species would be similar to those described for giant kangaroo rat during construction and operation of the CVSR above.

To the extent feasible, areas providing suitable habitat for giant kangaroo rat and Tipton kangaroo rat would be avoided. During the habitat assessment, biologists identified certain tension/pull sites and

landing zones that PG&E proposed that were in areas that could significantly affect giant kangaroo rats and Tipton kangaroo rats. As a result, PG&E agreed to move these tension/pull sites and landing zones to areas with significantly fewer burrows and much less dense shrubs, thus allowing for greater avoidance of burrows. When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist would walk ahead and identify a route for the vehicles to follow that would avoid burrows to the greatest extent practicable. To minimize direct mortality to giant kangaroo rats and Tipton kangaroo rats when working in suitable habitat, plywood boards would be placed to cover suitable burrows that occur along the vehicle access routes. These boards would be removed immediately after the construction vehicles have driven over them. If guard crossing poles need to be established within suitable giant kangaroo rat or Tipton kangaroo rat habitat, a biologist would work with construction crews to ensure that the poles are sited to avoid burrows.

If occupied or potentially occupied burrows cannot be avoided, a qualified biologist would flag a work-exclusion zone of at least 30 feet around active burrows and remain onsite as a biological monitor. If work must proceed in the exclusion zone, PG&E would pursue techniques to minimize direct mortality, which may include having approved biologists trap and hold species in captivity, and excavating and closing burrows. In areas that are temporarily disturbed, the approved biologist would release the mammals to areas where they were trapped as soon as possible when the work is complete and habitat is restored. These efforts would considerably reduce impacts on giant kangaroo rat and Tipton kangaroo rat, resulting in long-term but minor adverse effects.

The summary of BO (Appendix D-3) findings about the CVSR's impacts on giant kangaroo rat in Section 3.8.3.2, above, also applies to Morro Bay–Midway transmission line reconductoring. The summary indicates that conservation land preserved for the species under the CVSR Project would result in a net increase of suitable habitat available to giant kangaroo rat. In addition, as part of the conservation strategy, PG&E would acquire habitat in the Carrizo Plain for temporary and permanent impacts to habitat for giant kangaroo rat. This is additive to, and contiguous with, the conservation lands for the CVSR Project. With regard to Tipton kangaroo rat, the BO states that there would be a minimal amount of temporary impact to the species and its habitat. The temporary impacts are not expected to be a significant effect to the species as a whole or in the action area (Appendix D-3). Credits would be purchased from USFWS-approved conservation banks to provide certainty that offsite compensation for Tipton kangaroo rat would provide appropriate conservation benefits to the species. Therefore, impacts would not be significant during construction or operations.

San Joaquin Kit Fox

Direct effects would result in the permanent loss of approximately 8.58 acres and the temporary loss of approximately 21.5 acres of suitable San Joaquin kit fox habitat along the reconductoring route (Appendix D-3). Construction of the Caliente switching station would result in long-term impacts to approximately 6.8 acres of suitable San Joaquin kit fox habitat in San Luis Obispo County (Appendix D-3). Overall, direct and indirect effects would be similar to those described for kit fox during construction and operation of the CVSR above.

To minimize and avoid impacts to San Joaquin kit fox, a qualified biologist would conduct preconstruction den surveys no more than 14 days prior to the initiation of work activities in a given area to ensure that potential kit fox dens are not disrupted by work activities. If potential dens are located within the survey area, the entrance of the dens would be monitored. Only when the den is determined to be unoccupied may the den be excavated under the direction of a qualified biologist. If the animal is still present after 5 days of monitoring, the den may be excavated when, in the judgment of the qualified biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities). Destruction of the den would be accomplished as described for the CVSR above.

San Joaquin kit foxes are attracted to den-like structures, such as pipes, these features would be inspected or sealed. Steep-walled holes or trenches would be covered at the close of each working day as described

above for construction of the CVSR. These efforts would considerably reduce impacts on San Joaquin kit fox, resulting in long-term but minor adverse effects.

The summary of BO (Appendix D-3) findings about the CVSR's impacts on San Joaquin kit fox in Section 3.8.3.2, above, also applies to Morro Bay–Midway transmission line reconductoring. The summary indicates that conservation land preserved for the species under the CVSR Project would result in a net increase of suitable habitat available to kit fox. In addition, as part of their conservation strategy, PG&E would acquire habitat in the Carrizo Plain for temporary and permanent impacts to habitat for San Joaquin kit fox. This is additive to and contiguous with the conservation lands for the CVSR Project. Therefore, impacts on the species would not be significant during construction or operations.

California Tiger Salamander

Planned construction activities in staging areas, pull sites, and temporary access roads are anticipated to temporarily affect 14.75 acres of potentially suitable upland habitat (Appendix D-3). Construction activities would not directly affect suitable aquatic habitat. Direct effects would include injury or mortality if California tiger salamanders are hit by construction equipment or vehicles. Individuals that are exposed on the surface during project activities within the route alignment and work areas may also be subjected to increased predation or desiccation. California tiger salamanders utilize California ground squirrel and other types of small mammal burrows for dry-season refuge sites and construction would occur during the dry season months. Therefore, direct mortality could result by entombment of California tiger salamanders in burrows that may collapse during construction activity. Individuals could also fall into pits, trenches, or other excavations and be killed directly or indirectly (through desiccation, entombment, or starvation).

Indirect effects could occur if noxious weeds are spread in work areas by construction equipment contaminated with noxious weed seeds. Noxious weeds could make California tiger salamander travel corridors between upland refugia and breeding pools more difficult to transverse during wetter years due to increased growth. Indirect effects to California tiger salamanders could also occur if conditions that are beneficial to exotic predators such as bullfrogs and predatory fish are created by the CVSR Project. However, no introduced predators were observed in the pond that was surveyed, and reconductoring of the Morro Bay–Midway transmission line would not result in creation of new habitat for exotic predators, a change in the connectivity with existing habitat for exotic predators, changing the length of inundation in the pond, or any other modifications of habitat such that the habitat would become more favorable for exotic predators (Appendix D-3).

PG&E has designed reconductoring activities to avoid the California tiger salamander population and would not affect any suitable aquatic habitat. In addition, rodent burrows may provide suitable aestivation habitat. Therefore, in areas with a high concentration of rodent burrows, surface-disturbing activities would be minimized or avoided to the maximum extent feasible. To facilitate avoidance, concentrations of burrows would be staked or flagged to ensure that work crews are aware of their location.

Further, construction activities in suitable upland habitat would be restricted to the dry season (April 15 – October 31) as much as possible. If construction activities must occur during the wet season due to the project schedule, when the species may be migrating overland to suitable breeding ponds, the perimeter of work areas would be fenced with exclusion fencing by October 15th (Appendix D-3). A preconstruction survey would be conducted each day immediately preceding construction activities that occur in designated California tiger salamander suitable upland habitat between October 31st and April 15th, or in advance of any activity that may result in take of this species. No construction activities in sensitive habitat areas would occur during significant rain events or when rain events are forecasted (Appendix D-3). Details of construction restrictions can be found in Appendix B.

Other project design features include exclusion zones, monitoring, and erosion control consistent with those in the San Joaquin Valley Operations & Maintenance Habitat Conservation Plan for covered listed

amphibians and reptiles. Specifics regarding these design features can be found in Appendix B. Additionally, any California tiger salamander upland habitat temporarily affected by the project-related activities would be restored to pre-project conditions upon completion of construction. Restoration design features would be outlined in the Restoration Plan (Appendix D-3). Where avoidance and restoration of temporarily impacted land is insufficient to mitigate impacts, preservation, enhancement, and management of onsite and offsite conservation lands in perpetuity would occur. All losses to suitable habitat for California tiger salamander would be compensated at a 3:1 ratio. These efforts would considerably reduce impacts on California tiger salamander, resulting in negligible adverse effects.

According to the BO (Appendix D-3), overall, there would be a minimal amount of temporary impact on California tiger salamander and its habitat, which is not expected to result in a significant effect on the species as a whole or in the project vicinity. Therefore, impacts on the species would not be significant during construction or operations.

Blunt-nosed Leopard Lizard

Direct effects would result in the temporary loss of 14 acres of suitable habitat for blunt-nosed leopard lizard in Kern County. Direct effects would include injury or mortality if blunt-nosed leopard lizards are hit by construction equipment or vehicles. Direct mortality could result by entombment of blunt-nosed leopard lizards in burrows that may collapse during construction activity.

Blunt-nosed leopard lizards may be passively displaced from work sites and adjacent occupied habitat by human activity and noise associated with construction activities (ICF International 2010d); however, to the extent feasible, areas providing suitable habitat for blunt-nosed leopard lizard would be avoided. During the habitat assessment, biologists identified certain work areas for tension/pull sites and landing zones that PG&E proposed that were in areas that could significantly affect blunt-nosed leopard lizards. As a result, PG&E agreed to move these tension/pull sites and landing zones to areas with significantly fewer burrows and less dense shrubs, thus allowing for greater avoidance of burrows. When construction vehicles must travel off existing access roads located within suitable habitat, a qualified biologist would walk ahead of the vehicles and identify a route for the vehicles to follow that would avoid burrows to the greatest extent practicable.

Plywood boards would be placed over suitable burrows that occur along access routes and removed immediately after vehicles have driven over them. If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist would work with construction crews to ensure that the poles are sited to avoid burrows. If burrows occurring within the work area cannot be avoided, the work area would be fenced using material that blunt-nosed leopard lizards cannot climb. Steep-walled holes or trenches would be covered at the close of each workday as described in the Common Wildlife Species section above.

Protocol surveys would be conducted to determine whether blunt-nosed leopard lizards occur within the fenced area. If blunt-nosed leopard lizards do occur, active burrows would be avoided by a 50-foot buffer. If necessary, a CDFG or USFWS representative would be contacted so that the lizards may be passively relocated. Surface-disturbing activities would be designed to minimize or eliminate effects to rodent burrows that may provide suitable hibernating and aestivation habitat. Areas with a high concentration of burrows would be avoided by surface-disturbing activities to the maximum extent practicable. In addition, when a concentration of burrows is present along the reconductoring route, the area would be staked or flagged to ensure that work crews are aware of their location and to facilitate avoidance of the area. A preconstruction survey would be conducted each day immediately preceding construction activity that occurs in designated blunt-nosed leopard lizard habitat or in advance of any activity that may result in take of this species.

Vehicles would be inspected each morning before they are moved. All suitable habitat for blunt-nosed leopard lizard that is temporarily affected by project-related activities would be restored to pre-project

conditions. Site-specific restoration features and success criteria would be outlined in the restoration plan, which would be part of the overall Habitat Mitigation Plan developed for reconductoring. These efforts would considerably reduce impacts on blunt-nosed leopard lizard, resulting in long-term but minor adverse effects.

The summary of BO (Appendix D-3) findings about the CVSR's effects on blunt-nosed leopard lizard in Section 3.8.3.2, above, also applies to Morro Bay–Midway transmission line reconductoring. The summary indicates that there would be a minimal amount of impacts to the blunt-nosed leopard lizard and temporary impacts to a small amount of its habitat. All temporary losses to blunt-nosed leopard lizard habitat would be compensated at a 1:1 ratio through purchase of conservation bank credits. Additionally, surveys, in conjunction with the purchase of conservation bank credits, would contribute toward recovery of the species (Appendix D-3). Therefore, impacts to the species would not be significant during construction or operations.

California Condor

Construction activities may directly affect California condor foraging habitat temporarily but reconductoring is not expected to directly affect California condors. The existing power line has existed as part of the landscape for approximately 50 years and reconductoring would not change the location or configuration of the line (ICF International 2010d).

To minimize and avoid impacts to California condor, all transmission and sub-transmission towers and poles would be designed to be raptor-safe. All fuels, fluids, and components with hazardous materials/wastes would be handled in accordance with applicable regulations. All such materials would be kept in segregated storage with secondary containment as necessary. Records of storage and inspection would be maintained and would provide for proper offsite disposal. Hazardous materials would be stored in a neat, orderly manner in their appropriate containers in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable hazardous materials storage cabinets may be moved with each block of development, as deemed necessary. Personnel would collect all litter, small artificial items, and food waste along the reconductoring route on a regular basis. These efforts would considerably reduce impacts on California condor, resulting in negligible adverse effects.

According to the BO (Appendix D-3), reconductoring the Morro Bay–Midway transmission line is not likely to adversely affect California condor based on the design features incorporated into the CVSR Project. Therefore, impacts to the species would not be significant during construction or operations.

Kern Mallow

Direct effects would result in the temporary loss of 0.11 acre of suitable habitat for Kern mallow in Kern County due to construction activities. Individual Kern mallow plants could be lost due to trampling or earth moving. Construction activities could result in removal or modification of Kern mallow seed banks through grubbing and clearing of work sites. Increase of fugitive dust during construction due to movement of vehicles in work areas and on access roads could reduce survivorship and productivity of individual plants close to dust sources by decreasing photosynthetic output, reducing transpiration, and adversely affecting reproductive success. Indirect effects include the potential to spread noxious weeds within work areas with construction equipment, which could affect populations of Kern mallow. Soil compaction, erosion, and sedimentation from construction activities may also affect Kern mallow survivorship (ICF International 2010d).

To the extent feasible, areas providing suitable habitat for Kern mallow would be avoided. During the habitat assessment, biologists identified certain tension/pull site and landing zones that PG&E proposed that were in areas with substantial populations of Kern mallow. Biologists recommended that these work areas be moved to areas without known populations of Kern mallow. As a result, PG&E agreed to move

these tension/pull sites and landing zones to areas without known populations of Kern mallow. Some of the work areas were not previously surveyed for the presence of Kern mallow. Surveys for the presence of Kern mallow would be conducted prior to any construction activities occurring in work areas that were not previously surveyed for Kern mallow. If populations of Kern mallow are located within work areas, these populations would be avoided to the greatest extent feasible. Populations that can be avoided would be flagged for avoidance prior to the start of construction and a biological monitor would be present to ensure compliance with off-limit areas.

Indirect impacts to Kern mallow populations would be minimized by creation of a buffer zone around known populations. The buffer zone would be determined by a qualified biologist in consultation with the USFWS and would be of sufficient size to eliminate the potential for disturbance that may negatively affect the population. If habitat occupied by Kern mallow would be temporarily impacted, the upper 4 inches of topsoil would be stockpiled separately during construction and subsequently used to reseed the affected areas during restoration according to the Habitat Mitigation Plan (ICF International 2010d). Impacts on Kern mallow habitat would be reduced considerably by these efforts. Therefore, adverse effects on Kern mallow from construction and operation of the proposed action would be long-term but minor.

According to the BO (Appendix D-3), overall, there would be a minimal amount of temporary impacts to Kern mallow and its habitat, which is not expected to result in a significant effect on the species as a whole or in the project vicinity. Reconductoring activities would include avoidance, minimization, restoration of impacted sites, and compensation of Kern mallow habitat at the Kern Water Bank, thus contributing to the recovery strategy for the species by contributing to the protection of large blocks of suitable habitat. Therefore, impacts would not be significant during construction or operations.

Other Special-Status Species

Several of the proposed tension/pull sites, landing zones, and areas for crossing guards would be located within suitable habitat for coast horned lizard. Although construction would only temporarily affect suitable habitat, coast horned lizards could experience injury or mortality from vehicle traffic. Indirect effects could be caused by soil compaction or the establishment of noxious weeds. Operational impacts would include the risk of injury or mortality from vehicle traffic and disturbance from routine maintenance. In addition, the introduction of perch sites could increase predation risk from aerial predators.

Design features incorporated into the proposed project include conducting preconstruction surveys and implementation of avoidance measures. In addition, construction activities within suitable habitat would be conducted during warm-weather periods when the species is most active and likely to move out of the way of vehicles. These project design features would ensure that adverse effects on the species would be minor (SLO County 2011b). Therefore, impacts would not be significant during construction and operations.

Critical Habitat

The nearest designated critical habitat for California condor is the East Unit of the Hi Mountain-Beartrap Condor Area, 13 miles west of the CVSR site, where captive-raised condors were formerly released. The nearest designated critical habitat for California tiger salamander is located approximately 15 miles north of the western end of the Morro Bay-Midway transmission line reconductoring alignment (ICF International 2011a). Therefore, there would be no effects on primary constituent elements of critical habitat for this species as a result of reconductoring activities, and impacts on critical habitat would not be significant during construction or operations. Critical habitat has not been designated for the remainder of species known to occur, or with potential to occur, along the Morro Bay–Midway transmission line reconductoring route.

Effects of Habitat Conservation as Determined by the USFWS

To avoid or minimize impacts to biological resources, including natural communities and federal and state endangered, threatened, proposed, petitioned, and candidate plants, the biological resource conservation strategy for reconductoring would ensure conservation such that, overall, there would be a net benefit to species that would be impacted. The conservation strategy is described in the BO (Appendix D-3). A summary of onsite and offsite conservation lands that would be part of the proposed action is provided in Appendix D-3.

For the Morro Bay–Midway transmission line reconductoring, all permanent losses to suitable habitat for giant kangaroo rat, San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, and Kern mallow would be compensated for at a 3:1 ratio and temporary losses of suitable habitat at a 1:1 ratio. All losses to suitable habitat for California tiger salamander would be compensated at a 3:1 ratio.

Conservation habitat would be acquired in the northern Carrizo Plain for temporary and permanent impacts to giant kangaroo rat and San Joaquin kit fox habitat that occurs in San Luis Obispo County. Credits at a suitable bank in western Kern County would be purchased for temporary impacts to Kern mallow, California tiger salamander, blunt-nosed leopard lizard, and Tipton kangaroo rat. If a bank is not available, money for habitat restoration and preservation would be contributed to the Center for Land Management or another conservation entity. The amount of conservation land or money to be contributed would be determined through consultation with the USFWS and CDFG.

Umbrella and Keystone Species

The San Joaquin kit fox, an umbrella species, and giant kangaroo rat, a keystone species, are both present along the Morro Bay–Midway transmission line reconductoring route. As described in the Umbrella and Keystone Species discussion in the CVSR section, above, the conservation of kit fox and giant kangaroo rat habitat also provides habitat for American badger, burrowing owl, San Joaquin kit fox, San Joaquin coachwhip, and San Joaquin antelope squirrels, Tulare grasshopper mouse, and potentially blunt-nosed leopard lizard, which relies on giant kangaroo rat burrows for shelter. The Tipton kangaroo rat, which is also present along the reconductoring route, has also been identified by the USFWS as a keystone species (USFWS 1998). Further information about San Joaquin kit fox as an umbrella species and giant kangaroo rat as a keystone species is provided in the BO (Appendix D-3).

For the reasons described in the Umbrella and Keystone Species discussion in the CVSR section, above, impacts on American badger, burrowing owl, San Joaquin coachwhip, short-nosed kangaroo rat, Tulare grasshopper mouse, and San Joaquin antelope squirrel and their habitat would not be significant during reconductoring activities.

3.8.3.3 Twisselman Aggregate Mine Establishment

Establishment of the Twisselman aggregate mine would result in long-term impacts to 5 acres of suitable giant kangaroo rat habitat and approximately 7 acres of San Joaquin kit fox and San Joaquin antelope squirrel habitat. This habitat is suitable for other species of wildlife as well. However, the mine had been previously developed and because of CVSR project design features that would avoid or minimize impacts on vegetation and habitat, common wildlife species, and special status species in the CVSR Project sites described in the above sections, adverse effects on biological resources within the Twisselman aggregate mine site would be long-term but minor and not significant.

3.8.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on biological resources. However, the no action alternative would not contribute to assisting the State of California to meet its renewable energy goals and

would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.9 Cultural Resources

The term cultural resource refers to a wide array of resources that includes prehistoric and historic archaeological sites, historic buildings, districts, structures, locations, or objects considered important to a culture or community for scientific, traditional, religious, or other reasons.

3.9.1 Regulatory Framework

According to Section 106 of the National Historic Preservation Act, a cultural resource is listed or considered eligible for listing on the National Register of Historic Places (NRHP) if it meets one of the following criteria:

Criterion A: the resource is associated with events that have made a contribution to the broad pattern of our history;

Criterion B: the resource is associated with the lives of people significant in our past;

Criterion C: the resource embodies the distinct characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: the resource has yielded, or is likely to yield, information important in prehistory or history.

Recommendations for site NRHP eligibility are presented in reports and site recordation forms. A site determined to be eligible for the NRHP is a site that would need to be mitigated if affected by an undertaking. A site found to be not eligible for the NRHP is not, by definition, a historic resource and would not require mitigation if affected by the undertaking. Eligibility determinations are only made for sites that have been through a formal evaluation and nomination process overseen by the National Parks Service. Comparatively few sites are formally nominated due to the lengthy and labor intensive nomination process. If a site is recommended by the cultural resources consultant to meet the eligibility criteria, and if the SHPO concurs with this recommendation, the site will be avoided or impacts mitigated without going through the nomination process.

According to 36 CFR§ 800.5, a proposed action would have an adverse effect on a cultural resource if it would directly or indirectly alter one of the characteristics that renders it eligible for inclusion in the NRHP. Adverse effects include:

- Physical destruction of or damage to all or part of the resource;
- Alteration of a resource, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of Interior's Standards and Guidelines for the Treatment of Historic Properties (36 CFR§ 68);
- Removal of the resource from its historic location;
- Change of the character of the resource's use or of physical features within the resource's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the resource's significant historic characteristics;

- Neglect of a resource which causes its deterioration, except where such neglect and deterioration are recognized qualities of a resource of religious and cultural significance to an Indian Tribe; and
- Transfer, lease, or sale of the resource out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance.

Federal, state, and county laws, regulations, and standards that protect cultural resources in the CVSR Project vicinity are summarized in Appendix E.

3.9.2 Affected Environment

A brief summary of the cultural setting is provided below. Detailed information is provided in Appendix E.

Background data for this EA was compiled from cultural resource record searches conducted at the Central Coast Information Center located in the Department of Anthropology, University of California, Santa Barbara; the Southern San Joaquin Valley Information Center located at California State University, Bakersfield; the San Luis Obispo Historical Society; Caltrans District 5 Headquarters; and conversations with Darrell Twisselman, who has been a rancher and farmer in the area for several decades. Additional data for this section was acquired from reports of nine cultural resources investigations of the proposed action site and vicinity.

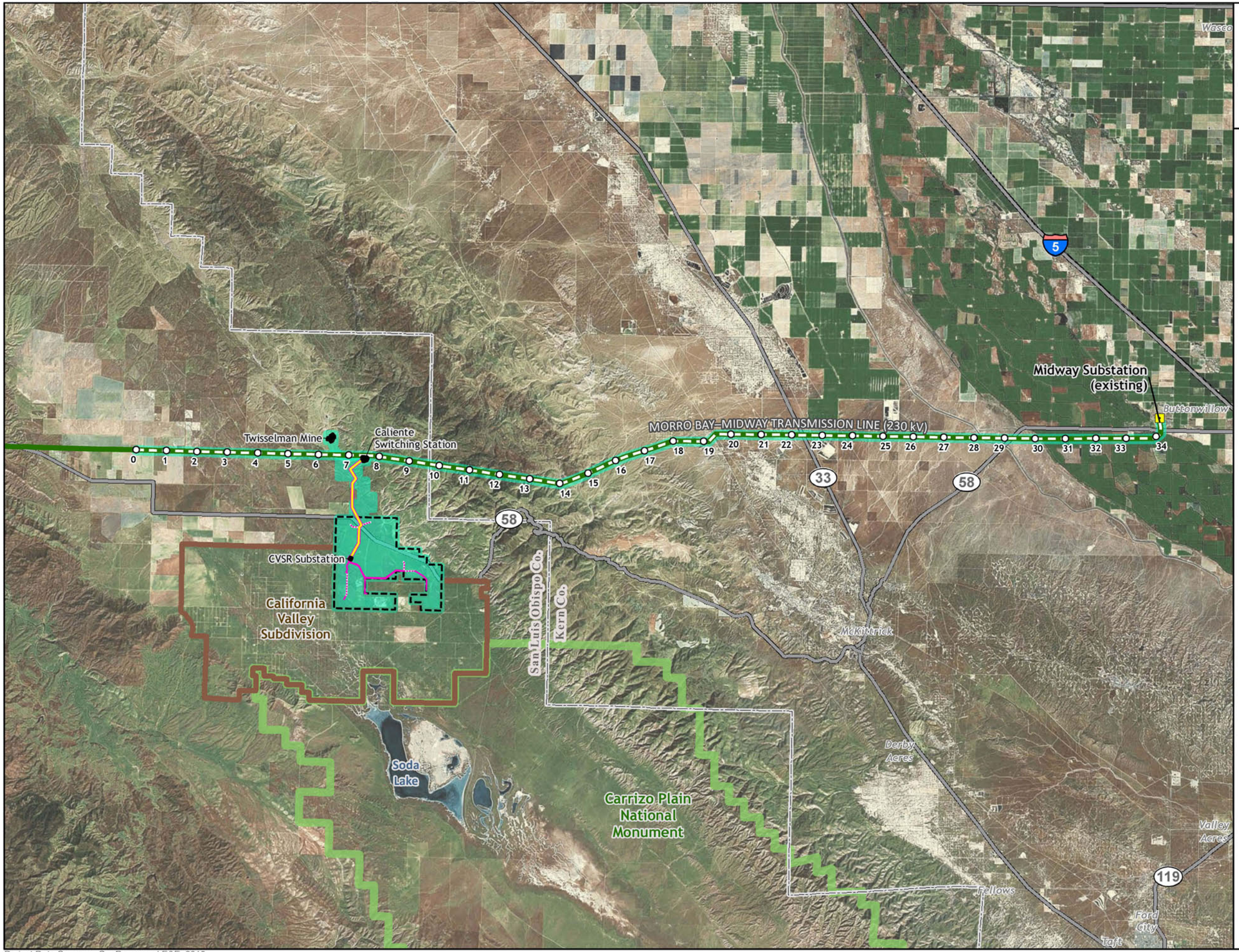
3.9.2.1 Area of Potential Effect

The Area of Potential Effects (APE) for direct impacts resulting from the proposed action includes all areas of potential ground disturbing activities (Figure 3.9-1). For the CVSR and interconnection line, the APE would be about 4,130 acres. For the reconductoring of the Morro Bay–Midway transmission line, only small parts of the ROW would be subject to disturbance, such as pull sites or new tower locations; therefore, the direct APE would be about 470 acres. The indirect APE for the proposed action includes all areas that could be impacted visually by the CVSR, interconnection line, and the Morro Bay–Midway transmission line. This assessment is necessary as the vista or other rural elements may be required for sacred or ceremonial areas within or adjacent to the proposed action. The southern edge of the proposed action is approximately 11 miles to Painted Rock in the Carrizo Plain National Monument. Due to its distance, the view of project components from the Painted Rock area is considered to be in the "seldom seen" zone. Additional information on visual resources is presented in Section 3.1, Land Use and Visual Resources.

3.9.2.2 Prehistoric

In order to assess the impacts to potential resources in the vicinity of the CVSR Project, the documented cultural history for the entire California Valley has been considered in this analysis, including the Carrizo Plain National Monument, despite the distance of the monument to the CVSR site. The Carrizo Plain National Monument has been the focus for most of the cultural resources work within the California Valley and has provided the data from which the following culture history has been derived. The California Valley and surrounding area has likely been inhabited since the end of the last ice age during the Late Pleistocene (10,000 BP [before present]). Sites of this antiquity are generally associated with lakes that formed in interior draining basins from melting glaciers, such as Soda Lake located less than four miles to the south of the CVSR Project perimeter. Although sites from this age have long been identified in the nearby southern San Joaquin Valley, the first site attributed to the Paleo-Indian Period was only recently discovered in the California Valley (Whitley, Loubser et al. 2007).

Figure 3.9-1
Area of Potential Effect
California Valley
Solar Ranch Project



- Area of potential effect
- CVSR site perimeter
- Interconnection line
- Collection line, overhead
- Collection line, underground
- Existing transmission line
- Segment of existing transmission line to be reconductored
- Existing substation
- Major road
- County boundary
- National monument
- California Valley Subdivision (mostly undeveloped)

NORTH

0 1 2 3 4 5
Miles

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: USGS National Hydrology Dataset 2009, ESRI 2009 basedata; Microsoft Virtual Earth Aerial Imagery 2009 (http://resources.esri.com/arcgisonlineservices/virtualearth)
Other transmission line data: National Renewable Energy Laboratory & FEMA, 1993

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The Millingstone Period (8,500 to 4,000 BP) followed the Paleo-Indian Period, during which there was widespread use of groundstone implements for food processing and a diverse hunting strategy that may have been a secondary subsistence focus (Jones et al. 2007). The Millingstone Period was then followed by the Middle Period (4,000 to 800 BP), which was recently identified as a period of population increase and expansion (Whitley, Loubser et al. 2007; Whitley, Simon, et al. 2007). The material culture from this time period is hallmarked by the appearance of the hopper-mortar and mortar and pestle (Moratto 1984). Middle Period habitation sites generally appear to be associated with terraces and ridges above streams and are thought to be "…the largest and densest concentration of habitation remains that we are aware of, away from the coast and islands, in south-central California" (Whitley, Simon, et al. 2007:5). While habitation sites are commonly associated with stream beds, Middle Period lithic scatters and foraging activities may occur in peripheral upland areas; however, not many of the upland areas within the valley have been subjected to archaeological study (Whitley, Loubser et al. 2007).

The transition from the Middle Period to the Late Period (800 to 200 BP) correlates with the end of a drought and the lowest levels of water at Soda Lake during the 3,200-year span of the Middle Period. The water level in Soda Lake had begun to decline during the Middle Period until it was desiccated by 1,200 BP (Whitley, Simon, et al. 2007). During this transition, the population base in the California Valley also seems to have collapsed. Known Late Period sites comprise only 18 percent of all Middle and Late Period sites by number, and cover only 5 percent of the total acreage containing known archaeological sites within the Carrizo Plain National Monument (Whitley, Simon et al. 2007).

As described in Section 3.6, Geology and Soils, the CVSR site is comprised of alluvial deposits dating to the Pleistocene and Holocene periods that could be concealing cultural resources. A geoarchaeological assessment for the CVSR Project determined that the CVSR site could contain buried cultural resources (ICF International 2010c).

3.9.2.3 Ethnographic

The proposed action would be located in an area historically occupied by the Chumash, Salinan, and Southern Valley Yokut Tribes. In addition, the California Valley and surrounding foothills are still used today as a ceremonial place for Native Americans and are considered sacred (ICF International 2010a:19). While the reservation system has artificially constrained the traditional habitation areas for the Native American groups of the region, the ethnographic record suggests that the California Valley was not the focus of habitation activities at the time of Euro-American contact and was used peripherally for resource gathering and other activities (Whitley, Loubser, et al. 2007).

3.9.2.4 Historic

The history of the California Valley is poorly documented, but the first Euro-American settlers to establish themselves in the Valley arrived in 1885 and primarily focused on ranching and dry farming. During the 20th Century, oil and gypsum extraction and dry farming were the dominant land uses in the CVSR Project area (Lange and Goodwin 2010). In the 1870s, the Macdonald Estate purchased lands that included the CVSR Project area. By the 1920s, Augusta C. Osmont bought the CVSR site. The property was then inherited by Augusta Osmont's children, Adelia Sperry and Vance C. Osmont, in 1932. By 1948, the property was in the hands of Christian and Eleanor Twisselman, a pioneer ranching and farming family and major land owners in San Luis Obispo County. The CVSR site is currently owned by Darrell Twisselman who has used the land for cattle grazing since the 1960s (Lange and Goodwin 2010).

3.9.2.5 Tribal Consultation and Coordination

Branches of the Federal Government are required to offer government-to-government consultation with Native American tribes for federal undertakings. This requirement is stipulated under the Native

American Graves Protection and Repatriation Act, NEPA, the National Historic Preservation Act, and the following Executive Orders:

- **Executive Memorandum, Government-to-Government Relationship with Tribal Governments (2004)**: Recommitted the federal government to work with federally recognized Native American tribal governments and to respect and support tribal sovereignty.
- **Executive Order 13175 Consultation and Coordination with Indian Tribal Governments (2000):** Recognizes the right for tribal self-government and sovereignty. It also committed the federal government to work with tribal governments on a government-to-government basis.
- **Executive Order 13007 Indian Sacred Sites (1996):** Directs federal agencies to accommodate access to and ceremonial use of Native American sacred sites by the Native American communities, and to avoid adversely affecting the physical integrity of sacred sites.
- **Executive Order 12898 Federal Actions to Address Environmental Justice in Minority populations and Low-Income Populations (1994):** Section 6-606, "Native American Programs" requires that federal agencies responsibilities apply equally to Native American programs.
- **Memorandum, Government-to-Government Relations with Native American Tribal Governments (1994):** Establishes that the head of each agency is responsible for ensuring that that agency or department conducts government-to-government consultation prior to taking actions that may affect federally recognized tribal governments, and that consultations are to be open and candid so that the interested parties may evaluate for themselves the potential impact of the action.

The DOE also has internal policies outlying the environment and procedures pertaining to Native American Consultation (DOE 2000) which include DOE Order 144.1 of 2009 which establishes the responsibilities and roles of DOE management in carrying out its policy.

As the lead federal agency for the NEPA process, DOE has extended an invitation for government-to-government consultation with federally recognized Native American tribes to identify locations of traditional, religious, or cultural importance in the vicinity of the proposed action. DOE sent letters describing the proposed action to the following federally recognized tribes:

- Santa Rosa Rancheria (Tachi Yokut Tribe); and
- Santa Ynez Band of Chumash Mission Indians.

To date, DOE has received one response to the consultation letter. This response was from the Santa Ynez Band of Chumash Mission Indians. DOE gave a presentation to this tribe on March 14, 2011, and led a follow up site visit on April 4, 2011.

Follow-up phone calls were made to the Santa Rosa Rancheria to ensure the letters were received. The Santa Rosa Rancheria has not responded to the DOE at this time. Responses are included in Table 3.9-1.

At the request of the California SHPO, DOE has also contacted 27 members and/or organizations from the following, tribes: Chumash, Fernandeno, Kinanemuk, Salinan, Shoshone Paiute, Tachi, Tataviam, Tejon, Tubatulabal, Xolon Salinan, Yaqui, Yokut, and Yowlumn. These contacts were provided by the California Native American Heritage Commission. DOE sent letters to the list of contacts on November 30, 2010, requesting comments or concerns about the CVSR Project site. Follow-up phone calls and emails were made during the month of December 2010.

Table 3.9-1. Federally Recognized Tribes Contacted

Organization	Contact	Tribe	Tribal Response	DOE Response
Santa Ynez Band of Chumash Mission Indians	Vincent Armenta, Chairperson	Chumash	No formal request for government–to-government consultation as yet, although requests have been made for further information including a presentation from the Applicant to the Tribal Elders Council. The tribe has also requested that DOE be present for the meeting.	DOE and the Applicant met with and gave a presentation to the Tribal Elders Council on 03/14/2011. Representatives of Elder Council were given a site tour on April 4, 2011. An email was sent from E & E to the Elders Council on 06/09/2011 describing alterations to the design of the Caliente switching station made to avoid impacts to the CVSR BRM-1 site.
Santa Rosa Rancheria	Ruben Barios, Chairperson	Tache, Tachi and Yokut	No response as yet.	

To date, DOE has received five responses to the letters, as detailed in Table 3.9-2.

Table 3.9-2. Non-Federal Recognized Tribal Contacts

Organization	Contact Name	Tribe	Tribal Response
None given	Randy Guzman-Folkes	Chumash, Fernandeño, Tataviam, Shoshone Paiute and Yaqui	Interested in participating in any meetings with tribes and offered his knowledge and expertise of the Carrizo Plain and tribal history there.
Northern Chumash Tribal Council	Fred Collins, Spokesperson	Chumash	Mr. Collins requested a meeting with the Applicant to discuss his concerns regarding impacts to the flora and fauna in the area. The Applicant met with Mr. Collins on January 12, 2011.
None given	Lei Lynn Odom	Chumash	Ms. Odom responded that she has not received the cultural resources reports for review and is concerned that she has not been provided with all available information on the CVSR Project.
None given	Mona Olivas Tucker	Chumash	Requested the cultural resources reports and stated that any cultural resources found would have to be protected.
Salinan Nation Cultural Preservation Association	Jose Freeman	Salinan	The Salinan Nation Cultural Preservation Association is very concerned about the Carrizo Plain area and would like to know what the BLM has said about the CVSR Project.

A complete list of contacts, correspondence, and responses can be found in Appendices E2, E3, and E5.

Section 106 of the National Historic Preservation Act also requires federal agencies consult with the SHPO regarding the efforts taken to identify and mitigate impacts to cultural resources. The DOE sent a letter of consultation to the California SHPO on April 14, 2011. On May 5, 2011 SHPO sent a letter to the DOE requesting additional information. DOE responded with a supplemental information submittal on

May 26, 2011, and the SHPO sent a letter of concurrence on June 23, 2011. The letter of concurrence included the following conditions:

- Temporary fencing is placed around site BRM-1[8] to protect it from construction and grading beyond the current work-plan under the direction of a qualified professional archaeologist.
- For the construction in the vicinity of site BRM-1, an archaeological monitor will be continuously present to monitor during grading or other ground disturbing activities that may result in the disturbance of soil down to bedrock. For all other phases of construction in the vicinity of site BRM-1 not resulting in such ground disturbance, including filling, an archaeological monitor will be on call at all times. The environmental inspector will be briefed by the archaeological monitor. The environmental inspector will be present on site during all construction activities, and will monitor the integrity of the protective fencing when in the area. The archaeological monitor will be present at least biweekly or more frequently as needed to verify the resource is not disturbed and to check the placement of the temporary fencing.
- For periods when the archaeological monitor is on call, if any activity results in the inadvertent disturbance of the site, the archaeological monitor will be notified immediately and work in the area will cease until the archaeological monitor can assess the disturbance and will follow procedures pursuant to 36 CFR 800.13
- The archaeological monitor shall be empowered to stop all work in the area should the monitor determine that the work is impacting site BRM-1 or if the installed fencing is disturbed, ultimately resulting in consultation pursuant to 36 CFR 800.13 Once construction in the vicinity of the BRM-1 site is complete, the archaeological monitor will be present to direct the removal of the temporary fencing surrounding the site.
- The consulting Native American tribes are invited to monitor construction in the vicinity of site BRM-1

These conditions have been added in to the project design features as PG&E CR-8.

3.9.2.6 Archival and Field Investigations

Ten Phase I and one Phase II cultural resource investigations have been conducted for the CVSR Project. The results of these investigations are discussed below.

Cultural resources surveys for PG&E reconductoring were conducted by IFC International and Ecology and Environment, Inc., (E & E). All areas identified as requiring ground disturbance were surveyed for the presence of cultural resources. Intensive level fieldwork with transect spacing of no more than 15 meters was conducted between February and April 2010 and in January 2011. A total of 31 cultural resources (prehistoric sites, historic sites, and isolated artifacts) have been identified either adjacent to or within the reconductoring APE. These resources are listed in Table 3.9-3.

In June and November 2010, ICF International prepared addendum reports to the cultural resources survey report. These reports included surveys done on additional proposed areas of disturbance that were identified along the reconductoring ROW. One additional isolated artifact was recorded (IFC International 2010b) and one historic site was recorded (IFC International 2010c). These resources are listed in Table 3.9-3.

On February 8, 2011 ICF International undertook another intensive level pedestrian survey. This survey was conducted on newly identified work areas and pole replacements in the eastern part of the proposed

[8] BRM-1 refers to bedrock mortars and shallow subsurface archaeological deposit associated with the Caliente Switching Station (See Table 3.9-3).

reconductoring. Three cultural resources were identified during the survey. These resources are one isolated handstone with bifacial wear patterns, a historic water tank with a pump and outbuilding, and a segment of the Arizona Ditch (IFC International 2011b). These resources are listed in Table 3.9-3.

The CVSR site was surveyed on unspecified dates in 2009 and in June and July 2010 by LSA Associates, Inc. (Lange and Goodwin 2010). The survey was conducted as an intensive level investigation with transect spacing no wider than 15 meters. Four cultural resources were recorded as part of this investigation. All four resources date to the historic era and represent farming activities. These resources are listed in Table 3.9-3. Additional areas requiring survey were identified in November 2010 and LSA conducted another intensive level cultural resource survey (Duke 2010). Resources identified during these studies are listed in Table 3.9-3.

Additional fieldwork requirements were subsequently identified and E & E conducted a field assessment of CVSR BRM-1, a prehistoric bedrock milling site (E & E 2010c). Test excavations were conducted on the site to make a recommendation on the site's NRHP eligibility (Whitley and Andrews 2011). E & E (2011) also conducted intensive level surveys for two new tower placement locations adjacent to the CVSR site for the reconductoring, and several areas within the CVSR site.

On May 17, 2011, intensive level pedestrian surveys were conducted on 4.5 miles of fencing located along the perimeter of the solar generating facility, north of SR 58. This fencing was a requirement of a San Luis Obispo County Biological Resources Habitat Mitigation and Monitoring Plan described in project design feature CVSR BIO-39 (Appendix B). The survey corridor was 15 meters wide, and resulted in no new resources recorded (Whitley 2011).

3.9.3 Environmental Effects

Findings from the nine cultural resource surveys and reports prepared for the CVSR Project were evaluated to determine if construction and operation of the CVSR, interconnection line, and reconductoring of the Morro Bay–Midway transmission line would adversely affect cultural resources. The following text discusses impacts on cultural resources either unevaluated, or recommended to be found eligible for listing on the NRHP.

The records search determined that one previously recorded built environment site (40-041017), consisting of a weigh station and two associated outbuildings, exists within the CVSR Project perimeter. The weigh station is still standing, but the outbuildings have been razed. Field surveys confirmed the presence of the historic structures relating to an idle on-site surface mine (weigh station and outbuildings) and yielded one potential historic structure, an abandoned ranch house (Lange and Goodwin 2010).

3.9.3.1 Proposed Action

CVSR Site

The 1930s Twisselman ranch house site (LSA-PWR0901A-S1) has been recommended by LSA as not eligible for listing in the NRHP; however, the potential for subsurface intact deposits has not been determined. Therefore, the site has not been fully evaluated and may be found to be eligible for listing in the NRHP. The weigh station (40-041017) does not meet the eligibility criteria for listing on the NRHP and is recommended as not eligible (Lange and Goodwin 2010). Because there is a potential for buried historic archaeological features and/or materials, a qualified county-approved archaeologist would prepare a Cultural Resources Monitoring Plan based on mapping of all Pleistocene to recent alluvium for the entire CVSR site. All areas containing such sediments would require having a qualified cultural resources monitor present during ground-disturbing activities.

Table 3.9-3. Research and Field Results

Cultural Resource Site No.	Description	NRHP Eligibility Recommendation	Project Component	Reference
N/A	Morro Bay–Midway Transmission Line	Not Eligible	Reconductoring	ICF International 2010a
P-15-4014	Prehistoric Midden site with human remains	Unevaluated	Reconductoring	ICF International 2010a
P-15-1493	Prehistoric site	Unknown	Reconductoring	ICF International 2010a
P-15-9736	Prehistoric site	Unevaluated	Reconductoring	ICF International 2010a
N/A	Filos Property; historic ranch	Not Eligible	Reconductoring	ICF International 2010a
N/A	Carrizo Plain substation	Not Eligible	Reconductoring	ICF International 2010a
P-15-9737	Historic archaeological site, San Joaquin Light and Power Company's Midway Steam Plant	Unevaluated	Reconductoring	ICF International 2010a
P-15-10840	Isolated chert flake	Not Eligible	Reconductoring	ICF International 2010a
P-15-10841	Isolated chert flake	Not Eligible	Reconductoring	ICF International 2010a
I-5 (LSA-PWR0901A-S3)	Historic well, water trough and tank, and earthen reservoir	Not Eligible	Adjacent to access road for Caliente Switching Station	Lange and Goodwin 2010
I-6	Horse-drawn spreader	Not Eligible	Access road to Caliente Switching Station	ICF International 2010a
Carrisa Highway (SR-58)	Highway was originally part of the 19th Century wagon route from Santa Margarita to the placer mines in Pozo, La Panza, and McKittrick	Not Eligible	Solar Generation Facility	ICF International 2010a
CM-ISO-1H	Horseshoe with nails still attached	Not Eligible	Access road to Caliente Switching Station	ICF International 2010a
CM-ISO-2	Obsidian flake	Not Eligible	Reconductoring	ICF International 2010a
CM-ISO-3	Crypto-crystalline silicate flake	Not Eligible	Access Road	ICF International 2010a
CM-ISO-4	Crypto-crystalline silicate flake	Not Eligible	Access Road	ICF International 2010a
CM-ISO-5	Obsidian flake	Not Eligible	Access Road	ICF International 2010a
CM-5H	Historic glass and ceramic scatter	Not Eligible	Reconductoring	ICF International 2010b
CM-ISO-6	Prehistoric handstone	Not Eligible	Reconductoring	ICF International 2010b
CM-1H/ LSA-PWR0901SA-S4	Rock alignments, historic refuse scatter	Unevaluated, no longer in proposed development area	Caliente Switching Station No. 1	ICF International 2010a, Lange and Goodwin 2010
CM-2	Bedrock mortar site with a handstone	Unevaluated	Reconductoring	ICF International 2010a
CM-3	Bedrock mortar site	Unevaluated	Reconductoring	ICF International 2010a

Table 3.9-3. Research and Field Results

Cultural Resource Site No.	Description	NRHP Eligibility Recommendation	Project Component	Reference
CM-4H	Possible mining prospect and refuse scatter	Unevaluated	Reconductoring	ICF International 2010a
CM-ISO-7	Handstone	Not Eligible	Reconductoring	ICF International 2011b
CH-6H	Arizona Ditch	Unevaluated	Reconductoring	ICF International 2011b
CM-7H	Water pump station	Unevaluated	Reconductoring	ICF International 2011b
LSA-PWR0901SA-S1	1930s ranch house and associated cattle watering features and refuse scatters	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010
LSA-PWR0901SA-S2	Farm equipment	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010
LSA-PWR0901SA-S3	Livestock watering, feeding and sanitation area	Not Eligible	Reconductoring	Lange and Goodwin 2010
P-40-041017	Weigh station along SR-58	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010
CVSR BRM-1	Bedrock mortars and shallow subsurface archaeological deposit	Eligible Under Criterion D	Caliente Switching Station Alternative 3	E & E 2010c; Whitley and Andrews 2011

The Applicant would retain a qualified archaeologist to survey areas where new fencing and other areas of disturbance are proposed, including the Twisselman ranch house complex. The Applicant would install fencing to delineate and restrict ground-disturbance within a 100-foot buffer zone around the ranch house complex, and the buffer zone would be delineated on all applicable construction plans. The Applicant would retain an archaeologist to record and evaluate the two idle gypsum mines on the CVSR site and SR-58 prior to ground-disturbing activities.

All culturally sensitive areas would be delineated on a confidential copy of project plans. If a Phase III (data recovery and reporting) program is determined to be necessary at the CVSR site, prior to issuance of construction permits, the Applicant would retain a county-approved archaeologist to prepare a scope of work to be approved by the county. Further, in the event that unanticipated archaeological discoveries were encountered during construction, a qualified archaeologist would be retained to evaluate the find. If human remains were encountered, the county coroner would be notified and work would be immediately halted pending the coroner's assessment of the remains and whatever treatment is prescribed and carried out. Implementation of these features, discussed in further detail in Appendix B, would help avoid impacts to cultural resources. Therefore, impacts on cultural resources from construction of the CVSR site would be minor and insignificant.

Interconnection Line

No cultural resources were located in the vicinity of the interconnection line. Three cultural resources have been recorded in the area of the Caliente switching station and access roads: LSA-PWR0901SA-S3, LSA-PWR0901SA-S4, and CVSR BRM-1. LSA-PWR0901SA-S3 and LSA-PWR0901SA-S4 have been recommended as not eligible for the NRHP. Resources found to be not eligible for listing are not protected under Section 106; therefore, these sites are not considered a management concern for this proposed action.

The CVSR BRM-1 site consists of 10 bedrock mortar (BRM) features in natural sandstone outcrops, and a shallow subsurface archaeological deposit (Whitley 2011). CVSR BRM-1 was assessed for its eligibility for listing on the NRHP, including site mapping, the collection of surface artifacts, the recording of surface features, and the hand excavation of test pits and shovel test pits. On the basis of positive and negative evidence, the CVSR BRM-1 site appears to represent a small, seasonally occupied camp, probably employed by a single extended family, oriented toward acorn processing and is, therefore, recommended as eligible for listing on the NRHP under Criterion D for its research potential (Whitley 2011).

Originally the Caliente switching station was designed in such a way that it would impact the CVSR BRM-1 site. Based upon discussions with the Santa Ynez Band of Chumash Mission Indians, the location of the Caliente switching station has been modified to avoid the BRM-1 site. The Caliente switching station was moved 165 feet east and 15 feet south of its originally proposed location. Construction of the CVSR Project will now avoid disturbance of the bedrock mortars and the subsurface components of the BRM-1 site. Grading would occur close to these components and cultural resources monitoring would ensure that if any resources are found during grading that they will be assessed and, if found to be NRHP eligible, will be subjected to data recovery excavations.

Should any significant cultural resources be inadvertently discovered during project construction, the Applicant would avoid the resource; or if avoidance is not feasible, sufficient treatment would be given to the find in accordance with the treatment plan(s) listed in Appendix B, and through data recovery excavations. Implementation of these project design features would ensure no adverse effects on cultural resources. Impacts would, therefore, be insignificant.

Morro Bay–Midway Transmission Line Reconductoring

Several recorded resources have been identified in proximity to the existing Morro Bay–Midway transmission line. Eleven of these resources have been determined as not eligible for the NRHP. Seven of these resources are not eligible because they are isolated artifacts with no research potential. The remaining four resources are recommended as not eligible because they have been upgraded through time, such as the Carrizo Highway, or because they are merely moderate examples of their type and are not connected to important events or people such as the first transmission line that brought power to the California Valley. Eight resources (CM-1H, CM-2, CM-3, CM-4H, P-15-4014, P-15-1493, P-15-9737, and P-15-9736) have been assumed to be eligible for listing in the NRHP, or are unevaluated for listing. PG&E has proposed protective fencing, avoidance, and other measures to protect these resources from impact to the maximum extent feasible. For P-15-1493, NRHP evaluations and data recovery investigations (if deemed necessary) have been proposed if avoidance is not feasible. Fencing would be ineffective for this resource due to the position of a transmission tower within the site boundaries.

To avoid impacts on cultural resources, PG&E would also implement a pre-construction worker education program and would issue stop work orders if unanticipated cultural resources or human remains were encountered. Further survey work would be conducted if new proposed areas of disturbance were identified. In addition, PG&E would construct silt fencing around known potential cultural resources and use minimally invasive equipment during construction. Impacts related to reconductoring would, therefore, be minor because all potential resources in connection with PG&E's work would be avoided to the maximum extent practicable, and any unavoidable impacts to potential cultural resources would be mitigated through data recovery efforts. The reconductoring of the Morro Bay–Midway transmission line would not cause significant impacts to cultural resources.

3.9.3.2 Twisselman Aggregate Mine Establishment

The Twisselman aggregate mine would increase in size from a 10-acre borrow pit to approximately 24-acres. The 14 acres of new surface disturbance has the potential to disturb cultural resources located in the thin topsoil levels. The topsoil levels in the area vary between 1 to 3 feet in thickness (SLO County

2011a) and are considered to be in an area of very low probability for the presence of buried cultural resources.

The area of the Twisselman aggregate mine was subjected to two intensive level cultural resources surveys in June and July 2009 (Lang and Goodwin 2010). LSA did not record any cultural resources during the survey. As the Twissleman aggregate mine would be subject to cultural resources monitoring, evaluation of inadvertent discoveries, and data recovery of all resources found to be eligible for listing in the NRHP, the expansion would not cause significant impacts to cultural resources.

3.9.3.3 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects on cultural resources. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.10 Paleontological Resources

3.10.1 Regulatory Framework

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the form and activity of such organisms. These resources are located within sedimentary rocks or alluvium and are considered to be nonrenewable under California and federal law.

3.10.1.1 Federal

Antiquities Act of 1906

The federal Antiquities Act of 1906 (16 U.S.C. 431–433) was enacted with the primary goal of protecting cultural resources in the United States. As such, it explicitly prohibits appropriation, excavation, injury, and destruction of "any historic or prehistoric ruin or monument, or any object of antiquity" located on lands owned or controlled by the federal government, without permission of the secretary of the federal department with jurisdiction. It also establishes criminal penalties, including fines and/or imprisonment, for these acts. The Antiquities Act institutes a requirement for appropriate studies by qualified experts and stipulations regarding the management and curation of collected materials. While neither the Antiquities Act, itself, nor its implementing regulations (43 CFR 3) specifically mentions paleontological resources, it has been interpreted as including them.

3.10.1.2 State

California Public Resources Code Chapter 1.7, Section 50975.

Paleontological resources are classified as non-renewable scientific resources and are protected by California Public Resources Code Chapter 1.7, Section 5097.5, which states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands. Violation of this section is a misdemeanor.

3.10.2 Affected Environment

The fossiliferous formations in the area include the Lodo Formation, Point of Rocks Formation, Temblor Formation, Monterey Shale, Paso Robles Formation, Tulare Formation, and Younger Quaternary Units, which all have low to moderate potential to contain paleontological resources (Pasenko 2009; ICF International 2010a). The main fossiliferous units in the area of the Morro Bay–Midway transmission line and the Caliente switching station site are the Miocene Monterey, Santa Margarita, and Caliente formations, the Plio-Pleistocene Paso Robles Formation, and the overlying Quaternary alluvium (SLO County 2010b).

The University of California Museum of Paleontology reports that, while no fossils have been found in Monterey Shale in the region, elsewhere, vertebrate fossil localities have been found in that rock formation. Paleontological resources have been found in the Quaternary Alluvium in the Northern Carrizo Region area, including one significant site found 5 to 6 miles west of the CVSR site (Pasenko 2009), which contained Mastodon (*Mammut americanum*), mammoth (*Mammuthus* sp.), camel (*Camelops* sp.), and bison (*Bison latifrons*) fossils. These fossils were recovered from Quaternary sediments at a shallow depth below surface in an exposed stream bed. The University of California Museum of Paleontology reports numerous fossil localities throughout San Luis Obispo County recovered from Quaternary sediments, as well as five fossil localities from the Paso Robles Formation (Pasenko 2009).

3.10.2.1 Methodology

In 2009 and 2010, four paleontological investigation reports were prepared for the CVSR site and the reconductoring of the Morro Bay–Midway transmission line to assess the potential for paleontological resources that may be present within the CVSR Project vicinity (Pasenko 2009; ICF International 2010a; ICF International 2010b; ICF International 2010c).The paleontological assessments included a review of available paleontological and geological literature, locality searches through the Natural History Museum of Los Angeles County and the University of California Museum of Paleontology, and a pedestrian survey of the area, including road cuts, burrows, strip mines, and other exposures, by a professional paleontologist.

Pre-field research for the reconductoring element included a record search at University of California Museum of Paleontology and Natural History Museum of Los Angeles County. Online resources consulted include the University of California Museum of Paleontology online database, MioMap, USGS maps, and other publications (ICF International 2010a). A field survey of the ROW did not identify visible significant paleontological resources exposed at the surface (ICF International 2010a). The investigation confirmed the presence of geologic units that hold potential for the presence of significant resources, observed exposed rocks and soils, and noted any visible fossils and the characteristics of exposed sedimentary deposits.

A fossil plant specimen and marine bivalves were found at one locality (CM-Paleo-1) situated on the Monterey Formation, within the reconductoring ROW. While these kinds of fossils are generally not considered significant resources unless noteworthy because of their rarity, scientific importance, or exceptional preservation, their presence tends to support the conclusion that other fossils potentially meeting these criteria could be found in the same formation.

Due to the geologic complexity encountered in the CVSR Project vicinity, different and often small subareas were assessed as having varying sensitivity. Despite the anticipated high significance of any vertebrate fossils that may be found within any of the geological units in the CVSR Project vicinity, the low potential of some of the units to yield such fossils indicates that significant finds are unlikely to appear in some of the units. These units are, therefore, assigned low sensitivity. Because of the apparent rarity of vertebrate or other significant fossils, the Lodo Formation, Point of Rocks Formation (or Member), and the Paso Robles Formation are assigned low sensitivity. The Younger Quaternary,

Temblor, Monterey, and Tulare formations each have proven potential for significant fossil recoveries and were assigned high sensitivity.

3.10.3 Environmental Effects

3.10.3.1 Proposed Action

Construction of the CVSR would require grading, access and fire road construction, foundation excavation for O&M and ancillary facilities, and water tank and utility trenching. It is unlikely that shallow grading and excavations into the younger alluvium, which makes up the bulk of ground disturbing work for the proposed action, would encounter paleontological resources. Deeper excavations or grading, which could occur with the construction of evaporation ponds and trenching for the underground electrical collection lines, may encounter finer-grained sediments or older Quaternary Alluvium, which would have a higher potential for paleontological resources.

The Applicant would retain a qualified paleontologist to prepare a Paleontological Monitoring and Treatment Plan that would identify construction areas of high sensitivity for paleontological resources and the shallowest depths at which they may be encountered. The Plan would also identify criteria to determine whether an encountered resource is significant, and if it should be avoided or recovered for its data potential. If avoidance is not feasible, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) would be carried out. In addition, the Applicant would ensure that full-time monitoring by a qualified paleontologist[9] would be conducted for all grading in the sediments determined to have a moderate to high sensitivity, as specified in the Paleontological Monitoring and Treatment Plan. Monitoring of sediments with low, marginal, undetermined sensitivity would occur on a part-time basis (as determined by the qualified paleontologist). The Applicant would train all construction personnel conducting rough grading about the recognition and protection of possible paleontological resources.

The existing Morro Bay–Midway transmission line is underlain by the same geologic formations as the CVSR site. Because reconductoring would include excavation and possibly the construction of deep foundations, there is some probability that paleontological resources could be encountered. The disturbance of such resources during excavation and rough grading could result in impacts on paleontological resources. PG&E would develop a Paleontological Monitoring and Treatment Plan that includes a data recovery component, similar to that described for CVSR. PG&E would train construction workers to identify potential resources; and a qualified paleontologist would conduct on-site construction monitoring in areas where ground disturbance would extend 12 inches bgs.

Implementation of these design features would avoid adverse effects on paleontological resources; therefore, impacts would not be significant.

3.10.3.2 Twisselman Aggregate Mine Establishment

The establishment of the Twisselman aggregate mine would occur at an existing 10-acre ranch borrow pit, with the mine ultimately expanding to approximately 24 acres over the course of 25 years. The quarry would mine semi-consolidated sandstone, siltstone, and shale of the Gould Shale Member of the Miocene age Monterey Formation. According to the Natural History Museum of Los Angeles County, although fossils have been found elsewhere within the rock unit, there are no vertebrate fossil locations from the Monterey Shale anywhere near the mine. Therefore, construction, operation, and decommissioning of the Twisselman aggregate mine would not affect known paleontological resources.

[9] A qualified paleontologist is defined as having a Master's Degree or Ph.D. in paleontology, with knowledge of the local paleontology, and familiarity with paleontological procedures and techniques.

3.10.3.3 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects on paleontological resources. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.11 Socioeconomics and Environmental Justice

3.11.1 Regulatory Framework

Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations

On February 11, 1994, President Clinton signed Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, which requires each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Executive Order 12898 created an Interagency Working Group on Environmental Justice comprised of the heads of federal departments for the purpose of providing guidance to federal agencies on the criteria for identifying disproportionately high and adverse human health or environmental effects on minority and low-income populations. Under Executive Order 12898, each federal agency was also charged with developing an agency-wide environmental justice strategy to: (1) promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations; (2) ensure greater public participation; (3) improve research and data collection relating to the health and environment of minority populations and low-income populations; and (4) identify differential patterns of consumption of natural resources among minority populations and low-income populations.

As the entity tasked with oversight of the Federal Government's compliance with Executive Order 12898, the CEQ developed guidance to help federal agencies comply with NEPA procedures to ensure that environmental justice concerns are effectively identified and addressed (CEQ 1997). DOE NEPA guidance recommends that the agency consider how minority and low-income populations could be affected by a particular action before determining that there are no disproportionately high or adverse impacts on minority or low-income populations.

The terms minority, minority population, and low-income population are defined by CEQ in Environmental Justice, Guidance Under the National Environmental Policy Act (CEQ 1997) as follows:

- Minority: Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.
- Minority Population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent; or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.
- Low-Income Population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census Current Population Reports on Income and Poverty.

DOE Environmental Justice Strategy for Executive Order 12898

In accordance with Executive Order 12898, DOE has promulgated an updated Environmental Justice Strategy, which outlines four goals for developing and maintaining an integrated approach to environmental justice activities (DOE 2008). The strategy outlines four programmatic goals to address programs and activities which adversely impact minority and low-income populations; enhance public trust and agency credibility, improve data collection methodologies for accurate characterization of risk; and integrate environmental justice criteria in activities related to human health and the environment.

3.11.2 Affected Environment

The socioeconomic environment described in this section is based on U.S. Census Bureau data from 2000, American Community Survey (ACS) data from 2005 to 2009 and from 2006 to 2008, and California Department of Finance data from 2010. Racial, demographic, income, and poverty level data for the specific census tract for the CVSR Project vicinity are provided below.

3.11.2.1 Demographics

The CVSR and Twisselman aggregate mine sites are within Census Tract 93453, which covers a large part of eastern unincorporated San Luis Obispo County. The Morro Bay–Midway transmission line traverses Census Tract 93453 in San Luis Obispo County and Census Tracts 93251 and 93206 in Kern County. Table 3.11-1 provides population data from the CVSR Project vicinity and provides comparative data for San Luis Obispo and Kern counties and the State of California based on the 2000 U.S. Census, ACS, and California Department of Finance population estimates.

Table 3.11-1. Population Data for the Region of Influence and State of California

Geographical Area	Population 2000[1]	Population 2006-2008[2]	Population Estimate, 2010[3]
Census Tract 93453	2,678	--	--
Census Tract 93251	296	--	--
Census Tract 93206	2,076	--	--
San Luis Obispo County	246,681	262,238	273,231
Kern County	661,645	785,953	839,587
State of California	36,418,499	36,418,499	38,648,090

Sources:
[1] U.S. Census Bureau 2000.
[2] ACS estimate 2006-2008.
[3] California Department of Finance 2010.
Note:
-- = Not Available.

According to the California Department of Finance population estimate, the San Luis Obispo County population was estimated to be 273,231 persons as of January 1, 2010, and according to the 2000 U.S. Census, the population for Census Tract 93453 was 2,678. Kern County's population was 839,587 persons as of January 1, 2010, and according to the 2000 Census, the populations of Census Tracts 93251 and 93206 were 296 persons and 2,076 persons, respectively.

Racial and ethnic data was collected from the U.S. Census Bureau for the affected area, along with comparative data from San Luis Obispo County, Kern County, and the State of California (Table 3.11-2). Racial and ethnic populations statewide and in both counties are comparable, with Whites comprising approximately two-thirds of the state population as well as most of the populations for Kern (63.2 percent) and San Luis Obispo (85.5 percent) counties.

Table 3.11-2. Total Percentage of Population by Race and Ethnicity[1]

Geographic Area	White	African American, Black	Native American, Alaskan, Aleut	Asian, Pacific Islander	Some Other Race	Latino, Hispanic[2] (of any race)
Census Tract 93453	90.6	0.3	1.6	0.7	2.8	10.8
Census Tract 93251	88.9	0.0	0.0	0.3	7.4	14.9
Census Tract 93206	39.0	3.2	1.2	0.4	52.2	65.7
Kern County	63.2	5.7	1.0	0.1	22.5	46.2
San Luis Obispo County	85.5	1.9	0.9	3.2	5.4	18.8
State of California	60.9	6.2	0.8	12.7	16.0	36.1

Notes:
[1] ACS 2005-2009 estimation.
[2] For Census 2000, there are two minimum categories for ethnicity: Hispanic or Latino or Not Hispanic or Latino. The Federal Government considers race and Hispanic origin to be two separate and distinct concepts. Hispanics and Latinos may be of any race (U.S. Census Bureau 2000). As a result, the percentages provided in Table 3.11-2 exceed 100 percent.

Census Tract 93453 is 90.6 percent White, and Census Tract 93251 is 88.9 percent White. Census Tract 93206 includes proportionally lower numbers of Whites (39.0 percent) with 61 percent of the people identifying themselves as African American, Black, Native American, Asian/Pacific Islander, Latino/Hispanic, or Some Other Race. Therefore, one of the census tracts for the proposed action (Census Tract 93206) includes minority populations that are statistically higher than those in San Luis Obispo County, Kern County, or the State of California.

3.11.2.2 Income and Poverty Level

Table 3.11-3 lists income statistics for the affected area. According to the 2000 Census, the median household income for San Luis Obispo County was $57,722, and the median household income for Kern County was $46,442, both of which were below the California state median income. Median incomes in Census Tracts 93453 and 93251 are fairly similar and consistent with the state and county median incomes at $44,545 and $53,750, respectively. Census Tract 93206 had a median household income of $26,912, which is notably lower than the median incomes for Kern County and the state. Per capita income, which is often used as a measure of wealth of a particular group, is the average individual income of a person in a defined population. The per capita income for Kern County ($46,442), San Luis Obispo County ($57,722), and California ($61,151) are fairly similar, while the per capita income for Census Tract 93206 is markedly lower at $10,722. The percentage of individuals living below the poverty level ranges from 5.7 percent for Census Tract 93453 to 27.8 percent for Census Tract 93251.

3.11.2.3 Housing Availability

Table 3.11-4 provides total housing units, vacancy rates, and available housing units for San Luis Obispo and Kern counties. Based on total housing units and vacancy rates, more than 10,000 housing units are available in San Luis Obispo County, and more than 27,000 units are available in Kern County.

Table 3.11-3. Socioeconomic Indicators for the Project Vicinity, San Luis Obispo County, Kern County, and California

Geographic Area	Median Household Income	Per Capita Income	Percentage of Individuals Below the Poverty Level (2000)
Census Tract 93453	$44,545	$21,466	5.7
Census Tract 93251	$53,750	$17,240	12.4
Census Tract 93206	$26,912	$10,722	27.8
Kern County	$46,442	$20,410	16.8
San Luis Obispo County	$57,722	$29,966	12.8
State of California	$61,154	$29,405	14.2

Source: ACS 2005-2009 estimation.
Note: Median Household and Per Capita incomes in 2008 inflation-adjusted dollars, exception as noted.

Table 3.11-4. Housing Indicators

Geographic Area	Total Housing Units	Housing Vacancy Rate (percent)	Available Housing Units[1]
San Luis Obispo County	117,319	9.29%	10,899
Kern County	279,769	9.85%	27,557

Source: ACS 2005-2009 estimation.
Note:
[1] Available Housing Units calculated by multiplying Total Housing Units by Vacancy Rate.

3.11.2.4 Employment

For the purposes of this analysis, employment profiles for the affected area were compiled based on information on occupational sections from the 2009 annual update of the employment data from ACS. Industry sectors examined include: management, professional, and related occupations; service occupations; sales and office occupations; farming, fishing, and forestry occupations; construction, extraction, and maintenance occupations; and production, transport, and material moving occupations. According to the California Employment Development Department, Labor Market Information Division, the unemployment rate in Kern County is 14.4 percent, and the unemployment rate in San Luis Obispo County is 9.4 percent. Table 3.11-5 displays the 2009 employment profiles in Kern and San Luis Obispo counties.

Table 3.11-5. 2009 Employment Profile

Industry	Kern County		San Luis Obispo	
	Employment by Occupation	Percent of Total	Employment by Industry	Percent of Total
Management, Professional, and Related	77,107	25.9	42,114	34.6
Service	54,884	18.5	25,525	20.9
Sales and Office	68,561	23.1	32,175	26.4
Farming, Fishing and Forestry	22,940	7.7	1,694	1.4
Construction, Extraction and Maintenance	35,859	12.1	11,482	9.4
Production, Transportation and Material Movement	38,047	12.8	8,857	7.3
Unemployment Rate		10.2		6.7
Employed Population	**297,398**		**121,847**	

Source: ACS Estimation 2009.

3.11.3 Environmental Consequences

3.11.3.1 Proposed Action

Population, Housing, and Employment

Construction of the CVSR would occur in three phases over an estimated 30- to 36-month period. The average daily number of workers onsite during a 36-month construction period would be 214 workers; with 257 workers onsite during a 30-month construction period. The typical peak number of construction workers onsite during a 30-month construction period would be 424 workers, although the short-term peak could be as high as 500 workers. Approximately 85 percent of this workforce would be hired from within San Luis Obispo and Kern counties (i.e., up to 360 persons). Workers coming to the site from areas outside of San Luis Obispo and/or Kern counties (i.e., maximum of 140 persons during short-term peak periods) would not substantially increase population in the CVSR Project vicinity and would not result in an increased demand for housing that exceeds the current supply. In addition, the Applicant would provide a 50-unit Temporary Construction Worker Accommodation Area within the CVSR site, which would further reduce the demand for housing. Operation of the CVSR would require 15 full-time staff hired from within San Luis Obispo and Kern counties, so no population or housing impacts would occur. While this increase in employment during construction and operation of the CVSR represents a small fraction of the total employment in both counties, this impact would, nonetheless, be beneficial.

Construction activities for reconductoring the Morro Bay–Midway transmission line, including tower replacement and modification, would be primarily completed by PG&E employees. Some work would likely be contracted out, including helicopter and crane operations, foundation construction, specialty transport, grading, and earth work. The construction activities are expected to take approximately 20 months to complete, and the maximum number of personnel required for construction labor is estimated at approximately 50 individuals. Reconductoring would not increase area population and would not increase the demand for housing. Population and housing impacts of the proposed action would, therefore, be short-term, negligible, and insignificant. No additional employees would be required for operation of the reconductored transmission line.

Environmental Justice

Environmental justice impacts could occur if there were any disproportionately high and adverse human health or environmental effects on minority or low-income populations. Census Tract 93206, within Kern County, includes minority populations of 61 percent of the total population and is statistically higher than those in San Luis Obispo County, Kern County, or the State of California. Any temporary impacts associated with construction, such as dust, noise, or hazardous spills, would be minimized or avoided through implementation of project design features identified in Appendix B and discussed in the applicable resource section. In addition, the Temporary Construction Worker Accommodation Area general rules would ensure that impacts on noise, hazardous spills, and biological resources are further reduced. Effects on environmental justice would, therefore, be minor and insignificant.

Socioeconomics

The proposed action would result in both short-term (during construction) and long-term (during operations) beneficial effects on the local and regional economy. Any influx of outside workforce would stimulate the local real estate market, and the proposed action would provide employment opportunities for local construction workforces. Additionally, local and regional communities would benefit from spending on project materials, discretionary spending by construction workers, and tax revenues collected for the proposed action.

California Valley Solar Ranch

Construction

Construction of the CVSR would require an average construction workforce of 214 to 257 workers per day, with a short-term peak of up to 500 workers. Approximately 85 percent of the workforce would be hired from within San Luis Obispo and Kern counties, with up to 50 percent hired directly from within the San Luis Obispo-Paso Robles area.

During the proposed three-year construction period, San Luis Obispo and Kern counties may have a direct increase in revenue from property and sales taxes generated by CVSR construction activities through expected construction costs and employment demands. Of the anticipated $1.3 to $1.4 billion in construction costs, the average benefit and overhead cost is $3.3 to $5.5 million to San Luis Obispo County and $1.8 to $3.7 million to Kern County. An estimated $31.4 to $53 million is anticipated from construction employment payrolls in San Luis Obispo County, with another $18 to $36 million anticipated in Kern County.

With the creation of up to 500 jobs directly from construction activities, the total San Luis Obispo County earning would rise by $55 to $81 million during the three-year period as services provided by local government agencies would be used, such as public safety and health inspection. San Luis Obispo and Kern County sheriff, fire protection, and land use code enforcement costs for the proposed action during the construction period would be $1.1 million to service the CVSR. As the CVSR is subject to sales and use taxes for construction and operation, an estimated 45 percent of material and equipment costs would be subject to sales tax such that San Luis Obispo County could receive $22 to $26 million during the construction period for distribution to the County General Fund, public safety, and San Luis Obispo Council of Governments Transportation Fund. The project would, therefore, have beneficial socioeconomic effects during construction.

Operations

Residual revenues generated for San Luis Obispo County via property and sales taxes would have long-term beneficial impacts that would supplement current revenues. The diversification of industry would also have a beneficial effect for the California Valley area. The estimated annual operation cost of the proposed action is $2.9 million with approximately $368,000 going to labor wages, benefits, and employer costs occurring in San Luis Obispo County. The overall direct, indirect, and induced impact of the proposed action would have a beneficial effect on the economic activities occurring in both counties as a result of direct changes in the demand for goods and services. The estimated 25-year operational period of the CVSR would increase San Luis Obispo County earnings by $2.5 million. Public service expenditures and other marginal costs associated with the operation of the CVSR are considered to have a minor, indirect effect because these costs typically increase due to changes in population, workforce, and socioeconomic conditions in the area. However, an estimated $620,000 in total costs by San Luis Obispo County departments (fire and code enforcement) servicing the CVSR during its operational period is anticipated. The property tax impact, as a result of changes in the estimated assessment value for the CVSR, is expected to generate approximately $806,000 with an increase in county revenue by about $227,000 annually from parcels within the CVSR Project perimeter indicating a direct, long-term benefit.

Morro Bay–Midway Transmission Line Reconductoring

Reconductoring of the Morro Bay–Midway transmission line and construction of the Caliente switching station would be carried out primarily by PG&E employees, and the contracted workforce would be minimal. A maximum estimated number of personnel required for construction would be approximately 50 individuals who either reside in the surrounding area or would be housed temporarily in accommodations in the CVSR Project vicinity. Reconductoring would, therefore, create a minimal demand for labor and housing as it is anticipated that most of the temporary housing for personnel would be obtained in Bakersfield, Kern County. Construction activities related to the reconductoring are

expected to take approximately 20 months to complete. Additionally, because all work would occur on existing transmission lines, there would be no potential for the reconductoring work to affect property values in the vicinity of the transmission line. Therefore, reconductoring of the Morro Bay–Midway transmission line would have a minor, beneficial impact on local employment and no impact on housing.

3.11.3.2 Twisselman Aggregate Mine Establishment

While no construction activities are necessary for the Twisselman aggregate mine, operation of the mine would be tied largely to construction of the proposed action; therefore, the CVSR's impacts on socioeconomics incorporate the Twisselman aggregate mine's Phase 1 operational extraction activities at the mine. Phase 2 and 3 operational activities would be primarily self-serve, with purchasers loading their own trucks, and up to two employees onsite on an intermittent basis. Therefore, due to the low number of workers required, impacts on employment levels would be minor. Further, because the Twisselman aggregate mine is an existing borrow pit, which was recently in operation and would return to historic levels of use after construction, establishment of the mine for the proposed action would not alter property values. Therefore, effects related to socioeconomics would be insignificant.

3.11.3.3 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; none of the short-term or long-term beneficial socioeconomic impacts would occur. In addition, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.12 Public and Occupational Health and Safety

3.12.1 Regulatory Framework

3.12.1.1 Federal

Comprehensive Environmental Response, Compensation, and Liability Act

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or the Superfund) of 1980, as amended, and pursuant to the National Oil and Hazardous Substances Pollution Contingency Plan, the EPA has the responsibility for responding to the release or threat of release of oil, petroleum products, hazardous substances, or pollutants and contaminants that pose an actual or potential threat to human health or welfare or to the environment. CERCLA authorizes short-term removal requiring prompt response and long-term remedial response actions to permanently and significantly reduce the dangers associate with releases or threats of release of hazardous substances. The National Contingency Plan established the National Priorities List, which lists hazardous waste sites that are eligible for long-term remedial action financed under the federal Superfund program.

Occupational Safety and Health Act

The Occupational Safety and Health Act of 1970 recognized that personal injuries and illnesses incurred in a work setting result in reduced productivity, wage loss, and medical expenses. OSHA administers Occupational Safety and Health Standards (29 CFR Sections 1910 and 1926), which: (1) provide regulations for safety in the workplace; (2) regulate construction safety; and (3) require a Hazard Communication Plan to identify and inventory all hazardous materials for which material safety data sheets will be maintained. OSHA's standards ensure the health and safety of workers through enforcement, providing training, outreach, and education, establishing partnerships, and encouraging the continual improvement in workplace safety and health. Cal/OSHA retains jurisdiction over occupational safety and health issues in California.

Occupational Safety and Health Act Electrical Safety Standards

Title 29 CFR, Part 1910.302, Subpart S, Design Safety Standards for Electrical Systems, and 1910.331, Electrical Safety-Related Work Practices Standard (1990), provides a description of concepts and principles associated with electrical hazards and basic electrical safety for individuals. OSHA's electrical standards for construction recommend following general industry electrical standards whenever possible for hazards that are not addressed by industry-specific standards. The standards address concerns that relate to electrical hazards and exposures to such dangers as electrical shock, electrocution, burns, fires, and explosions. OSHA's electrical standards help minimize these potential hazards by specifying safety aspects in the design and use of electrical equipment and systems.

National Fire Protection Association 780, National Electrical Code

The National Electrical Code addresses electrical hazards through guidance related to installation of any electrical power system, including PV systems. The National Electrical Code covers the installation of electrical conductors, equipment, and raceways, signaling and communications conductors, and equipment and optical fiber cables for public and private premises. Article 690 of the National Electrical Code specifically covers installation and operational requirements for solar PV systems. The proposed action may require special permission from the San Luis Obispo County authority having jurisdiction for the enforcement of this code.

Federal Resource Conservation and Recovery Act

The RCRA regulates solar PV product end-of-life disposal. If solar panels are determined to be hazardous waste by the regulatory authority, the requirements of RCRA and Hazardous Waste Control Law (HWCL) would regulate their handling, recycling, reuse, storage, treatment, and disposal. Decommissioned or defective solar panels are currently considered hazardous waste if they do not meet the EPA Toxicity Characteristic Leaching Procedure standards (this determination varies depending on the technology used).

Solid Waste Disposal and Resource Conservation and Recovery Act

The Solid Waste Disposal Act of 1965 (as amended by the RCRA) establishes requirements for the management of solid waste and provisions for the design and operation of solid waste landfills. It authorizes states to carry out many functions of the Act through their own waste programs and laws. Title 40 CFR, Chapter I, Subchapter I, Solid Wastes, was established to implement the provisions of these acts.

3.12.1.2 State

Hazardous Waste Control Law, Title 26

The HWCL created the state hazardous waste management program, which is similar to, but more stringent than RCRA program requirements. The Act is implemented by regulations contained in Title 26 of the California Code of Regulations, which describes the requirements pertaining to the proper management of hazardous waste.

The California Environmental Protection Agency (CalEPA) Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under RCRA and the HWCL. Both laws impose cradle-to-grave regulatory systems for handling hazardous waste in a manner that protects human health and the environment. Under the HWCL, and Title 26, the generator of hazardous waste must complete a manifest which accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

California Code of Regulations, Title 22, Chapter 11

Title 22 of the California Code of Regulations (CCR), Division 4.5, Chapter 11, contains regulations for the identification and classification of hazardous wastes. The Code defines a waste as hazardous if it has any of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. Article 3 provides detailed definitions of each characteristic. Article 4 and 5 provide lists of RCRA hazardous wastes, non-RCRA hazardous wastes, hazardous wastes from specific sources, extremely hazardous wastes, hazardous wastes of concern and special wastes.

California Integrated Waste Management Board Solid Waste Policies, Plans, and Regulations

The Integrated Waste Management Act of 1989 (PRC 40050 et seq. or Assembly Bill 939, codified in PRC 40000), administered by the California Integrated Waste Management Board, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. This law set reduction targets at 50 percent by the year 2000. To assist local jurisdictions in achieving these targets, the California Solid Waste Reuse and Recycling Access Act of 1991 requires all new development to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials. The San Luis Obispo County Integrated Waste Management Authority oversees implementation of this program.

California Occupational Safety and Health Regulations, Title 8

The primary intent of the Title 8 requirements is to protect workers; compliance with some of these regulations also reduces potential hazards to non-construction workers and others in the vicinity of proposed construction activity, as a result of required controls related to site monitoring, reporting, and other activities. Worker safety on construction projects is the responsibility of the California Department of Industrial Relations, Occupational Safety and Health Regulations (Cal/OSHA, CCR Title 8). Cal/OSHA establishes requirements for safe working conditions and safety-related reporting in the state and for electrical safety (Electrical Safety Orders).

Fire Safety

In 2008, the Office of the State Fire Marshall (in partnership with interested local fire officials, building officials, and industry representatives) published a draft Solar Photovoltaic Installation Guide. This guide was developed to increase public safety for all structures equipped with solar PV systems. It was developed for PV systems associated with residential and commercial buildings, but some of the information about marking, access, pathways, smoke ventilation, location of direct current conductors, and ground mounting is applicable to public safety (CAL FIRE 2008).

Photovoltaic Product Disposal and End-of-life Regulation

Regulation of solar PV products' end-of-life disposal is based on the federal RCRA and on the California HWCL. If solar panels are determined to be hazardous waste by the regulatory authority (San Luis Obispo County), the requirements of RCRA and HWCL would regulate their handling, recycling, reuse, storage, treatment, and disposal.

3.12.1.3 Local

San Luis Obispo County

San Luis Obispo County has several plans and regulations related to hazards and public safety. The Safety Element of the San Luis Obispo General Plan has two main principles: to be ready for disaster and to manage development to reduce risk. The Safety Element covers hazards related to flooding, geology, fire, hazardous materials, and other hazards, such as requiring fire resistant building materials, maintaining firefighter access around structures, and reviewing commercial projects that involve hazardous materials. The San Luis Obispo County Land Use Ordinance, Section 22.10.070 also includes requirements for

flammable and combustible liquid storage. The San Luis Obispo County Emergency Operations Plan sets policies pertaining to emergency planning and response.

Regarding waste management, in accordance with AB 939, the San Luis Obispo County Integrated Waste Management Authority Ordinance No. 2008-3 establishes mandatory 50 percent recycling rate requirements in order to reduce the amount of recyclable material in landfills. The San Luis Obispo County General Plan Energy Element also encourages source reduction and recycling of solid waste generated in the County to reduce energy consumption. The County Land Use Ordinance determines when new land uses must include provision of identified trash collection, pick-up and recycling areas, and sets design standards for such areas.

Kern County

The Kern County Safety Element has multiple goals to minimize injury and loss of life and reduction of property damage through the reduction of economic and social disruptions caused by earthquake, fire, flooding and other geological hazards. The Safety Element encourages extra precautions for the design of utilities.

Regarding waste management, the Kern County Environmental Health Services Department regulates the handling and collection of solid waste through the Waste Management Department, as described by County Ordinance Title 8, Chapter 8.28 (Solid Waste).

3.12.2 Affected Environment

3.12.2.1 California Valley Solar Ranch

Waste Management

No solid or wastewater facilities exist within the CVSR site perimeter. Regional disposal practices include direct haul by residents and private garbage companies to disposal sites. Residents in Shandon, California Valley, and Whitley Gardens have garbage pickup available. A small disposal site is operated by the nearby California Valley Community Services District. Solid waste landfills in the CVSR site vicinity and their capacity and throughput are listed in Table 3.12-1.

Table 3.12-1. Solid Waste Capacity

Facility Name	Total Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity	Maximum Throughput (tons per day)
Cold Canyon Landfill	10,900,000	2,800,000	26%	1,200
Chicago Grade Landfill	8,950,220	8,329,699	93%	500
Paso Robles Landfill	6,495,000	5,327,500	82%	450

Source: SLO County 2011a.

Hazardous Materials/Waste Evaluations

A review of environmental databases was conducted to identify those sites known to be associated with releases of hazardous materials or wastes within the vicinity of the proposed action (EDR 2009; EPA 2009; California Department of Toxic Substances Control [DTSC] 2009; SWRCB 2009). No known contaminated sites were identified outside the CVSR site perimeter within 0.5 mile, but one site was identified within the CVSR site perimeter: Temblor Gypsum Co., Farming Camp Mine. It was listed in the MINES database, but shows no reported violations (EDR 2009).

Phase I and II Environmental Site Assessments were conducted for the proposed action in 2009 and 2010. It was determined that the sites assessed do not pose a significant threat to human health or the

environment. There were no indications of improper storage or disposal of chemicals, fuels, or other hazardous waste (URS 2008; E & E 2010a; E & E 2010b).

Fire Hazards

San Luis Obispo County is classified by CAL FIRE as having very high fire severity risk areas. According to the County Safety Element, the CVSR site is within a medium fire safety risk area (SLO County 1999) and responsibility for fire response is divided between local and state/federal agencies. The ungraded areas along the western, northern, and eastern margins of the CVSR site perimeter are covered with California (non-native) annual grassland, which is considered a low-fuel load type and is one of the easier vegetation/habitat types to manage during fire conditions.

The area of the CVSR site is served by the Carrizo Plain Fire Station (Station 42) under the jurisdiction of CAL FIRE, which provides fire protection services under contract with San Luis Obispo County. The station is staffed 24 hours per day, three days per week; volunteer responders are on call the remaining four days. Fire-related emergency response time to the site is rated at 10 minutes (SLO County 2011a).

Disease Vectors

A disease vector is any organism capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including mosquitoes, flies, fleas, cockroaches, mites, rats, or fungi.

The CVSR site is located in an area that may harbor the soil borne fungus that causes the disease Desert Valley Fever. Coccidioidomycosis (Valley Fever, or Cocci) is endemic to San Luis Obispo County. The organism that causes the fever can be stirred into the air by soil disruption, such as farming, construction, or wind. When the fungi enters the lungs, it causes acute coccidiodomycosis that either goes away with time or requires treatment with antifungal medications. According to the San Luis Obispo County Health Agency, 54 cases were reported in North County and 32 cases were reported in South County in 2008, with a total of 86 cases. This statistic is lower than the reported 160 cases in 2007, which has been attributed to more aggressive public health education outreach efforts. Individuals with the greatest risk of contraction are typically in construction/landscape occupations, which accounted for more than 18 percent of reported cases in 2007 and 2008.

3.12.2.2 Reconductoring

Waste Management

Similar to the CVSR, regional disposal practices include direct haul by residents and private garbage companies to disposal sites. The landfills closest to the Morro Bay–Midway transmission line are shown in Table 3-12.1.

The Clean Harbors Buttonwillow hazardous waste treatment and disposal facility is located approximately 0.25 mile north of the transmission line at MP 26. Several documented contaminated sites are located within 0.5 mile of the transmission ROW. In addition, a documented release of gasoline into groundwater occurred in 1989 at the Buttonwillow Fire Station located approximately 0.5 mile north of the transmission line at MP 34 (Geotracker 2010). The case is currently open with remediation underway.

A second leaking underground storage tank (UST) was detected in 1997 at the Alvidres Unocal site, adjacent to the Buttonwillow Fire Station (Geotracker 2010). Tests for soil and groundwater contamination are ongoing, and no remediation has begun (Geotracker 2010). Three other UST sites with past leaks are located within 0.5 mile of the transmission line; however, these spills have been fully remediated, and the cases are closed. Several documented releases of crude oil have been reported from the Cymric Oil Field, located within 0.25 mile of the transmission line at MP 18.5.

The following two facilities, in addition to those listed in Table 3.12-1, are located in the vicinity of the proposed Morro Bay–Midway transmission line reconductoring alignment: Shafter-Wasco Landfill (68 percent capacity remaining, 7,901,339 of 11,635,500 CY) and Taft Landfill (76 percent capacity remaining, 6,679,433 of 8,787,547 CY) (SLO County 2011a).

Fire Hazards

The Caliente switching station and the section of the Morro Bay–Midway transmission line to be reconductored pass through areas of low and moderate fire hazard severity (SLO County 2011a). In San Luis Obispo County, the transmission line is served by the Carrizo Plain Fire Station (Station 42). This station is staffed 24 hours per day, three days per week; volunteer responders are on call the remaining four days. In Kern County, the existing transmission line is served by the Kern County Fire Department's Station 25 in Buttonwillow and Station 24 in McKittrick.

Disease Vectors

Similar to the solar generating facility, the Morro Bay–Midway transmission line reconductoring would be located in an area that may harbor the fungus that causes the disease Valley Fever.

Electromagnetic Fields

Electromagnetic fields (EMFs) are common throughout nature and are produced by all living organisms. Concern over EMF exposure, however, generally pertains to human-made sources of electromagnetism and the degree to which they may have adverse biological effects or interfere with other electromagnetic systems. Possible health effects associated with exposure to EMFs have been the subject of scientific investigation since the 1970s. Reviews of the scientific literature have consistently indicated insufficient evidence of an association between EMF exposure and adverse health effects in humans (National Institute of Environmental Health Sciences 1999; World Health Organization 1984 1987, 2001, 2007).

3.12.3 Environmental Effects

3.12.3.1 Methodology

Activities associated with construction and operation of the CVSR and reconductoring of the Morro Bay–Midway transmission line were analyzed to determine if they would be conducted in accordance with local, state, and federal regulations to protect the health and safety of employees and the general public, as described below. The proposed action's effect on solid waste and wastewater management was evaluated based on the ability of waste facilities and existing services in the CVSR Project vicinity to meet demands of the proposed action during construction and operation.

3.12.3.2 Proposed Action

California Valley Solar Ranch

Construction

Very small quantities of hazardous materials would be used or stored onsite during construction or operation of the CVSR, mainly for vehicle and general maintenance purposes. No radioactive waste material would be used or transported as part of the proposed action. A gas storage tank would be occasionally used during operation for refueling of construction vehicles.

The Applicant would prepare and adhere to a Hazardous Materials Business Plan; a site-specific Spill Response Plan; a Spill Prevention, Control, and Countermeasures Plan; a Certified Unified Program Agency Business Plan; and a Hazardous Waste Management Plan. The Applicant would also hire a licensed herbicide applicator for construction and operations, and in the event that contaminated soils are discovered, the Applicant would sample and test contaminated soil. All project activities would be carried out in compliance with OSHA and Cal/OSHA requirements, reducing potential risk of accident or injury

to workers. The Applicant would also prepare a Fire Safety Plan for construction and operations and would work with CAL FIRE and the County Fire Department to develop a process during Red Flag Warning times (as issued by the National Weather Service) where the Applicant would cease work during times of high wildfire risk, as determined necessary. The Applicant would also coordinate traffic during emergencies, designate an Emergency Response Liaison, and provide suitable temporary helicopter landing areas near construction areas on the CVSR site.

The Sheriff's Department would also review construction plans and approve access plans for emergency and patrol vehicles, and the Applicant would ensure funding for all San Luis Obispo County staffing impacts. Therefore, the effect on public or occupational health related to hazardous materials, wildfire risk, or other emergencies would be negligible and not significant.

Safety planning and regular training sessions would ensure the employees are adequately prepared to address any site-specific operations hazards, such as electrocution, wildfire safety, accidents, or exposure to disease vectors. Dust control measures and the integration of San Luis Obispo Health Agency Interim Valley Fever Recommendations for Workers into construction operations would reduce exposure to Valley Fever. Therefore, effects on public or occupational health related to disease vectors would be negligible and not significant.

During construction, estimated waste generation would amount to 12,762 CY over a 36-month construction period, or 12 CY per day, or one standard 40-CY bin every three days. The Applicant would contract with a hauling firm licensed by San Luis Obispo County to provide solid waste and recycling services. Landfills in the CVSR Project vicinity would provide adequate capacity to accommodate construction waste as shown in Table 3.12-1. In addition, the Applicant would recycle 50 percent of construction waste by weight and provide documentation of demolition and waste recycling; therefore, effects on solid waste facilities would be minor and not significant.

On-site portable toilets would be provided for the contractors during the construction period and would be serviced by a local contractor such that they would have a negligible effect on solid waste services in the CVSR Project vicinity; therefore, effects would not be significant.

Operations

The grassland fire risk at the CVSR site could pose a risk of damage to facilities and worker health during construction and operations; however, the Applicant would install electrical safety signage on all wiring and all electrical conduit. Solar arrays are constructed out of fire resistant materials and are not subject to threat of wildland fires. The underside of the PV modules would be protected from grassfires by ongoing vegetation management of the CVSR site through implementation of a controlled grazing plan. In addition, a defensible space would be maintained around the CVSR Project perimeter to provide a primary fire safety zone. In addition, on-site fire safety measures would include the installation of fire sprinklers, a water tank, and a fire hydrant. Therefore, effects from wildland fire would not be significant.

The proposed action would generate reverse osmosis waste in evaporation ponds. Reverse osmosis waste consists of water, salts, metals, minerals and organic and inorganic contaminants, and is generally considered non-hazardous. Nonetheless, the Applicant proposes to transport wastes from the reverse osmosis process on a regular basis to the Kettleman Hills hazardous waste facility in Kings County. Generation and transport of reverse osmosis waste would not result in a hazard to the public or the environment, and effects would, therefore, not be significant.

During the operational phase, the Applicant would contract for domestic solid waste disposal services from the California Valley Community Services District service or would self-haul appropriate items to licensed facilities. The rate of waste generation would be very low during operations due to the minimal staff needed to operate and maintain the site. Similar to the construction phase, the Applicant would contract with a hauling firm licensed by San Luis Obispo County to provide both solid waste and

recycling services and would meet the 50 percent recycling requirement; therefore, effects on these services would be negligible and not significant.

A septic tank and leach field would be constructed north of the O&M building to treat project wastewater flows. The septic system and leach field design would meet applicable San Luis Obispo County permitting engineering design specifications. The engineered fill will be designed to create a profile to handle the percolation of wastewater effluent consistent with all County and RWQCB regulations. No effects are anticipated on groundwater or any community wastewater service provider and are, therefore, not significant.

Decommissioning

During decommissioning, most components installed as a result of the proposed action would be removed and recycled. At that time, a demolition permit would be obtained, which would be subject to environmental review, therefore ensuring that all materials would be removed and recycled according to regulations in place at that time.

Morro Bay–Midway Transmission Line Reconductoring

Construction

PG&E would submit a Hazardous Substance Control and Emergency Response Plan to the CPUC for recordkeeping at least 30 days prior to construction. The Plan would identify methods and techniques to minimize the exposure of the public to potentially hazardous materials during all phases of construction through operation. PG&E would also establish an Environmental Monitoring and Training Program, Health and Safety Plan, Fire Prevention and Response Plan, use a licensed herbicide operator, and work with CAL FIRE/County Fire to develop a process during Red Flag Warning times to cease work during times of high wildfire risk. Contaminated soils would be disposed of properly. Therefore, the effect on public or occupational health related to hazardous materials, wildfire risk, or other emergencies would be negligible and not significant.

Operations

PG&E would work with CAL FIRE/County Fire to develop a process during Red Flag Warning times to cease work during times of high wildfire risk. Effects on public and occupational health would, therefore, be negligible and not significant.

3.12.3.3 Twisselman Aggregate Mine Establishment

No hazardous materials would be stored onsite at the Twisselman aggregate mine. All fuel and maintenance supplies would be stored offsite and delivered as needed for fueling or maintenance. Mining activities would not generate hazardous waste. Development and implementation of the site-specific spill response plan and hazardous materials business plan would reduce direct effects from transport or use of hazardous materials and would not be significant.

The Twisselman aggregate mine would be required to comply with OSHA and Cal/OSHA requirements for personnel safety and with the SMARA, which would ensure safe and proper closure at the completion of mining activities. Mining activities would also be required to comply with the airborne toxic control measure adopted by CARB. Although naturally occurring asbestos is a concern for some geologic types in the CVSR Project vicinity, the Applicant and APCD have concurred that there is no asbestos within the CVSR Project perimeter. Effects on public health and safety from the proposed mine operations due to hazardous materials and wildfires would be similar to past operations; these negligible effects would not be significant.

The Twisselman aggregate mine does not require construction activities, and operation would be largely tied to construction of the proposed action; therefore, the impacts of the proposed action on waste

management already incorporate the operational activities at the mine. The Twisselman aggregate mine would be largely independent of public utility systems, with mining process wastewater treated in sedimentation basins, waste rock stockpiled for later reclamation, and sanitary waste addressed through the use of portable toilets. Therefore, the aggregate mine would generate little demand on solid or wastewater treatment facilities and would result in negligible effects that are not significant.

3.12.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed; therefore, there would be no effects associated with the proposed action on public and occupational health and safety. However, the no action alternative would not contribute to assisting the State of California in meeting its renewable energy goals and would not support the San Luis Obispo County's goals and policies that advocate the development of renewable energy sources.

3.13 Intentional Destructive Acts

3.13.1 Regulatory Framework

Uniting and Strengthening America (USA) Provide Appropriate Tools Required to Intercept and Obstruct Terrorism (PATRIOT) Act of 2001

The Uniting and Strengthening America (USA) Provide Appropriate Tools Required to Intercept and Obstruct Terrorism (PATRIOT) Act of 2001 authorizes the enhancement of domestic security services to prevent and counter terrorism and fortify critical infrastructure for the purposes of information and intelligence gathering. The Act expanded the definition of terrorism to include domestic terrorism and increase the applicability of law enforcement powers. Under the Act, electrical power systems are considered critical infrastructure essential to the minimal operations of the economy and government (Sec 2(9)) warranting specific protection in light of domestic terrorist threat.

Homeland Security Presidential Directive-7 (HSPD-7), Critical Infrastructure Identification, Prioritization and Protection

Homeland Security Presidential Directive-7 (HSPD-7) established the policy for federal agencies and departments to identify and prioritize U.S. critical infrastructure and key resources for protection against terrorist attacks. The directive provides the roles of federal, state, and local agencies to make strategic improvements and enhancements in securing critical infrastructure described and defined in the USA PATRIOT Act. Under HSPD-7, the DOE is designated at the Sector-Specific Agency with oversight of the implementation of protection policies and protocols, encouragement of risk management strategies and facilitation of vulnerability assessments for the energy sector to include production, refining, storage, and distribution of oil, gas, and electric power except for commercial nuclear power facilities.

3.13.2 Affected Environment

San Luis Obispo County is actively engaged in homeland security and emergency preparedness activities through its Office of Emergency Services. The Office of Emergency Services hazard analysis indicates that San Luis Obispo County is at risk for natural and manmade disasters, with the focus on a potential for hazardous materials incidents due to the presence of two operational nuclear power plants within the County. The California Transit Security grant program assigns the County to the Urban Security Area Initiative region with Santa Barbara, Ventura, and Los Angeles. Through Homeland Security, Domestic Preparedness, and Transit Security Grant Programs, the County has obtained training, equipment, and infrastructure upgrades to support and enhance preparedness efforts in the operational area. This includes the acquisition of chemical, biological, radiological, nuclear, and explosive detection equipment, interoperable communications, and planning focused on pre-identified hazards.

Kern County is also engaged in homeland security and emergency preparedness activities. The Kern County Terrorism Response and Recovery Contingency Plan (2003) contains response procedures for emergency incidents with an emphasis on terrorist incidents involving weapons of mass destruction. The Terrorism Response and Recovery Contingency Plan is intended to supplement the Kern County Emergency Plan.

3.13.3 Environmental Effects

3.13.3.1 Methodology

The construction and operation of the proposed action were considered against the existing context of terrorism-based risk and the capability of project-related personnel, as well as the ability of local response agencies, to respond to terrorism incidents.

3.13.3.2 Proposed Action

California Valley Solar Ranch

The substation and switchyard areas would have standard 7-foot-tall chain-link fencing topped by barbed wire, and solar arrays would also be fenced. All areas of the O&M building would be access-controlled with security personnel performing regular rounds. The entire solar facility would be under 24-hour closed circuit camera surveillance. To limit access and deter intruders, all authorized personnel (employees and contractors) would be issued proper identification to regulate entry into the facility, including office and processing areas. With these security features, the risk of an intentional destructive act, including theft, vandalism, sabotage, or acts of terrorism intended to disable electrical generation or transmission at the CVSR site would be negligible.

As an energy generation facility, the CVSR would be eligible for inclusion on the County's list of critical infrastructure and subject to preparedness and response outreach efforts that may include planning, exercise participation, and response operations. Security personnel assigned to the facility would be responsible for updating plans and coordinating with the San Luis Obispo County Office of Emergency Services. Based on an analysis of the terrain and susceptibility to terrorism, San Luis Obispo County has determined that it is not exposed to risk from terrorist events. Nonetheless, the County has undertaken activities to decrease risks associated with manmade emergency incidents in exercise, training, and planning initiatives. Therefore, risks associated with intentional destructive acts, including terrorism, would be minor and not significant.

Morro Bay–Midway Transmission Line Reconductoring

As a utility service provider, PG&E is responsible for providing the following information to public safety agencies upon request: utilities service area, grid, and infrastructure information. Impacts associated with construction and operation of the transmission line reconductoring would be similar to those associated with the CVSR, while the potential to increase risk of terrorism-related incidence would be limited. No temporary or long-term major impacts would be expected to occur in an existing easement ROW from the construction or operation of the transmission line. Public access to the transmission line is limited. The emergency preparedness and response policies and protocols described in Section 3.13, Public and Occupational Health and Safety, would provide adequate reporting and training to ensure sufficient response mechanisms in the unlikely event of a terrorism-related issue. In addition, both San Luis Obispo and Kern counties have undertaken activities to decrease risks associated with terrorism. Therefore, risks associated with terrorism would be minor and not significant.

3.13.3.3 Twisselman Aggregate Mine Establishment

The Twisselman aggregate mine has been used by the landowner for approximately 10 years. The surface mine and subsequent mining activities are not considered critical infrastructure and do not require additional analysis.

3.13.3.4 No Action Alternative

Under the no action alternative, the DOE would not issue a loan guarantee for the proposed action. If the proposed action is not funded elsewhere, the CVSR Project would not be constructed. Therefore, the CVSR Project would not be incorporated into the regional security area initiative that provides additional funding related to securing critical infrastructure for the area to support emergency response and training activities.

4 Cumulative Effects

This chapter describes the cumulative environmental effects that could result from implementing the proposed action. A cumulative effect is defined as the impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR Part 1508.7).

This chapter defines the area DOE considered in the cumulative effects analysis, provides an overview of relevant past and present actions in the CVSR Project vicinity, presents the reasonably foreseeable actions in the area of consideration based on information from local planning agencies and the available documentation for future projects, and concludes with a cumulative effects analysis that covers all resources to which the proposed action would contribute environmental effects.

Further, it should be noted that in the Final EIR, the County identified significant impacts to several environmental resources based on CEQA significance criteria and analysis methodology. Because of the differences in the proposed project at the DOE stage and between San Luis Obispo County's and DOE's impact evaluation criteria, the impacts of the project are different when evaluated under NEPA. Differences in the NEPA evaluation criteria, methodology, and impact conclusions are presented in detail in Section 3.1, Land Use and Visual Resources, Section 3.2, Agricultural Resources, Section 3.3, Transportation, and Section 3.4, Noise, of this EA. Based on the differences in the project descriptions, methodology used, and the differences in impacts identified in the Final EIR, the cumulative impacts identified in this chapter are less significant than those identified in the EIR.

4.1 Area of Evaluation

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The area within which a cumulative effect can occur varies by resource. For example, traffic and noise impacts tend to be localized, while air and biology impacts are typically dispersed over larger areas. The geographic scope of each analysis is based on the topography surrounding the proposed action and the natural boundaries of the resource affected, rather than jurisdictional boundaries.

The geographic scope for the CVSR site includes parts of the San Luis Obispo County APCD jurisdiction. Because emissions associated with the Morro Bay–Midway transmission line would be minor, the cumulative analysis for the air quality focuses on sources within 10 miles of the CVSR site. The geographic extent for the analysis of cumulative impacts related to biological resources includes the Carrizo Plain and surrounding areas (including the Carrizo Plain National Monument) in San Luis Obispo County, the Panoche Valley in San Benito County and portions of the San Joaquin Valley. These areas contain remaining habitat for many of the special status species that would be impacted by the CVSR Project and establishment of the Twisselman aggregate mine. Habitat within these regions supports core populations of listed wildlife species including San Joaquin kit fox, giant kangaroo rat, and blunt-nosed leopard lizard.

The geographic extent for the analysis of cumulative impacts to cultural resources consists of the Carrizo Plain and Central Valley, lower San Joaquin Valley. It is likely that cultural resources similar to those in the APE for the proposed action are present throughout the Carrizo Plain and Central Valley, and that ground disturbance required for existing and reasonably foreseeable projects would likely have impacted or could impact similar resources. For paleontological resources, the geographic extent for cumulative analysis includes both San Luis Obispo and Kern counties because geologic formations similar to those documented at the CVSR site, along the Morro Bay–Midway transmission line and the Twisselman aggregate mine site underlie much of both counties.

The geographic scope of the cumulative impact analysis for water resources includes the Carrizo Plain Groundwater Basin within San Luis Obispo County. For aesthetic resources, the geographic scope of cumulative impacts is that area where the CVSR Project and Twisselman aggregate mine facilities occupy the same field of view as other built facilities or impacted landscapes and includes the Solar Generation Facility site, interconnection line ROW, Caliente switching station site, the Twisselman aggregate mine site, and the reconductoring ROW.

Because noise impacts would generally be localized, the geographic extent for the analysis of cumulative impacts related to noise is generally limited to areas within approximately one mile of the CVSR Project and the Twisselman aggregate mine site, as well as along the haul truck routes. This area is defined as the geographic extent of the cumulative noise impact area.

The geographic extent for the analysis of cumulative impacts associated with agricultural resources consists of San Luis Obispo County and for transportation impacts; it would include the regional roadway network considered for analysis of the proposed action. Construction-related traffic impacts would mostly result from increased construction traffic on the regional roadways. Therefore, the geographic extent for the analysis of cumulative traffic and transportation impacts would include the affected portions of SR-33, SR-41, SR-46, SR-58, as well as Shell Creek Road, and San Juan Road (as listed in Table 3.1-1).

The geographic scope for reconductoring of the Morro Bay–Midway transmission line includes the Carrizo Plain for the biological resources analysis; the Carrizo Plain and lower San Joaquin Valley for the cultural and paleontological resources analysis; and the San Joaquin Valley Groundwater Basin (Kern County sub-basin) for the water resources analysis. The San Joaquin Valley Groundwater Basin would also be part of the geographic scope because the Morro Bay–Midway transmission line would be located within the San Joaquin Valley Groundwater Basin from transmission line MP 17 to MP 35.

Projects within one mile of the existing transmission line ROW were included in the cumulative impacts analysis of visual resources, noise, and agricultural resources. The immediate vicinity of the existing transmission line ROW includes parts of the northern section of the Carrizo Plain, part of the Temblor Range located in San Luis Obispo County and Kern County, and part of the San Joaquin Valley in Kern County. Resource areas that require a larger geographic scope to account for impacts typically dispersed over a large area include air, biological, transportation, water, cultural, and paleontological resources.

The temporal parameters for this cumulative effects analysis follow the anticipated lifespan of the proposed action, which is 25 years. The CVSR would be fully operational in 2012. The cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the CVSR.

4.2 Past and Present Actions

Past and present activities in the vicinity of the CVSR site consist primarily of dispersed recreation, livestock grazing, mineral exploration, and residential development activities. Currently, few residences are near the CVSR site. The California Valley Village, adjacent to the south side of the CVSR site, was originally conceived in 1960. Only a few homes have been developed to date—80 percent of which are

second homes that are not permanently occupied. Development and occupancy has been hampered on the 24,083-acre site due to the lack of community services, lack of water supply, low employment potential in the area, and remote location.

The Shandon-Carrizo planning area will likely continue to remain a viable agricultural area well into the future because of existing land uses and the prevailing agricultural dedication of the population (SLO County 2003). It is assumed that adjacent agricultural and livestock grazing activities within the area would continue into the foreseeable future in the same manner and to the same degree as they have been conducted in the present and recent past. The area is expected to experience limited population growth, related only to future increased demands for agricultural labor (SLO County 2003).

The westernmost 30 miles of the Morro Bay–Midway transmission line route is primarily undeveloped. The transmission line passes through the BLM-managed Lokern ACEC in Kern County. Petroleum extraction activities occur adjacent to and south of the ROW from MP 22 to MP 24. Agricultural operations occur within and adjacent to the ROW, including grazing and dry land grain cultivation operations west of MP 30.8 and irrigated crop production east of MP 30.8 (SLO County 2011b). From MP 33.4 to the Midway Substation (MP 35), the line crosses approximately 0.3 mile south of Buttonwillow. According to the Kern County Land Use, Open Space, and Conservation Element of the General Plan, land near the Morro Bay–Midway transmission line will remain dedicated to intensive agriculture uses, including irrigated crops, grazing, and dry land farming, as well as mineral and petroleum uses (Kern County 2007c). The BLM Bakersfield Field Office has proposed competitive oil and gas leasing of approximately 5,622 acres within 612,000 acres of public land in the Bakersfield region (BLM 2010).

Past and present actions that could contribute to the cumulative effects scenario are listed in Table 4-1. Many of the past and present actions in the cumulative effects scenario are limited in their geographic extent and would result in minor construction plans and renovations. San Luis Obispo County projects limited in their geographic extent include a limited number of single-family homes near the CVSR site, and several residential minor use permits. Kern County projects located within approximately 10 to 20 miles from the existing Morro Bay–Midway transmission line include a low-density residential development, an industrial park, and a gasification project. A hazardous waste landfill unit is located at MP 25 of the Morro Bay–Midway transmission line ROW.

4.3 Reasonably Foreseeable Actions

Reasonably foreseeable actions include solar projects and their associated facilities, which are expansive in nature and could create cumulative impacts despite the distance to the CVSR Project. The timeframe for actions considered reasonably foreseeable were those that had the potential to occur within a near-term time period as evidenced by submitted applications or those projects with approved permits that had not started construction at the time of publication of this Draft EA. Reasonably foreseeable projects that could contribute to the cumulative effects scenario are listed in Table 4-2. Collectively, the reasonably foreseeable actions along with the past and present actions, represent known and anticipated activities that may occur in the geographic extent of the cumulative analysis that have the potential to contribute to a cumulative impact on the environment.

Table 4-1. Past and Present Actions – Cumulative Projects List

Project	Location	Type	Status
Transmission Lines	San Luis Obispo County: (1) 115-kV Temblor–San Luis Obispo crosses CVSR site along SR-58 and (2) 500-kV Diablo Valley Canyon–Midway #1 and #2.	Utility	Transmission lines already in place.
SR-46, Corridor Improvement Project	San Luis Obispo County: Widen SR-46 from a two-lane to a four-lane expressway from Geneseo Road in Paso Robles to I-5 in phases over an extended multi-year period.	Transportation	67.7 million dollars allocated for widening SR-46 from Geneseo Road east to Almond Drive (expected construction start 2011). Remaining segments to start construction in 5 years.
California Valley Village	San Luis Obispo County: California Valley Village Reserve Area. Adjacent to the south side of CVSR site, south of SR-58.	Residential	Part of El Chicote Ranch subdivided in 1960 into more than 7,200 2.5-acre ranchos. Only a few homes have been developed to date.
Clean Harbors Hazardous Waste Disposal Facility Project	Kern County: North side of Lokern Road, 4 miles west of SR-58 and 2.5 miles east of SR-33, 8 miles west of Buttonwillow. Located at MP 25 of the Morro Bay–Midway transmission line.	Industrial	CUP to authorize construction of a large hazardous-waste landfill in an area formally permitted for eight smaller hazardous waste landfills. Final EIR issued August 1994; Supplemental EIR issued September 2004; original CUP issued December 1994; CUP extended July 2004.
Reina Ranch Project	Kern County: Southwest corner of Reina Road and Santa Fe Way, Northwest Bakersfield.	Residential/ Petroleum Resources	Two parcels (76 acres) to be subdivided into 253 low-density residential lots and a 2.5-acre parcel for a drill island for petroleum extraction. Draft EIR issued May 2009; construction to last one year.
Liberty Energy Center Biofuels Gasification Project	Kern County: 162.75-acre parcel located at 12421 Holloway Road, 10 miles northwest of Lost Hills, 6 miles north of SR-46 and about 5 miles west of I-5.	Industrial/ Gasification Project	Development of a gasification project as part of an existing composting operation. Draft EIR issued June 2010; construction may take up to 3 phases, each lasting up to 18 months.
Beech Avenue Industrial Park	Kern County: A half-mile south of Burbank Street and Beech Avenue, east of SR-43.	Industrial	Construction of 871,200-square-foot industrial park. Draft EIR issued March 2010. Phased development, with construction beginning in 2010 and ending in December 2014.

Sources: SLO County 2011a, Kern County 2010.

Table 4-2. Reasonably Foreseeable – Cumulative Project List

Project	Location	Type	Status
Topaz Solar Farm (First Solar)	San Luis Obispo County: Approximately 6 miles west of the CVSR; up to 4,100 acres within 7,800-acre study area.	Solar PV utility (550 MW)	Under environmental review by San Luis Obispo County. Construction estimated to take 3 years.
Solar Switching Station	San Luis Obispo County: North of the existing PG&E transmission line corridor within the Topaz Project boundary; approximately one mile north of SR-58; and approximately 6 miles west of CVSR.	Three bay, six-position breaker and a half configuration switching station	Under environmental review by San Luis Obispo County. Solar switching station site would be cleared and graded during the start of the Topaz Solar Farm project and completed during the first year of the project.
Panoche Valley Solar Farm (Solargen)	San Benito County: 100 miles north of the CVSR project within the Panoche Valley on 4,885 acres.	Solar PV utility (420 MW)	Final EIR issued by San Benito County. Construction estimated to take 5 years.
Agricultural Cluster Subdivision	San Luis Obispo County: 9689 Carissa Highway (SR-58), located on Sections 4 and 5 of Township 30 South, Range 18 East, overlapping with the southern part of Topaz Solar Farm Option A.	Cropland, Rangeland, Residential	Request for an agricultural cluster subdivision that would subdivide an existing 1,280 acre parcel into seven parcels ranging from 2.5 acres to 13.8 acres totaling 31.4 acres (2.5 percent of the site's total area) and one open space parcel of approximately 1,248 acres with a 2.5 acre building envelope.
Two Road Improvement Projects	Kern County: Holloway Road from SR-46 to Twisselman Road (10 mile segment); approximately 21 miles north of Morro Bay–Midway transmission line and Lerdo Highway, SR-33 to Westside Canal (7-mile segment); approximately 10 miles north of Morro Bay–Midway transmission line.	Transportation	Repairing, reconstructing, resurfacing roadways.
Elk Hills Solar by enXco	Kern County: Highway 119 east of Valley West Road; approximately 12 miles south of Morro Bay–Midway transmission line.	Solar Project	CUP to allow for the construction of a 47-acre 7 MW PV solar facility. Notice of Preparation (NOP) of DEIR issued March 2010.
Goose Lake Solar by enXco	Kern County: Corcoran Road and Carmel Road; approximately 16 miles northeast of Morro Bay–Midway transmission line.	Solar Project	CUP to allow for the construction of a 94-acre 15 MW PV solar facility. NOP of DEIR issued March 2010.
Eight solar projects, each located more than 20 miles from the Morro Bay–Midway transmission line reconductoring route	Kern County: Seven solar projects in Southern San Joaquin Valley and one solar project in Northwest Kern County.	Solar Projects	Southern San Joaquin Valley: San Bernard Solar by enXco (6 MW on 43 acres, NOP of DEIR issued March 2010); Old River I, II by Recurrent Energy (33 MW on 215 acres, application filed with Kern County on March 2010); Cygnus Solar by Fotowatio Renewable Ventures (80 MW on 423 acres, application not complete); Rigel Solar by Fotowatio Renewable Ventures (80 MW on 319 acres, application not complete); Orion Solar by Fotowatio Renewable Ventures (40 MW on 286 acres, application not complete); and Porter & Associates (20 MW on 321 acres, application incomplete).

Table 4-2. Reasonably Foreseeable – Cumulative Project List

Project	Location	Type	Status
			Northwest Kern County: Smyrna Solar by enXco (20 MW on 125 acres, NOP of DEIR issued March 2010).
Thirty-one Mobile Homes	San Luis Obispo County: Numerous locations within a 5-mile radius of the proposed action.	Residential	Applications received, extended; finalized and County permits issued.
Six Single Family Dwelling	San Luis Obispo County: Numerous locations within a 5-mile radius of the proposed action.	Residential	Applications held, finalized, and County permits issued.
Two Minor Use Permits	San Luis Obispo County: Clover Dale Trail, California Valley	Residential	Approved and accepted by the County.
Lost Hills Solar by NextLight	Kern County: East of SR-46 and SR-33.	Solar Project	307-acre 32.5-MW PV facility. Construction from 2010 to second quarter 2011. Blackwell Substation. Draft EIR issued July 2010.
Maricopa Sun Solar Complex Project by Maricopa Sun LLC	Kern County: West of I-5 and east of Taft.	Solar Project	6,046-acre solar farm (plus 2,960-acre future expansion). Construction start 2010; completion over an 8- to 10-year period. Draft EIR issued November 2010.
Rosedale and Renfro Project	Kern County: Northeast corner of Rosedale Highway (SR-58) and Renfro Road, west of Bakersfield.	Commercial	Shopping center development with up to 11 commercial building pads. Draft EIR issued May 2010; proposed opening 2011.

Sources: SLO County 2010f; Kern County 2010; Kern County Construction Services 2010.

Topaz Solar Farm

The Topaz Solar Farm is proposed approximately 6 miles west of the CVSR site. The proposed 550-MW solar PV plant includes 550 PV arrays, electrical equipment, access roads, a substation and switching yard, a solar energy learning center, as well as a monitoring and maintenance building. It would be located north of SR-58 and immediately east of Bitterwater Road. First Solar submitted a CUP application (DRC2008-00009) for the project in July 2008 to San Luis Obispo County and is in the process of preparing environmental permit and project documents. The original application consisted of 6,200 acres of agricultural land, 60 percent of which is currently under Williamson Act contracts (SLO County 2011a). Since the original filing, First Solar has revised the project description such that the project would be installed on up to 4,100 acres within an up to 7,800-acre study area. Construction of the Topaz Solar Farm is expected to begin in 2011 and be completed in 2014 (Topaz Solar 2010). The Draft EIS for the Topaz Solar Farm was issued in March 2011.

Solar Switching Station

The Topaz Solar Farm project would interconnect with the PG&E transmission system from the proposed Solar switching station. The Solar switching station work area would be approximately 600 by 650 feet (9 acres) and would be enclosed by a fence adjacent to the Topaz Solar Farm substation.

Panoche Valley Solar Farm

In applications dated August 2009 (updated in December 2009 and February 2010), Solargen Energy, Inc., requested permits from San Benito County to construct and operate the Panoche Valley Solar Farm, a 420-MW solar PV plant located along Little Panoche Road in the Panoche Valley of southeastern San Benito County. The project site consists of approximately 4,885 acres, located approximately 100 miles north of the CVSR site. As with the Carrizo Plain, the Panoche Valley, which is part of the Ciervo-Panoche Natural Area of western Fresno and eastern San Benito Counties, is one of the three core populations for the San Joaquin kit fox. For this reason, the Panoche Valley Solar Farm has been included in the cumulative analysis where appropriate. The Final EIR for the Panoche Valley Solar Farm was released by San Benito County, the CEQA lead agency, in September 2010 (San Benito County 2010).

Agricultural Cluster Subdivision

The Agricultural Cluster Subdivision is a request for a minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280-acre parcel into eight parcels. Seven parcels would range from 2.5 acres to 13.8 acres totaling 31.4 acres (2.5 percent of the site area), and one open space parcel would be approximately 1,248 acres with a 2.5-acre building envelope. Applicants would retain the future right to request the following development on the protected agricultural parcel: up to one additional primary dwelling unit, accessory structures, and farm support housing on a building site that uses up to 2.5 acres of the open space parcel. This project is currently under review by San Luis Obispo County.

The Agricultural Cluster Subdivision would be located on Sections 4 and 5 of Township 30 South, Range 18 East which are two sections that have also been identified as part of the Topaz Study Option A. The location of the cluster has been proposed in the far northwestern area of Section 4. While the County is processing these projects simultaneously (Topaz Solar Farm project and the Agricultural Cluster Subdivision), the expectation is that only one project would be developed on these sections. In addition, if Topaz Solar Farm Option B (Northern Option) is identified as the preferred project, then the Agricultural Cluster Subdivision could proceed if approved by the County (Topaz Solar 2010).

Kern County Projects

Capital improvement projects located within the vicinity of the Morro Bay–Midway transmission line include two road resurfacing projects. The Holloway Road project spans 10 miles and is located approximately 21 miles north of the PG&E ROW. The Lerdo Highway project spans 7 miles and is

located approximately 10 miles north of the ROW (Kern County Construction Services 2010). In Kern County, several solar projects are proposed for sites over 10 miles from the Morro Bay–Midway transmission line ROW. Two of the closest solar projects are Elk Hills Solar and Goose Lake Solar, approximately 12 miles south and 16 miles northeast, respectively. The remaining solar projects planned for the region are located over 20 miles from the transmission line ROW but are taken into consideration for cumulative impacts of resource areas that require a larger geographic scope.

4.4 Cumulative Effects Analysis

This section analyzes the cumulative effects of the past, present, and reasonably foreseeable future projects discussed above in conjunction with the CVSR Project. The analysis addresses only those resources to which the CVSR and reconductoring of the Morro Bay–Midway transmission line could contribute to cumulative impacts.

4.4.1 Visual Resources

The Topaz Solar Farm would be the only project close to the CVSR (i.e., within the cumulative effects study area). The Topaz Solar Farm and the associated Solar switching station would result in visual impacts similar to those of the CVSR Project given that they would be similar facilities with similar viewer groups (DOE 2011). The Draft EIS for the Topaz Solar Farm (DOE 2011) and the Final EIR for the CVSR and Twisselman aggregate mine CUPs (SLO County 2011a) determined that CVSR construction would contribute to a cumulative impact on visual resources. Both documents indicate that the Topaz Solar Farm would have visual characteristics similar to those of the CVSR, and combined, they would contribute to the conversion of the existing natural landscape to a landscape with prominent industrial characteristics.

The primary viewer group for CVSR and Topaz Solar Farm would be motorists on SR-58, which is not designated as a scenic highway, corridor, or byway. Views by motorists would be peripheral and fleeting within foreground distance zones. Therefore, viewer sensitivity would be low. Based on the low level of sensitivity for motorists on SR-58 and the fleeting visibility of the solar projects to passersby, impacts would be long-term and minor.

The Topaz Solar Farm would not be visible from the Carrizo National Monument; therefore, no cumulative effect would occur for viewers at the monument. Dispersed rural residents and users on Seven Mile Road and Soda Lake Road would notice minimal visual contrast; therefore, cumulative visual effects would be long-term but minor.

The Morro Bay–Midway transmission line is an existing PG&E transmission line in a sparsely populated area, and construction activities would be of a short duration in any single location. Additionally, no residences or cumulative projects are within 2 miles of the proposed Caliente switching station. There are no projects within close enough distance to the Morro Bay–Midway transmission line or Caliente switching station to be visible. Therefore, cumulative effects would be minor during construction, there would be no long-term cumulative effects, and cumulative effects on visual resources would not be significant.

4.4.2 Agricultural Resources

The Topaz Solar Farm is the only project that would be located near the CVSR site. The Topaz Solar Farm and the associated Solar switching station would likely result in impacts similar to those of the CVSR Project on agricultural resources given that they would be similar facilities, both located on agricultural land. Many of the other past and present actions in the cumulative effects scenario in San Luis Obispo are limited in their geographic extent and would result in minor construction plans and renovations on non-agricultural land. The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that construction and operation of the CVSR would contribute to a cumulatively considerable

impact on agricultural resources because the resulting loss of 1,934 acres of agricultural land would represent 50 percent of the average loss of agricultural land between 2004 and 2006 in San Luis Obispo County. The Agriculture Element of the San Luis Obispo County General Plan indicates that the County considers the conversion of agricultural land to non-agricultural uses a significant threat to its agricultural resources (SLO County 2011a).

Current agricultural use is severely restricted by limited water and forage available on the CVSR site as well as the general decline of dry farming on the Carrizo Plain and related economic factors. No Prime or Unique Farmland is present on the CVSR site (including the proposed interconnection line route and Caliente switching station), and the site has been used for limited grazing for 21 years. As designated by the NRCS, both the CVSR site and the Topaz Solar Farm study areas contain Farmland of Statewide Importance, Prime Farmland if Irrigated, and other Not Prime Farmland; the interconnection line would cross Prime Farmland if Irrigated and other Not Prime Farmland (SLO County 2011a); however, currently, neither site is irrigated. Some agricultural activity (grazing) would continue on part of the CVSR site. The proposed site of the Topaz Solar Farm comprises land that is primarily used for grazing and dry farming agriculture (Topaz Solar 2010).The Topaz Solar Farm would fence up to 4,100 acres of land used for agriculture; however, it is possible that some land within the fenced area may still be used for grazing (DOE 2011). CVSR would compensate for agricultural land on a 1:1 basis; therefore, no cumulative effect would result from the CVSR Project.

Data suggest that groundwater supplies in the Carrizo Plain are inadequate to sustain irrigated use, and the severe water quality and quantity restrictions that prevent the CVSR site from being irrigated have significantly limited its agricultural potential. Water for local agricultural operations for the CVSR Project, Topaz Solar Farm, and Solar switching station sites would be obtained primarily from the Carrizo Plain Groundwater Basin, which has both water quality and quantity limitations. Likewise, the Topaz Solar Farm would be located within the same area of the Carrizo Plain and does not have access to adequate water supplies to sustain irrigated use.

The Topaz Solar Farm and the associated Solar switching station would be subject to the same requirements as the CVSR. As such, coordination of construction activities with agricultural owners and mitigating the loss of farmland through permanent preservation of offsite farmlands of an equivalent type at a ratio of 1:1 would be required for both projects. Therefore, because the Topaz and CVSR projects would not affect NRCS designated Prime Farmland, impacts would be long-term, but minor, and no significant cumulative effects associated with agricultural resources are anticipated.

Several of the reasonably foreseeable solar projects located in Kern County may impact NRCS designated Prime Farmland; however, all projects would be subject to the requirements of the FPPA. Many of the other past and present actions in the cumulative effects scenario, other than the Topaz Solar Farm and associated Solar switching station discussed above, are limited in their geographic extent and would result in minor construction and renovations on non-agricultural land. Therefore, these past and present actions would not apply to the cumulative analysis for agricultural resources.

The existing Morro Bay–Midway transmission line ROW passes through NRCS designated Prime Farmland for approximately 4.2 miles, and pull sites within these areas would temporarily disturb a maximum of 4.1 acres. However, reconductoring would not result in the permanent conversion of Prime Farmland because construction activities would be temporary, and temporarily disturbed land would be restored to existing conditions after construction; therefore, cumulative effects associated with agricultural resources would be long-term, minor, and not significant.

4.4.3 Transportation

Most past and present actions in San Luis Obispo County are limited in their geographic extent and would not affect the regional roadway network. However, the Topaz Solar Farm and the associated Solar switching station would likely result in impacts on transportation similar to those of the CVSR Project

given the similarities between the projects and their potential overlapping construction schedules. Caltrans improvements to SR-46 are also expected to overlap with the construction schedule of the two projects.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that CVSR construction would contribute to a cumulative transportation impact. The LOS analysis in the Final EIR indicates that under future conditions when both the CVSR and Topaz Solar Farm are under construction, construction traffic would degrade the LOS on SR-46 between Jardine Road and SR-33 from LOS D to LOS E. In addition, construction activities related to widening a segment of SR-46 would likely require temporary lane closures. If such closures were to occur during daytime hours, the LOS of SR-46 would be further decreased. In addition, trucks traveling to the CVSR site would require closures of SR-58 in one direction for up to 35 minutes and vehicle delays. Such delays, which would occur regularly throughout construction, are considered significant and unavoidable impacts in the Final EIR (SLO County 2011a).

Construction of the Topaz Solar Farm and CVSR projects could impact SR-46 during construction, but implementation of the CVSR Traffic Control Plan would ensure that SR-46 is not used for truck deliveries during peak hours, and employees and truck deliveries would be instructed to use SR-58. The Topaz Solar Farm project would adhere to similar transportation and circulation guidelines, such as implementation of a Truck Management Plan and worker shuttle buses to reduce traffic congestion (DOE 2011). In addition, deliveries by trucks that exceed the kingpin-to-rear-axel distance of 30 feet on SR-58 for the proposed Topaz Solar Farm would be coordinated with CVSR Project construction. It is estimated that ten cars would be delayed during each 35-minute closure of SR-58 and the LOS of SR-58 would not be degraded to below LOS B (SLO County 2011a). Therefore, construction of the CVSR Project would have a moderate, adverse, short-term, cumulative effect on transportation-circulation impacts. With the implementation of the Traffic Control Plan, transportation impacts during construction would not be significant.

After construction, CVSR would have minimal transportation or traffic associated with it other than for maintenance activities and operations at the solar facility and mine operation. Both the CVSR and the Topaz Solar Farm would each require only 15 roundtrips per day, which would not decrease the LOS on any area roadways (DOE 2011). Widening SR-46 to four lanes from Jardine Road to SR-33 would also reduce cumulative effects related to SR-46 LOS, and the cumulative impact would be negligible and not significant.

Reconductoring of the Morro Bay–Midway transmission line would have a minor cumulative effect on transportation circulation within the CVSR Project vicinity in both Kern and San Luis Obispo counties. Reconductoring activities would occur intermittently at different locations, and therefore, any effects would be temporary and negligible. The Elk Hills Solar project, Goose Lake Solar project, and two road improvement projects are planned to be constructed in Kern County within the same timeframe as the reconductoring of the Morro Bay–Midway transmission line; however, both projects are over 10 miles from the transmission line ROW. In addition, reconductoring would use a helicopter for tower erection at various locations, which would further reduce cumulative effects on the local transportation network. Operation and maintenance traffic would be similar to current levels. Overall, reconductoring would generate additional traffic on regional and local roadways but would not appreciably alter existing LOS or significantly add to existing traffic on project roadways.

4.4.4 Noise

The only reasonably foreseeable future large-scale project that would be under construction and located within the vicinity of the CVSR site is the Topaz Solar Farm. While this project would be too far away to result in cumulative noise impacts from onsite construction activities, cumulative traffic noise impacts could result along SR-58 as this would be a common haul truck route for these projects.

The Final EIR for the CVSR and Twisselman aggregate mine CUPs determined that CVSR construction would contribute to a cumulative noise impact because of truck traffic that would result from concurrent construction of the proposed Topaz Solar Farm. It states that residences located within 50 feet of the centerline of haul routes could be exposed to cumulative noise levels of 64 dBA Ldn, which would exceed the San Luis Obispo County General Plan policy for maximum allowable noise exposure to residential land uses from transportation noise sources of 60 dBA Ldn/CNEL (SLO County 2011a). A noise level of 64 dBA Ldn would be within existing ambient noise levels (30 to 66 dBA Leq) (SLO County 2011a).

Truck deliveries to the CVSR site would be limited to between 7:00 a.m. and 8:00 p.m. on weekdays and weekends, which means that trucks would not be traveling on SR-58 at night when receptors are most sensitive to noise. Taking this limitation into account, the Federal Highway Administration's Traffic Noise Model (Version 2.5) indicates that cumulative noise levels at 50 feet from the centerline of haul routes would be 60 dBA Ldn or below, which would not exceed the San Luis Obispo County maximum allowable noise exposure to residential land uses from transportation noise sources.[1] Fewer than 10 residences are located within close proximity to SR-58 (DOE 2011). The Applicant would also implement noise-reducing features and practices, such as using mufflers and engine shrouds. Therefore, the cumulative effect of noise from construction truck traffic on sensitive receptors would be short-term and minor, and impacts would not be significant.

For residences located along SR-58 in Kern County, the noise element of the general plan requires commercial and industrial uses or operations, including transportation facilities and fixed-point sources, not to subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dBA Ldn (Kern County 2007a). However, the Federal Highway Administration's Traffic Noise Model (Version 2.5) indicates that cumulative noise levels at 50 feet from the centerline of haul routes would be 60 dBA Ldn or below, which would not exceed noise thresholds identified in the Kern County noise element. Therefore the cumulative effect of noise from construction traffic on sensitive receptors would be short-term and minor, and impacts would not be significant.

Approximately 31 mobile homes and 6 single-family dwellings are proposed in numerous locations within a 5-mile radius of the CVSR site. These new residences could add more vehicles on the existing roadways in the immediate project area further exacerbating cumulative traffic noise impacts. To reduce the potential for disturbing residences along the construction traffic routes, the Applicant would limit delivery hours by trucks to the site, thereby reducing the noise level to 60 dBA Ldn along roads. In addition, limiting noisy construction activities, providing advance notice of construction and decommissioning, shielding primary construction staging areas, and limiting panel washing activity noise would reduce the CVSR's overall contribution to cumulative noise impacts. Because the Topaz Solar Farm project would implement similar features to the CVSR, such as a Topaz Truck Management Plan and worker shuttle buses to reduce traffic congestion, combined construction-related traffic noise associated with the CVSR Project and Topaz Solar Farm project would therefore result in traffic noise levels of 60 dBA Ldn, which would be a minor, short-term, adverse cumulative effect that is not significant.

Where reconductoring of the Morro Bay–Midway transmission line occurs simultaneously and in close proximity to construction of the Topaz Solar Farm, there could be a temporary cumulative noise effect. Most of the reconductoring would not occur near other cumulative projects and would be of short duration in any one location. Therefore, cumulative noise effects related to transmission line reconductoring would be negligible to minor. Overall, cumulative noise effects would not be significant.

[1] Noise during evening and night hours are considered by the EPA and World Health Organization to have increased noise sensitivity. Accordingly, noise during evening and night hours are weighted differently than daytime noise in the Federal Highway Administration's Traffic Noise Model (Version 2.5), which was used to estimate truck traffic noise from construction of the CVSR.

4.4.5 Air Quality

The air quality analysis in this section is primarily focused on criteria air pollutants across the entire San Luis Obispo County APCD jurisdiction because emissions associated with the CVSR and cumulative projects could affect overall air quality within the South Central Coast Air Basin. The cumulative analysis focuses on potential sources of air emissions within 10 miles of the CVSR site because the CVSR Project and other cumulative projects would not be major sources of air pollutants. However, the pending Topaz Solar Farm project in the Carrizo Plain (approximately 6 miles west of the western boundary of the CVSR site) is currently being evaluated by San Luis Obispo County and may be under construction at the same time as CVSR. Due to this potential for additional construction activity and emissions within the air basin, minor, short-term, adverse cumulative effects associated with air quality are anticipated. However, design features included in the proposed action, such as shuttle buses and dust control, would reduce the CVSR Project's contribution to cumulative impacts. Therefore, impacts would not be significant.

In addition, reconductoring the existing Morro Bay–Midway transmission line would have a temporary cumulative effect on air quality due to temporary construction emissions; however, emissions during O&M would be similar to current emissions. Therefore, the Morro Bay–Midway transmission line would have a minor cumulative effect on air quality. Overall, long-term cumulative effects on air quality would be beneficial due to the projects' generation of non-GHG producing power.

4.4.6 Water Resources

The CVSR and Topaz Solar Farm would require a water supply during construction and operation, which could affect the local groundwater table. Therefore, the geographic extent of this cumulative analysis includes the Carrizo Plain Groundwater Basin. To support the water resources analysis, a screening level, three-dimensional groundwater flow model for the CVSR Hydrogeology Report was prepared on behalf of the applicant. The model considered water demands during construction and operation and evaluated the effects of both the CVSR and Topaz Solar Farm projects' water supply requirements on underlying and adjacent groundwater resources (URS 2009). The model results indicate modest drawdown of the groundwater table in the immediate vicinity of the CVSR Project's well and other project wells in the study (URS 2009). Within six months of project decommissioning, drawdown at each pumping site was less than 0.15 foot, which would be a negligible effect on the local groundwater table.

Due to the horizontal separation of more than 6 miles between the wells, the modeled 30-year operation period showed there was no drawdown effect between the CVSR well and Topaz Solar Farm well (SLO County 2011a). However, it is important to note that while water modeling can provide general characteristics and averages of a groundwater basin, it does not take into account area-specific variations of soil and/or geologic characteristics that can influence area-specific elements such as drawdown. Therefore, the CVSR Project includes development and implementation of a Groundwater Monitoring and Reporting Plan which would more accurately assess the CVSR Project's pumping impacts from changes in background conditions and ensure that potential effects associated with CVSR Project pumping remain less than cumulatively significant.

Reconductoring of the Morro Bay–Midway transmission line would require minimal water, would not interfere with groundwater recharge, and would therefore have a negligible effect on water supplies in the area. Cumulative effects on water quality or availability would not be significant.

4.4.7 Biological Resources

The geographic extent for the analysis of cumulative impacts related to biological resources includes the Carrizo Plain in San Luis Obispo County, the Panoche Valley in San Benito County, and parts of the San Joaquin Valley. These areas contain habitat for many of the special status species that would be impacted by the CVSR Project. Habitat within these regions supports core populations of listed wildlife species including San Joaquin kit fox, giant kangaroo rat, and blunt-nosed leopard lizard. The Carrizo Plain houses grassland habitats that once occurred throughout the San Joaquin Valley. These grasslands provide

some of the largest remaining contiguous habitats for many endangered, threatened, and rare species. Since the 1870s, more than 95 percent of the original natural communities in the San Joaquin Valley have been destroyed. As a result, many of the species that occur in the area are now limited to a fraction of their historical ranges. For example, since the 1870s, both San Joaquin kit fox and giant kangaroo rat have lost more than 95 percent of their habitat. Likewise, the reduction and fragmentation of habitat has lead to the decline of blunt-nosed leopard lizard (SLO County 2011a).

Large-scale solar development currently represents a significant potential source of additional habitat loss for these species. In addition to the CVSR Project, the 4,100-acre Topaz Solar Farm project and the 4,885-acre Panoche Valley Solar Farm (located approximately 100 miles northwest of the CVSR Project in eastern San Benito County) would involve large-scale conversion of natural and agricultural lands. Together these projects would affect approximately 11,000 acres in the Carrizo Plain and Panoche Valley. The CVSR Project and Topaz Solar Farm project would convert approximately 4 percent of the natural lands in the Carrizo Plain ecoregion to developed uses (SLO County 2011a).

Construction of the CVSR Project and the identified reasonably foreseeable projects could also result in further loss to natural lands and other habitat that supports sensitive and listed species and could contribute to the fragmentation of habitat by altering wildlife linkages and movement corridors.

The Carrizo Plain supports several key wildlife corridors for San Joaquin kit fox, tule elk, and pronghorn antelope. Ranching in the area has lead to the placement of numerous fences, roadways, and other obstacles that potentially impede wildlife movement. As development and road expansion continues in the region (i.e., proposed solar farms, residential uses, and the expansion of SR-46) it will become progressively more difficult to maintain critical landscape features required for the passage of native wildlife between the Carrizo Plain and Cholame Valley along movement corridors. However, the applicants for the CVSR, Topaz Solar Farm, and Panoche Valley Solar Farm projects have engaged in consultation with relevant wildlife agencies and would incorporate design features and implement measures to reduce the overall effects of the projects.

For the CVSR Project, the proposed PV foundations and supporting structures would preserve most of the existing annual grassland ground cover. Except where grading is otherwise required, vegetation would not be removed to install the solar trackers. With regard to giant kangaroo rat, which is a federal endangered species, the configuration and layout of the solar arrays on the CVSR site would be designed to reduce impacts through the avoidance of habitat supporting the largest concentration of occupied and unoccupied precincts. Where giant kangaroo rats cannot be avoided, giant kangaroo rats would be relocated to offsite conservation land. The Applicant prepared a Plan for Relocation of Giant Kangaroo Rats as part of the Biological Assessment (Appendix D2) that is based on literature research workshops, field meetings, and written and oral communications with biologists that have studied kangaroo rat species, managed their habitats and populations, and regulated their habitats and populations through federal and state impact assessments and permits.

Both the CVSR Project and Topaz Solar Farm Project applicants would work with San Luis Obispo County, USFWS, and CDFG to establish the California Valley Land Acquisition Program for the acquisition of private lands within the California Valley subdivision that may be available at low cost because they cannot support residential uses. They would be reclaimed and aggregated into larger parcels for use by regionally important wildlife and plant species. The value of any individual parcel for acquisition would depend on several factors including the condition of the parcel; location of parcel relative to undeveloped lands; the presence of special status species; and adjacent land uses (i.e., residential or agricultural). The long-term goal of the California Valley Land Acquisition Program would be to consolidate contiguous blocks of habitat capable of supporting sensitive plants and wildlife. The program would include the implementation of enhancement and protective measures including the management of weeds and exotic wildlife species; removal of fences; reseeding or restoration; and

establishment of artificial burrows to attract wildlife. For both onsite (Figure 2-2) and offsite conservation areas, a Habitat Conservation and Monitoring Plan would be developed and implemented.

The CVSR Project would compensate for the permanent loss of giant kangaroo rat and San Joaquin kit fox habitat at a ratio of at least 4:1 for all permanently affected acreage (3:1 for PG&E reconductoring). Permanent loss of occupied California jewelflower and San Joaquin woollythreads habitat would be compensated at a ratio of 1:1, or 0.5:1 for areas temporarily affected. Permanent loss of Camissonia plants (the larval host foodplant of the Kern primrose sphinx moth) would be compensated at a ratio of 3:1 on an individual plant basis, and temporary impacts would be compensated at a ratio of 2:1. Final conservation ratios would be determined in consultation with the USFWS and CDFG based on an analysis of the quality of the conservation land and/or the presence of species as demonstrated by future surveys. The Topaz Solar Farm Project and Panoche Valley Solar Farm would incorporate similar compensation measures for giant kangaroo rat and San Joaquin kit fox.

The CVSR, Topaz Solar Farm, and Panoche Valley Solar Farm projects would develop and implement habitat restoration plans, weed control plans, and fence removal and pronghorn friendly fencing plans (CVSR and Topaz only). Project personnel would be trained through environmental education programs, and personnel would avoid affecting wetlands, streambeds, and stream banks. Development would maintain or improve existing hydrologic patterns with respect to runoff supporting seasonal wetlands. For all projects, BMPs would be used for the prevention of soil erosion and sedimentation of streams and prevention of the introduction and spread of invasive plant species.

Wildlife permeability differs at the CVSR site and the Topaz Solar Farm site. The proposed Topaz Solar Farm site is considered a highly permeable movement corridor for San Joaquin kit fox, pronghorn antelope, and tule elk (in the northern part of the site). The CVSR would be located on a site that ranges from medium high to low permeability for San Joaquin kit fox and pronghorn antelope, and from low to high for tule elk. CVSR design features would reduce effects on wildlife movement and include the establishment of movement corridors for tule elk and pronghorn antelope; the placement of escape dens for San Joaquin kit fox; and the removal of fences in key locations. In addition, the acquisition of conservation land would preserve habitat and likely support movement corridors for these and other species (SLO County 2011a).

It is unclear to what extent wildlife, particularly the giant kangaroo rat, San Joaquin kit fox, tule elk, pronghorn antelope, and American badgers would use the CVSR site or designed movement pathways during and after construction; however, the CVSR site would provide a relatively broad corridor for wildlife movement through and around the CVSR site and preserve contiguous patches of habitat. The corridor would likely provide foraging and burrowing habitat for such species as the giant kangaroo rat and San Joaquin kit fox. Through implementation of project design features at the CVSR site, these impacts would be reduced and residual use of the site would likely occur. Therefore, the cumulative contribution of the CVSR Project to San Joaquin kit fox movement impacts would be long-term and minor and would not be significant (SLO County 2011a).

Because tule elk are not present on the CVSR site south of SR-58, the CVSR's contribution to cumulative impacts for tule elk would not result in adverse impacts. Pronghorn antelope are known to use the CVSR site, and the CVSR would limit their movement in the region. San Luis Obispo County determined that biological resources would not experience significant cumulative effects. With the implementation of these design features, including those that would conserve habitat onsite and offsite and reduce effects on wildlife movement, the CVSR Project's contribution to adverse cumulative impacts on special status species, such as giant kangaroo rat, would be long term but minor and would not be significant.

4.4.8 Cultural Resources

Cumulative impacts to cultural resources in the vicinity of the CVSR site could occur if any other existing or proposed projects, in conjunction with CVSR, had or would have impacts on cultural resources. Previous ground disturbance from prior projects and ground disturbance related to the proposed CVSR, Topaz Solar Farm, and Solar switching station could have a cumulatively considerable effect on subsurface archaeological deposits, both prehistoric and historic. However, the solar project applicants and applicants of future projects in the northern Carrizo Plain area would mitigate impacts to as-yet-undiscovered subsurface archaeological deposits by requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated as eligible for listing in the California Register of Historical Resources.

Because impacts from CVSR would likely be minor and because similar protocols would be applied to other projects in the area, incremental effects on cultural resources of CVSR would be minor. Likewise, reconductoring of the existing Morro Bay–Midway transmission line would not be expected to have a cumulative effect on cultural resources because the area has already been disturbed and the potential for unexpected discoveries is low. Therefore, cumulative effects associated with cultural resources would be minor and not significant.

4.4.9 Paleontological Resources

Paleontological resources have been documented in the general area of the CVSR site and the proposed Topaz Solar Farm; however, both projects would implement similar features to reduce impacts, such as paleontological monitoring plans, construction monitoring, paleontological data recovery, and construction personnel training. Therefore, cumulative impacts would be either neutral (no fossils encountered) or have a long-term, beneficial effect (fossils encountered, preserved, and identified). Likewise, reconductoring of the Morro Bay–Midway transmission line would not be expected to have a cumulative effect on paleontological resources because the area has already been disturbed, and the potential for unexpected discoveries is low. Therefore, cumulative effects associated with paleontological resources would be minor and not significant.

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5 List of Preparers

5.1 U.S. Department of Energy, Loan Guarantee Program Office

Lynn Alexander
NEPA Document Manager, DOE Loan Guarantee Program Office

Matthew McMillen
Director, Environmental Compliance, DOE Loan Guarantee Program Office

5.2 SunPower Corporation

Renee L. Robin, JD
Director of Permitting, Utilities and Power Plants, North America

Brian Parker
Utilities and Power Plants, North America

Joe Human
Senior Analyst, Structural Finance

5.3 Ecology and Environment, Inc.

Preparer and Responsibility	Education	Years of Experience
Cheryl Karpowicz, AICP Senior Vice President, Principle in Charge	BA, Interdepartmental Studies	36
Christina J. Willis Project Manager	BA, Economics/Urban Planning	23
Karen Ladd Quality Assurance	BA, Geophysics	20
Erica Brown Land Use and Visual Resources, Agriculture	BA, English	5
Conor Doyle Transportation	BA, Political Science	2
Rob Peterson Noise	PhD, Education BS, Communication	8

Preparer and Responsibility	Education	Years of Experience
Paul VanKerkhove Air Quality	MS, Environmental Science/ Engineering BS, Chemical Engineering	20
Silvia Yanez Air Quality	MS, Development and Environment MS, Environmental Management BS, Chemical Engineering	7
Amy DiCarlantonio, AICP Purpose and Need, Proposed Action and Alternatives, Geology and Soils, Cumulative Effects, Water Resources	MS, City Design/Social Science BA, Art History	14
Jon Goin Biological Resources	MS, Natural Resources BS, Environmental Studies	9
Sandra Pentney Cultural Resources, Paleontological Resources, Tribal Consultation and Coordination	MA, Archeology	11
Alexis Amaye-Hunter Socioeconomics and Environmental Justice, Terrorism-Related Impacts	MSPH, Environmental Health BA, Political Science/Spanish	5
Rachel Wilkinson Proposed Action and Alternatives, Public and Occupational Health and Safety	BA, English	7

5.4 Contributing Consultants

H.T. Harvey & Associates

Brian Boroski, PhD
Wildlife Biologist

Paul Hastings, LLP

Thomas Mounteer, JD
Attorney

6 List of Entities Contacted

6.1 Federal

- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Department of Agriculture (USDA), Natural Resources and Conservation Service (NRCS)
- U.S. Department of the Interior, Bureau of Land Management (BLM)

6.2 State

- California Department of Conservation, Division of Land Resource Protection
- California Department of Fish and Game (CDFG)
- California Department of Transportation (Caltrans)
- California Department of Forestry and Fire Protection (CAL FIRE)
- California Governor's Office of Planning and Research
- California Public Utilities Commission (CPUC)
- California State Historic Preservation Office (SHPO)
- California State University-Stanislaus
- Native American Heritage Commission

6.3 Local

- San Joaquin Valley Air Pollution Control District
- San Luis Obispo County Air Pollution Control District
- San Luis Obispo County Department of Agriculture and Measurement Standards
- San Luis Obispo County Department of Planning and Building
- San Luis Obispo County Department of Public Works
- San Luis Obispo County Fire Department
- San Luis Obispo County General Services Agency
- San Luis Obispo County Parks
- San Luis Obispo County Planning Department
- San Luis Obispo Tribune

- San Luis Obispo, Paso Robles, and Atascadero Chambers of Commerce
- California Valley Community Services District

6.4 Non-Government Organizations

- Audubon Society
- Defenders of Wildlife
- Natural Resources Defense Council
- Nature Conservancy
- Sierra Club
- California Native Plant Society (CNPS)

6.5 Federally Recognized Native American Tribes

- Santa Rosa Rancheria (Tachi Yokut Tribe)
- Santa Ynez Band of Chumash Mission Indians

6.6 Other Native American Tribes[1]

- Chumash Tribe
- Fernandeno Tribe
- Kitanemuk Tribe
- Salinan Tribe
- Shoshone Paiute Tribe
- Tachi Tribe
- Tataviam Tribe
- Tejon Indian Tribe
- Tubatulabal Tribe
- Xolon Salinan Tribe
- Yaqui Tribe
- Yokut Tribe
- Yowlumn Tribe

[1] A complete list of tribal entities and individuals contacted is included in Appendix E.

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