DOE/EIS–0458

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME II: APPENDICES

DEPARTMENT OF ENERGY
LOAN GUARANTEE TO ROYAL BANK OF SCOTLAND FOR
CONSTRUCTION AND STARTUP OF THE TOPAZ SOLAR FARM
SAN LUIS OBISPO COUNTY, CALIFORNIA

US Department of Energy, Lead Agency
Loan Guarantee Program Office
Washington, DC 20585

In Cooperation with

US Army Corps of Engineers
San Francisco District

August 2011

APPENDICES TABLE OF CONTENTS

Appendix A
Public Scoping

required by Section 10(a)(2) of the Federal Advisory Committee Act and is intended to notify the public of their opportunity to attend the open portion of the meeting. The public is being given less than 15 days' notice due to the need to accommodate the members' schedules.

DATES: November 1, 2010

TIMES: Open session: 8:30 a.m. to 4 p.m. The meeting will be closed from 4 p.m. to 4:45 p.m. for the election of a Chair and Vice Chair.

ADDRESSES: 80 F Street, NW., Room 100, Washington, DC 20208.

FOR FURTHER INFORMATION CONTACT: Mary Grace Lucier, Designated Federal Official, National Board for Education Sciences, 555 New Jersey Ave., NW., Room 602 I, Washington, DC 20208; phone: (202) 219–2253; fax: (202) 219–1466; e-mail: *Mary.Grace.Lucier@ed.gov.*

Individuals who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FRS) at 1–800–877–8339.

SUPPLEMENTARY INFORMATION: The National Board for Education Sciences is authorized by Section 116 of the Education Sciences Reform Act of 2002(ESRAa0, 20 U.S.C 9516. The Board advises the Director of the Institute of Education Sciences (IES) on, among other things, the establishment of activities to be supported by the Institute, on the funding for applications for grants, contracts, and cooperative agreements for research after the completion of peer review, and reviews and evaluates the work of the Institute.

At this time, the Board consists of ten of fifteen appointed members due to the expirations of the terms of former members. The Board shall meet and can carry out official business because the ESRA states that a majority of the voting members serving at the time of a meeting constitutes a quorum.

On November 1, 2010, starting at 8:30 a.m. the Board will approve the agenda and hear remarks from the chair, followed by further remarks from John Easton, IES director. The Board is expected to consider and approve priorities proposed by the director to guide the work of the Institute. A break will take place from 9:45 a.m. to 10 a.m. A presentation on the Privacy Technical Assistance Center will take place from 10 a.m. to 11 a.m., followed by an overview of the proposed agenda for the Regional Educational Laboratories program.

The meeting will break for lunch from 12 noon to 1:15 p.m., following which there will be a presentation and discussion of state of the art approaches to research implementation. A discussion of recently released IES reports will be held from 2:30 p.m. until 4 p.m. The meeting will close to the public from 4 p.m. to 4:45 p.m. for the election of Chair and Vice Chair. The new officers will have a brief opportunity to address the membership about their vision for the Board's role for the next two years, and adjournment is expected at 5 p.m.

A final agenda will be available from Mary Grace Lucier (*see* contact information above) on October 25 and will be posted on the Board Web site *http://ies.ed.gov/director/board/agendas/index.asp.* Individuals who will need accommodations for a disability in order to attend the meeting (*e.g.,* interpreting services, assistance listening devices, or materials in alternative format) should notify Mary Grace Lucier no later than October 20. We will attempt to meet requests for accommodations after this date but cannot guarantee their availability. The meeting site is accessible to individuals with disabilities.

Records are kept of all Committee proceedings and are available for public inspection at 555 New Jersey Ave., NW., Room 602 K, Washington, DC 20208, from the hours of 9 a.m. to 5 p.m., Eastern Standard Time Monday through Friday.

Electronic Access to This Document: You may view this document, as well as all other documents of this Department published in the **Federal Register,** in text or Adobe Portable Document Format (PDF) on the Internet at the following site: *http://www.ed.gov/news/fed-register/index.html.*

To use PDF you must have Adobe Acrobat Reader, which is available free at this site. If you have questions about using PDF, call the U.S. Government Printing Office (GPO), toll free at 1–888–293–6498; or in the Washington, DC, area at (202) 512–1530.

Note: The official version of this document is the document published in the **Federal Register**. Free Internet access to the official edition of the **Federal Register** and the Code of Federal Regulations is available on GPO Access at: *http://www.gpoaccess.gov/nara/index.html.*

Dated: October 19, 2010.

John Q. Easton,

Director, Institute of Education Sciences.

[FR Doc. 2010–26782 Filed 10–21–10; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF ENERGY

Notice of Intent To Prepare an Environmental Impact Statement for a Proposed Federal Loan Guarantee To Support Construction of the Topaz Solar Farm, San Luis Obispo County, CA

AGENCY: Loan Guarantee Program, Department of Energy.

ACTION: Notice of intent to prepare an environmental impact statement and conduct a public scoping meeting and notice of proposed floodplain action.

SUMMARY: The U.S. Department of Energy (DOE) announces its intent to prepare an environmental impact statement (EIS) pursuant to the National Environmental Policy Act of 1969, as amended (NEPA), the Council on Environmental Quality (CEQ) NEPA regulations, and the DOE NEPA implementing procedures, to assess the potential environmental impacts of its proposed action of issuing a Federal loan guarantee to Topaz Solar Farms, LLC (Topaz) (DOE/EIS–0458). Topaz submitted an application to DOE under the Federal loan guarantee program pursuant to the Energy Policy Act of 2005 (EPAct 2005) to support construction of the Topaz Solar Farm Project located in San Luis Obispo County, California (the Project).

Topaz is a limited liability company that is owned by First Solar, Inc. Topaz proposes to develop the Project on approximately 4,000 acres of land. As proposed, the approximately 550-megawatt electric generation project would include the installation of about nine million photovoltaic (PV) solar modules within approximately 437 arrays and associated electric equipment. At full capacity, the Project would generate enough electricity to power an estimated 160,000 California homes annually. Generated electricity would be sold to Pacific Gas and Electric (PG&E) under a long-term power purchase agreement. The Project would be interconnected into PG&E's existing Morro Bay-Midway 230-kilovolt (kV) transmission line, which runs in an east-to-west direction through the site.

The EIS will evaluate the potential environmental impacts of the issuance of a DOE Loan Guarantee for Topaz's proposed Project and the range of reasonable alternatives. The purposes of this Notice of Intent are to inform the public about DOE's proposed action; invite public participation in the EIS process; announce plans for a public scoping meeting; and solicit public comments for consideration in establishing the scope and content of

the EIS. DOE is hereby providing notice of a proposed action in a floodplain and that DOE will include a floodplain assessment in the EIS. DOE invites those agencies with jurisdiction by law or special expertise to be cooperating agencies.

DATES: The public scoping period will begin with publication of this Notice of Intent and end on November 22, 2010. To ensure that all of the issues related to this proposal are addressed, DOE invites comments on the proposed scope and content of the EIS from all interested parties. Comments must be postmarked or e-mailed by November 22, 2010 to ensure consideration. Late comments will be considered to the extent practicable.

ADDRESSES: Public comments can be submitted electronically or by U.S. Mail. Written comments on the proposed EIS scope should be signed and addressed to the NEPA Document Manager for this project: Ms. Angela Colamaria, Loan Guarantee Program (LP–10), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585. Electronic submission of comments is encouraged due to processing time required for regular mail. Comments can be submitted electronically by sending an e-mail to: *Topaz-EIS@hq.doe.gov.* All electronic and written comments should reference DOE/EIS–0458.

In addition to receiving written comments, DOE will conduct a public scoping meeting in the vicinity of the proposed Project at which government agencies, private-sector organizations, and the general public are invited to provide comments or suggestions with regard to the alternatives and potential impacts to be considered in the EIS. The date, time, and location of the public scoping meeting will be announced in local news media and on the DOE Loan Guarantee Program's "NEPA Public Involvement" Web site (*http://lpo.energy.gov/?page_id=1502*) and the DOE NEPA Web site "Public Participation" Calendar (*http://nepa.energy.gov/calendar.htm*) at least 15 days prior to the date of the meeting.

FOR FURTHER INFORMATION CONTACT: To obtain additional information about this EIS, the public scoping meeting, or to receive a copy of the draft EIS when it is issued, contact Angela Colamaria by telephone: 202–287–5387; toll-free number: 800–832–0885 ext. 75387; or electronic mail: *Angela.Colamaria@hq.doe.gov.* For general information on the DOE NEPA process, please contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (GC–54), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585; telephone: 202–586–4600; facsimile: 202–586–7031; electronic mail: *askNEPA@hq.doe.gov;* or leave a toll-free message at 800–472–2756.

SUPPLEMENTARY INFORMATION:

Background

Title XVII of EPAct 2005 established a Federal loan guarantee program for eligible energy projects, and was amended by the American Recovery and Reinvestment Act of 2009, (the Recovery Act) to create Section 1705 of Title XVII (42 U.S.C. 16516), authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through financing renewable energy, transmission and leading edge biofuels projects.

On March 29, 2010, the Royal Bank of Scotland plc, as Lender-Applicant, with Topaz as the borrower, submitted the first part (Part I) of a two-part application to DOE for a Federal loan guarantee under the Solicitation entitled, "Federal Loan Guarantees for Commercial Technology Renewable Energy Generation Projects under the Financial Institution Partnership Program" (Solicitation No. DE–FOA–0000166), issued on October 7, 2009. Topaz submitted Part II of its application on August 10, 2010.

Purpose and Need for Agency Action

The purpose and need for action by DOE is to comply with its mandate under EPAct 2005 by selecting eligible projects that meet the goals of the Act, as summarized above. The EIS will inform DOE's decision on whether to issue a loan guarantee to Topaz to support the proposed Project.

Proposed Action

DOE's proposed action is to issue a loan guarantee to Topaz to support construction of the Topaz Solar Farm. The Project would be located in an unincorporated portion of eastern San Luis Obispo County, California, adjacent to Highway 58 and east of Bitterwater Road. Topaz has options to purchase approximately 10,000 acres of land in the Project area. The Project would be developed on approximately 4,000 to 4,100 acres of land within one of two overlapping study areas:

Study Area A, the southernmost study area, includes approximately 8,000 acres. If the Project is located within Study Area A, the fenced area would be approximately 4,100 acres.

Study Area B, the northernmost study area, includes approximately 6,300 acres. If the Project is located within Study Area B, the fenced area would be approximately 4,000 acres.

The study areas are larger than what would be needed to develop the project in order to allow flexibility in the final project design. The proposed Project would consist of: A solar field of ground-mounted PV modules that collect solar radiation to produce electricity; an electrical collection system that converts generated power from direct current (DC) to alternating current (AC) and delivers it to the Project substation; the aforementioned Project substation that collects and converts the generated power from 34.5 kV to 230 kV for delivery via a new PG&E switching station to PG&E's existing Morro Bay-Midway 230–kV transmission line; and the aforementioned PG&E switching station that interconnects the Project to PG&E's existing transmission line. After construction, PG&E would own and operate the switching station.

The Project's solar field would consist of 437 solar arrays. Each solar array would generate 1.3 megawatts alternating current of power and would consist of up to 20,000 PV modules and one power conversion station. Each power conversion station would consist of two inverters in an air-conditioned enclosure and one adjacent transformer. Each array would cover approximately seven acres of land.

Eight to twelve miles of overhead 34.5–kV high-capacity collection system lines, with two to four circuits each, would connect the power output from each of the solar arrays to the on-site Project substation. Wooden poles approximately 43 feet high would support these overhead lines.

The Project substation would collect the output and transform it from 34.5 kV to 230 kV. The substation would occupy approximately 4.5 acres and would be adjacent to the PG&E switching station, where the 230–kV output of the substation would be connected and delivered to the Morro Bay-Midway 230–kV transmission line.

The new PG&E switching station would be adjacent to the existing PG&E Morro Bay-Midway 230–kV transmission line. The Morro Bay-Midway 230–kV transmission line traverses the Project site just south of

the PG&E switching station. Two new 100- to 125-foot-high double-circuit lattice steel transmission towers and four steel poles would be installed to accommodate the looping of PG&E's 230–kV line into the switching station. The towers and poles would be within or adjacent to the existing PG&E transmission line right-of-way as well as located on either side of the new PG&E switching station to position the transmission conductors for proper ingress and egress to the station. Construction of the interconnection between the existing Morro Bay–Midway 230–kV line and the new PG&E switching station would be undertaken by PG&E.

Topaz has interconnection agreements in place for the first 400 MW of Project capacity. The California Independent System Operator has determined that network upgrades would be required to accommodate the Project's remaining 150 MW, as well as other generation projects in the region. Network upgrades could include the reconductoring of the 230–kV transmission lines between the new PG&E switching station and the Midway Substation.

As part of the proposed Project, Topaz would construct and operate a solar energy learning center within the Project's site boundary. Topaz would work with local educators to develop exhibits, tours, and educational programs for the center that would complement existing science and sustainability curricula. The center would be able to accommodate several class field trips per day, as well as 100 to 200 visitors per month. The center would be a 30-foot-by-30-foot enclosed building, compliant with the Americans with Disabilities Act, with restrooms, a scale model of the solar facilities, and exhibits on solar power.

Alternatives

In determining the range of reasonable alternatives to be considered in the EIS for the proposed Project, DOE identified the reasonable alternatives that would satisfy the underlying purpose and need for agency action. DOE currently plans to analyze in detail the Project proposed by Topaz and the No Action alternative. Topaz's site selection criteria for the Project included environmental sensitivity, topography, electrical grid system integration, high solar production potential, and disturbed land availability. Topaz determined that the Project area met these criteria because it has a strong solar resource, is adjacent to a transmission line with available capacity, contains relatively flat terrain and consists of previously disturbed, available land. Within the Project area, Topaz identified two Study Areas (Study Area A and Study Area B) that would be suitable for the Project, although construction of the Project would take place on only one Study Area if the Project is approved. DOE will analyze both Study Areas (Study Area A and Study Area B) available to Topaz as options, within the scope of the Project and mitigation measures as appropriate.

Under the No Action alternative, DOE would not provide the loan guarantee to Topaz. In this case, Topaz may have greater difficulty obtaining financing for the Project, which may result in a delay in the start of construction, construction in smaller phases over a longer time period, potentially increased project cost, or could possibly result in the Project not being built. Although Topaz may still pursue the Project without the loan guarantee, as defined above, for purposes of this NEPA analysis, it is assumed that the No Action alternative would include a no Project or no build scenario.

Notice of Proposed Floodplain Action

DOE is hereby providing notice of a proposed DOE action in a floodplain pursuant to DOE Floodplain and Wetland Environmental Review Requirements (10 CFR Part 1022). Overhead electrical lines would need to cross 100-year floodplains (unnamed drainages within the Carrizo Plain, northwest of Soda Lake). Since some of the floodplains on the project site are greater than 200 feet wide and posts are needed every 200 feet to support overhead lines, the installation of some posts within the floodplain is anticipated. DOE will prepare a floodplain assessment as required by DOE regulations. The floodplain assessment will be included as part of the EIS that DOE is preparing for this project. Interested parties may comment during the scoping period following the publication of this NOI and will also be able to comment on the floodplain assessment when the Draft EIS is published.

Preliminary Identification of Environmental Issues

DOE has tentatively identified the following environmental resource areas for consideration in the EIS. This list is neither intended to be all-inclusive nor a predetermined set of potential environmental impacts:

Air quality.
Greenhouse gas emissions and climate change.
Energy use and production.
Water resources, including groundwater and surface waters.
Wetlands and floodplains.
Geological resources.
Ecological resources, including species of special concern and threatened and endangered species such as the San Joaquin kit fox, longhorn fairy shrimp and vernal pool fairy shrimp.
Cultural resources, including historic structures and properties; sites of religious and cultural significance to Tribes; and archaeological resources.
Land use.
Visual resources and aesthetics.
Transportation and traffic.
Noise and vibration.
Hazardous materials and solid waste management.
Human health and safety.
Accidents and terrorism.
Socioeconomics, including impacts to community services.
Environmental justice.
Cumulative impacts.

DOE invites comments on whether other resource areas or potential issues should be considered in the EIS.

Public Scoping Process

To ensure that all issues related to DOE's proposed action are addressed, DOE seeks public input to define the scope of the EIS. The public scoping period will begin with publication of this Notice of Intent and end on November 22, 2010. Interested government agencies, private-sector organizations, and the general public are encouraged to submit comments concerning the content of the EIS, issues and impacts that should be addressed, and alternatives that should be considered. Scoping comments should clearly describe specific issues or topics that the EIS should address to assist DOE in identifying significant issues for analysis. Comments must be postmarked or e-mailed by November 22, 2010 to ensure consideration. (*See* **ADDRESSES** above). Late comments will be considered to the extent practicable. DOE invites those agencies with jurisdiction by law or special expertise to be cooperating agencies in the preparation of this EIS.

A public scoping meeting will be held during the scoping period, at a date, time, and location to be determined. Notice of this meeting will be provided in local news media and on the DOE Loan Guarantee Program's "NEPA Public Involvement" Web site (*http://loanprograms.energy.gov/?page_id=337*) and the DOE's NEPA Web site "Public Participation" Calendar (*http://nepa.energy.gov/calendar.htm*) at least 15 days prior to the date of the meeting. Members of the public and representatives of groups and Federal, State, local, and Tribal agencies are

invited to attend. The meeting will include both a formal opportunity to present oral comments and an informal session during which DOE and Topaz personnel will be available for discussions with attendees. Displays and other forms of information about the proposed agency action, the EIS process, and Topaz's proposed Project will also be available for review. DOE requests that anyone who wishes to present oral comments at the meeting contact Ms. Colamaria by phone or e-mail (*see* **ADDRESSES** above). Individuals who do not make advance arrangements to speak may register at the meeting. Speakers who need more than five minutes should indicate the length of time desired in their request. DOE may need to limit speakers to five minutes initially, but will provide additional opportunities as time permits. Written comments regarding the scoping process can also be submitted to DOE officials at the scoping meeting.

The DOE will use and coordinate the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) as provided for in 36 CFR 800.2(d)(3). Because the Topaz project site is expected to impact waters subject to the jurisdiction of the U.S. Army Corps of Engineers, the project will require a Section 404 Permit. In addition, because the proposed Topaz project may affect listed species under the Endangered Species Act (ESA), DOE will also initiate consultation regarding the project with the U.S. Department of the Interior's Fish and Wildlife Service under Section 7 of the ESA. DOE will also invite Federally-recognized American Indian Tribes that have historic interests in the area to government-to-government consultation regarding the project. Government-to-government consultation will be offered to Indian Tribes, and Tribal concerns, including impacts on Indian trust assets, will be given appropriate consideration. Federal, State, and local governments—along with other stakeholders who may be interested or affected by the DOE's decision on this Project—are invited to participate in the scoping process and, if eligible, may request or be requested by the DOE to participate as a cooperating agency.

Issued in Washington, DC, on October 18, 2010.

Jonathan M. Silver,

Executive Director, Loan Programs Office.

[FR Doc. 2010–26712 Filed 10–21–10; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling

AGENCY: Department of Energy, Office of Fossil Energy.

ACTION: Notice of open meeting.

SUMMARY: This notice announces an open meeting of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (the Commission). The Commission was organized pursuant to the Federal Advisory Committee Act (Pub. L. 92–463, 86 Stat. 770) (the Act). The Act requires that agencies publish these notices in the **Federal Register**. The Charter of the Commission can be found at: *http://www.OilSpillCommission.gov.*

DATES: November 8, 2010, 9 a.m.–5 p.m., and November 9, 2010, 9 a.m.–5:30 p.m.

ADDRESSES: Grand Hyatt Washington, 1000 H St., NW., Washington, DC 20001; telephone number: 1–202–582–1234.

FOR FURTHER INFORMATION CONTACT: Christopher A. Smith, Designated Federal Officer, Mail Stop: FE–30, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585; telephone (202) 586–0716 or facsimile (202) 586–6221; e-mail: *BPDeepwaterHorizon Commission@hq.doe.gov.*

SUPPLEMENTARY INFORMATION:

Background: The President directed that the Commission be established to examine the relevant facts and circumstances concerning the root cause of the BP Deepwater Horizon explosion, fire, and oil spill and to develop options to guard against, and mitigate the impact of, any oil spills associated with offshore drilling in the future.

The Commission is composed of seven members appointed by the President to serve as special Government employees. The members were selected because of their extensive scientific, legal, engineering, and environmental expertise, and their knowledge of issues pertaining to the oil and gas industry. Information on the Commission can be found at its Web site: *http://www.OilSpillCommission.gov.*

Purpose of the Meeting: Inform the Commission about the progress of the Chief Counsel's investigation into the Macondo well blowout. The Commission will hear a presentation from the Chief Counsel and statements from industry and academic experts. The Commission will also have the opportunity to hear from representatives of companies involved in the events leading to the blowout.

Tentative Agenda: The meeting is expected to start on November 8, 2010 at 9 a.m. Presentations to the Commission are expected to begin shortly thereafter and will conclude at approximately 5 p.m. The meeting will continue on November 9, 2010 at 9 a.m. with presentations to the Commission. Public comments can be made on November 9, 2010 from 5 p.m. to 5:30 p.m. The final agenda will be available at the Commission's Web site: *http://www.OilSpillCommission.gov.*

Public Participation: The meeting is open to the public, with capacity and seats available on a first-come, first-serve basis. The Designated Federal Officer is empowered to conduct the meeting in a fashion that will facilitate the orderly conduct of business.

Approximately one-half hour will be reserved for public comments on the second day of the hearing. Time allotted per speaker will be three minutes. Opportunity for public comment will be available on November 9, 2010 tentatively from 5 p.m. to 5:30 p.m. Registration for those wishing to request an opportunity to speak opens onsite on November 9, 2010 at 8 a.m. Speakers will register to speak on a first-come, first-serve basis. Members of the public wishing to provide oral comments are encouraged to provide a written copy of their comments for collection at the time of onsite registration.

Those not able to attend the meeting may view the meeting live on the Commission Web site: *http://www.OilSpillCommission.gov.* Those individuals who are not able to attend the meeting, or who are not able to provide oral comments during the meeting, are invited to send a written statement to Christopher A. Smith, Mail Stop FE–30, U.S. Department of Energy, 1000 Independence Ave., SW., Washington, DC 20585, or e-mail: *BPDeepwaterHorizion Commission@hq.doe.gov.*

Minutes: The minutes of the meeting will be available at the Commission's Web site: *http://www.OilSpillCommission.gov* or by contacting Mr. Smith. He may be reached at the postal or e-mail addresses above.

Accommodation for the hearing impaired: A sign language interpreter will be onsite for the duration of the meeting.

UNITED STATES DEPARTMENT OF ENERGY
PUBLIC SCOPING MEETING
Topaz Solar Farm Project
ENVIRONMENTAL IMPACT STATEMENT

The U.S. Department of Energy (DOE) will conduct a meeting to obtain public comments regarding its proposed action of issuing a Federal loan guarantee to Topaz Solar Farms, LLC (Topaz) to support construction of the Topaz Solar Farm Project located in San Luis Obispo County, CA. DOE will use the public comments to define the scope of an Environmental Impact Statement (EIS) that will assess the potential environmental impacts of the proposed project. In addition, DOE intends to offer the U.S. Army Corps of Engineers, and any other eligible agency, cooperating agency status in the preparation of the EIS. Topaz proposes to develop the Project on approximately 4,000 acres of land. As proposed, the approximately 550 MW electric generation project would include the installation of about nine million photovoltaic solar modules within approximately 437 arrays and associated electric equipment. At full capacity, the Project would generate enough electricity to power an estimated 160,000 California homes annually.

Members of the public are invited to attend to obtain information about the proposed project and make comments. DOE and project personnel will be available for informal discussions prior to the presentation of oral comments.

DATE: Tuesday, November 16, 2010
OPEN HOUSE & INFORMAL Q & A SESSION: 5:00 pm
PRESENTATION OF PROJECT DESCRIPTION & ORAL COMMENTS: 7:00 p.m.
PLACE: Carrisa Plains Heritage Association Community Center – 10750 Carrisa Highway (Highway 58), approximately one mile east of Soda Lake Road

Individuals wishing to present oral comments may either register in advance by notifying DOE via phone or e-mail as indicated below or register at the meeting. Comments presented at the meeting or received at DOE by November 22, 2010, will be considered in preparing the EIS.

Angela F. Colamaria Loan Guarantee Program Office (LP-10) U.S. Department of Energy 1000 Independence Avenue, SW Washington, DC 20585	**Office:** 202-287-5387 **Toll-free:** 1-800-832-0885 **Fax:** 202-586-4052 **Electronic mail:** Angela.Colamaria@hq.doe.gov

From: Topaz-EIS [mailto:Topaz-EIS@Hq.Doe.Gov]
Sent: Friday, November 12, 2010 9:49 AM
To: Topaz-EIS
Subject: NOTICE OF PUBLIC MEETING FOR TOPAZ SOLAR FARM, SAN LUIS OBISPO COUNTY

This email is to notify you of a public meeting regarding the proposed Topaz Solar Farm, in San Luis Obispo County, CA. The Department of Energy (DOE) is considering whether to give a Federal loan guarantee to the project sponsor.

The DOE intends to prepare an environmental impact statement (EIS) pursuant to the National Environmental Policy Act, to assess the potential environmental impacts of its proposed action of issuing a Federal loan guarantee to Topaz Solar Farms, LLC (Topaz) (DOE/EIS-0458). Topaz submitted an application to DOE under the Federal loan guarantee program pursuant to the Energy Policy Act of 2005 (EPAct 2005) to support construction of the Topaz Solar Farm Project located in San Luis Obispo County.

Members of the public are invited to attend the scoping meeting to obtain information about the proposed project and make comments. DOE and project personnel will be available for informal discussions prior to the presentation of oral comments.

DATE: Tuesday, November 16, 2010
OPEN HOUSE & INFORMAL Q & A SESSION: 5:00 pm
PRESENTATION OF PROJECT DESCRIPTION & ORAL COMMENTS: 7:00 p.m.

PLACE: Carrisa Plains Heritage Association Community Center – 10750 Carrisa Highway (Highway 58), approximately one mile east of Soda Lake Road

Individuals wishing to present oral comments may either register in advance by notifying Angela Colamaria via phone or e-mail, as indicated below, or register at the meeting.

Written comments can be signed and mailed to the address below, or submitted electronically to Topaz-EIS@hq.doe.gov by November 22, 2010.

Comments presented at the meeting or received at DOE by November 22, 2010, will be considered in preparing the EIS.

You are receiving this notice because you have previously expressed interest in this project, or may be affected by this project. If you would like to be removed from this mailing list, please reply to this email with REMOVE in the subject line.

For questions, written comments, or to sign up for oral comments please contact:

Angela F. Colamaria
U.S. Department of Energy
Loan Programs Office
Environmental Compliance Division
1000 Independence Avenue, S.W., LP-10
Washington, DC 20585

Direct: (202) 287-5387
Fax: (202)586-7809
Email: angela.colamaria@hq.doe.gov

Appendix B
PG&E Connected Action

June 22, 2011

Brandon Liddell
Pacific Gas and Electric Company
245 Market Street
San Francisco, CA 94105

Subject: Carrizo to Midway 230 kV Transmission Line Reconductoring Project Pond Surveys for California Tiger Salamander

Dear Mr. Liddell:

This letter summarizes results of surveys conducted by ICF between April 1 and June 10, 2011, to determine whether California tiger salamander (*Ambystoma californiense*) is likely to be present in ponds within 1.24 miles of the Carrizo-Midway Reconductoring Project work areas. Surveys were initiated at the request of CDFG.

According to the California Natural Diversity Database (2010), the closest known California tiger salamander (CTS) occurrence is approximately 19 miles northwest of the project area. The southern extent of the range of the Central Valley population of CTS is approximately 15 miles northwest of the project area (California Department of Fish and Game 2011). Because of the locations of the known occurrences, CTS was not expected to occur in or within 1.24 miles of the project area.

However, on January 25, 2011, California Department of Fish and Game (CDFG) biologist, David Hacker, requested that larval surveys be conducted within a pond that occurs near the work areas at Tower 071 and Tower 073**.** This pond is referenced as Pond 8 in Table 1, which also indicates various distances from work areas. Will Kohn (ICF wildlife biologist) requested and received authorization from the U.S. Fish and Wildlife Service (USFWS) and CDFG to conduct the larval CTS surveys. Biologists Will Kohn and Molly Globe (ETIC biologist) conducted the first survey of the pond on April 1, 2011. Both surveyors are permitted by the USFWS and CDFG to conduct CTS surveys and have observed CTS larvae and adults in the field on numerous occasions. Mr. Kohn and Ms. Globe used dip nets with 1/8-inch mesh during the first survey. It was during this survey that several eggs and a single embryo were observed and photographed. At the time, surveyors could not make a specific determination, but in an abundance of caution did note that the embryo had an appearance similar to that of a salamander[1]. The larvae and eggs of California toad (*Anaxyrus boreas*

[1] The embryo was photographed and returned to the pond. The photograph was also submitted, informally, to several individuals with extensive amphibian experience, including Mark Jennings (Rana Resources), Brad Shaffer (UC Davis), and Pete Trenham (UC Santa Cruz). Jennings stated that the embryo was that of a salamander, but could not determine the species; Shaffer and Trenham thought likewise. Formal letters requesting ID assistance were submitted on May 20, 2001 to Mark Jennings, Pete Trenham, Adam Clause (UC Davis) and Samuel Sweet (UC Santa Barbara). Mr. Sweet, the only

halophilus) and Sierra tree frog (*Pseudacris sierra*) were also observed. The survey was abbreviated because of the large number of western toad and Sierra tree frog egg masses that were observed in the pond and Mr. Kohn and Ms. Globe determined not to disrupt the egg masses.

A second survey of the pond was conducted on April 22, 2011 by Mr. Kohn, Ms. Globe, and Sally Krenn (PG&E biologist), who was working under Mr. Kohn's and Ms. Globe's permits. The surveyors used 1/8-inch mesh dip nets and a ¼-inch mesh seine measuring 15 feet x 4 feet. No CTS eggs, larvae, or adults were observed during this second survey. California toad and Sierra tree frog larvae were captured.

A third survey of the pond was conducted on May 12, 2011 by Mr. Kohn, Ms. Globe, and Ms. Krenn. Survey equipment used included 1/8-inch mesh dip nets, a ¼-inch mesh seine measuring 15 feet x 4 feet, and a 1/8-inch mesh seine measuring 6 feet x 6 feet that could be lowered to a depth of 10 feet (the depth of the pond). No CTS eggs, larvae, or adults were observed during this third survey. The larvae of three other amphibian species were captured in the pond; California toad, Sierra tree frog, and western spadefoot toad (*Spea hammondii*). No bullfrogs (*Rana catesbiana*) or fish species were captured or observed in the pond.

A fourth survey of the pond was conducted on June 9, 2011 by Mr. Kohn, Ms. Globe, and Ms. Krenn. The equipment that was used was similar to that used during the third survey. No CTS eggs, larvae, or adults were observed during the fourth survey. Western spadefoot, western toad, and Sierra treefrog larvae and metamorphs were captured during the survey. No bull frogs or fish species were captured or observed.

After the observation of the unidentified embryo on April 1, 2011, our biologists conducted a search for other ponds that could provide suitable breeding habitat within 1.24 miles of project work areas. In total, there are eleven ponds (see Overview Figure and Figures 1–4) within 1.24 miles of the Carrizo-Midway 230 kV line and associated work areas, ranging in elevation from 1,600 feet to over 3,500 feet (Table 1). Four ponds occur within 1.24 miles of the work areas at Tower 071 and Tower 073 (Figure 1), including Pond 8, which occurs at approximately 1,600 feet in elevation. Three ponds are within 1.24 miles of Landing Zone (LZ) 048 (Figure 2). These ponds are above 3,500 feet in elevation and the upland habitat is California juniper woodland. Three ponds are within 1.24 miles from Tension Pull Site (TP) 065 (Figure 3). These ponds are above 3,000 feet in elevation and upland habitat is oak woodland and California juniper woodland. One pond is located 0.35 mile from TP 090 (Figure 4). Upland habitat near this pond and at TP 090 is in the grassland/saltbush scrub habitat interface.

Ponds (1 through 7 and 9 through 11) (Table 1) were first surveyed on May 12, 16, and 17, 2011 by Mr. Kohn and Ms. Globe. Survey equipment used included 1/8-inch mesh dip nets and ¼-inch mesh seine measuring 15 feet x 4 feet. A second survey of these ponds was performed by Mr. Kohn and Ms. Globe on June 9 and June 10, 2011. Ponds 2, 10, and 11 were dry during the first and second surveys, so no aquatic habitat was present. Although ponds 3 and 7 contained water during the first survey effort, no amphibian larvae were captured or detected and were not sampled a second time.

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formal respondent to date, believes that the photo looks like western spadefoot toad, since it did not resemble an *Ambystoma* embryo in body proportions. He noted, however, that the photo had limitations in making a certain call.

No CTS eggs, larvae, or adults were captured or observed during the first or second sampling event in the remaining ponds (ponds 1, 4-6, and 9)(Ponds 4, 5, 6, and 9 were surveyed on June 9, 2011 and Pond 1 was surveyed on June 10, 2011). Three amphibian species were captured and observed in varying abundance: California toad, western spadefoot toad, and Sierra tree frog. No bullfrogs or fish were captured in any of the ponds, although a dead catfish was observed along the shore of Pond 6 during the first survey event.

In total, approximately 20 survey hours were conducted at Pond 8. Despite continued survey efforts at this location, no CTS have been collected in our ongoing and repeated sampling efforts—only California toad, Sierra tree frog, and western spadefoot toad larvae and metamorphs have been detected in varying abundance. We also note that the specimen in the April 1, 2011 photo, along with one or two unique-looking eggs, was observed 15-20 miles outside of the known range of the CTS. Spadefoot larvae were not detected in Pond 8 until the third survey event, on May 12, when they were sampled in smaller quantities (hundreds), compared to California toad and Sierra tree frog (thousands). This is a reasonable explanation for the observation of the small quantity of unique eggs and an embryo in early April. Given the evidence to date, we believe that the specimen photographed on April 1, 2011 was most likely a spadefoot toad. The inability of experts to agree on a photo-based species identification is not surprising, given the limitations inherent to the image—the quality of the photo is in question, more so than the expertise of the individuals providing the opinion. Nonetheless, based on the lack of detection in the field to date, as well as the distance outside the known range, we conclude that the presence of CTS in the project has not been substantiated.

Sincerely,

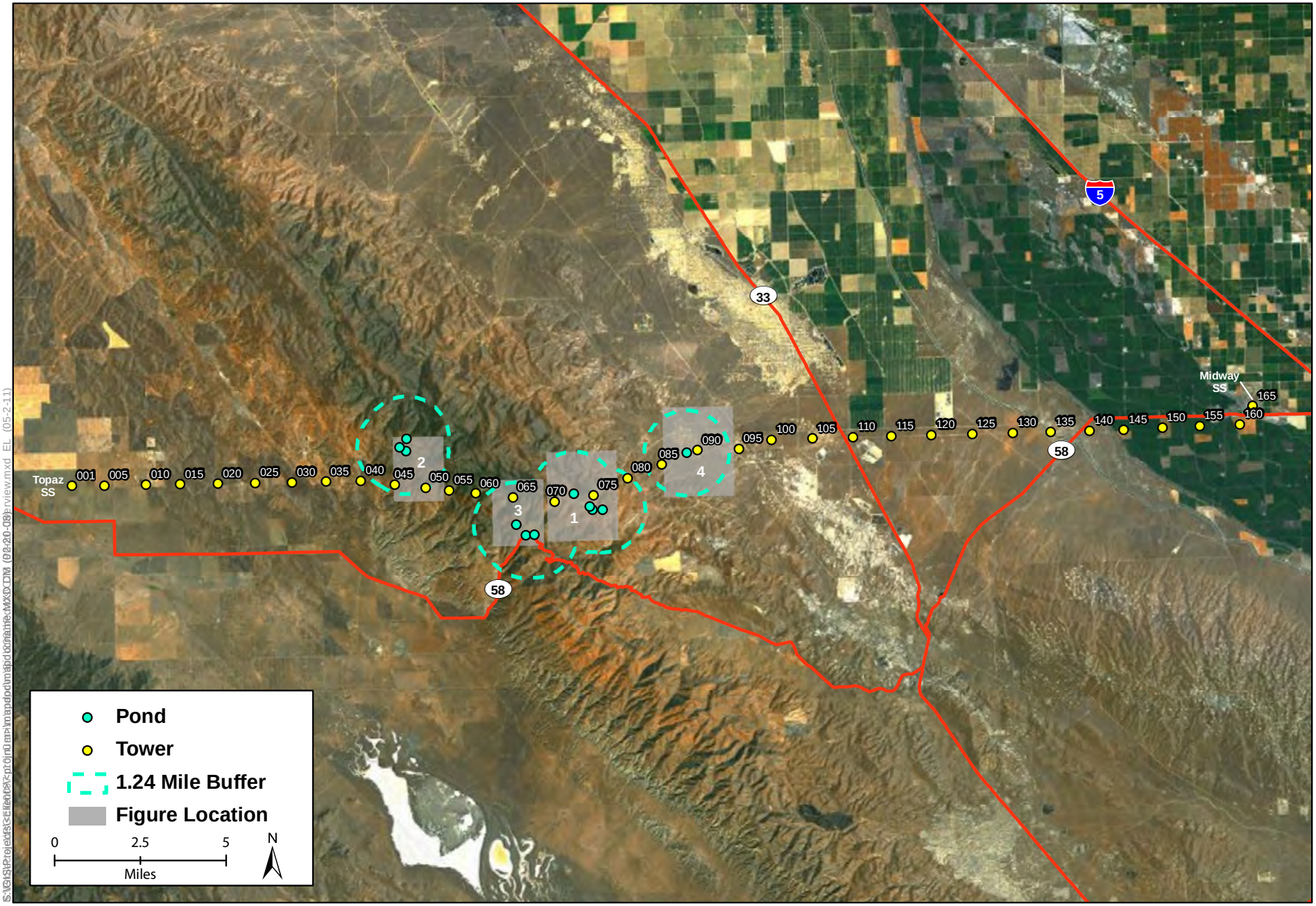
Robert Knutson
Senior Biologist

Attachments

cc: Janelle Kellman, Esq, PG&E Law Department
Sally Krenn, PG&E Wildlife Biologist
Will Kohn, ICF Wildlife Biologist

Table 1. Ponds within 1.24 Miles of Project Work Area

Work Area ID	Work Area Type	Pond ID	Distance of Pond(s) from Work Area (mi)	Elevation (ft) of Pond
48	Landing Zone	1, 2, 3	0.69, 0.65, 0.43	3,471; 3,657; 3,584
48	Access Road Improvement	2, 3	1.10, 1.02	3,657; 3,584
50	Access Road Improvement	3	1.21	3,584
50	Tension Pull Site (OPGW Site)	3	1.19	3,584
65	Access Road Improvement	4, 5, 6	0.27, 0.40, 0.47	3,310; 3,272; 3,242
65	Tension Pull Site (OPGW Site)	4, 5, 6	0.77, 1.13, 1.21	3,310; 3,272; 3,242
71	Access Road Improvement	7, 8, 9, 10	0.06, 0.60, 0.68, 0.96	1,609; 1,604; 1,617, 1,660
73	Landing Zone	7, 8, 9, 10	0.38, 0.13, 0.25, 0.51	1,609; 1,604; 1,617; 1,660
73	Tension Pull Site	7, 8, 9, 10	0.2, 0.23, 0.34, 0.57	1,609; 1,604; 1,617; 1,660
71	Tension Pull Site (OPGW Site)	7, 8, 9, 10	0.3, 0.66, 0.75, 1.04	1,609; 1,604; 1,617; 1,660
80	OPGW Slice Box	10	1.15	1,660
90	Tension Pull Site (OPGW Site)	11	0.32	980



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Overview
Ponds Within 1.24 Miles of Carrizo Work Areas

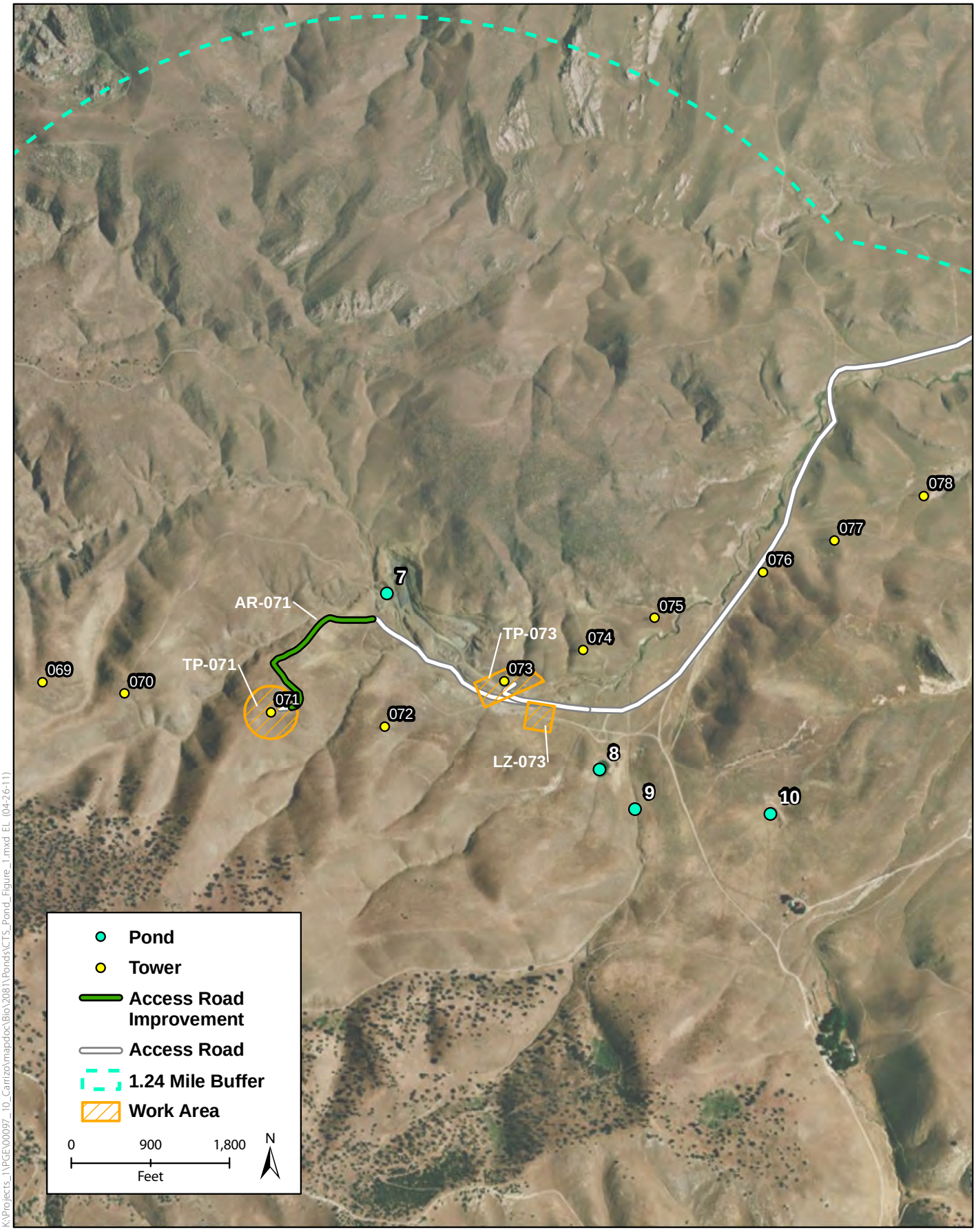

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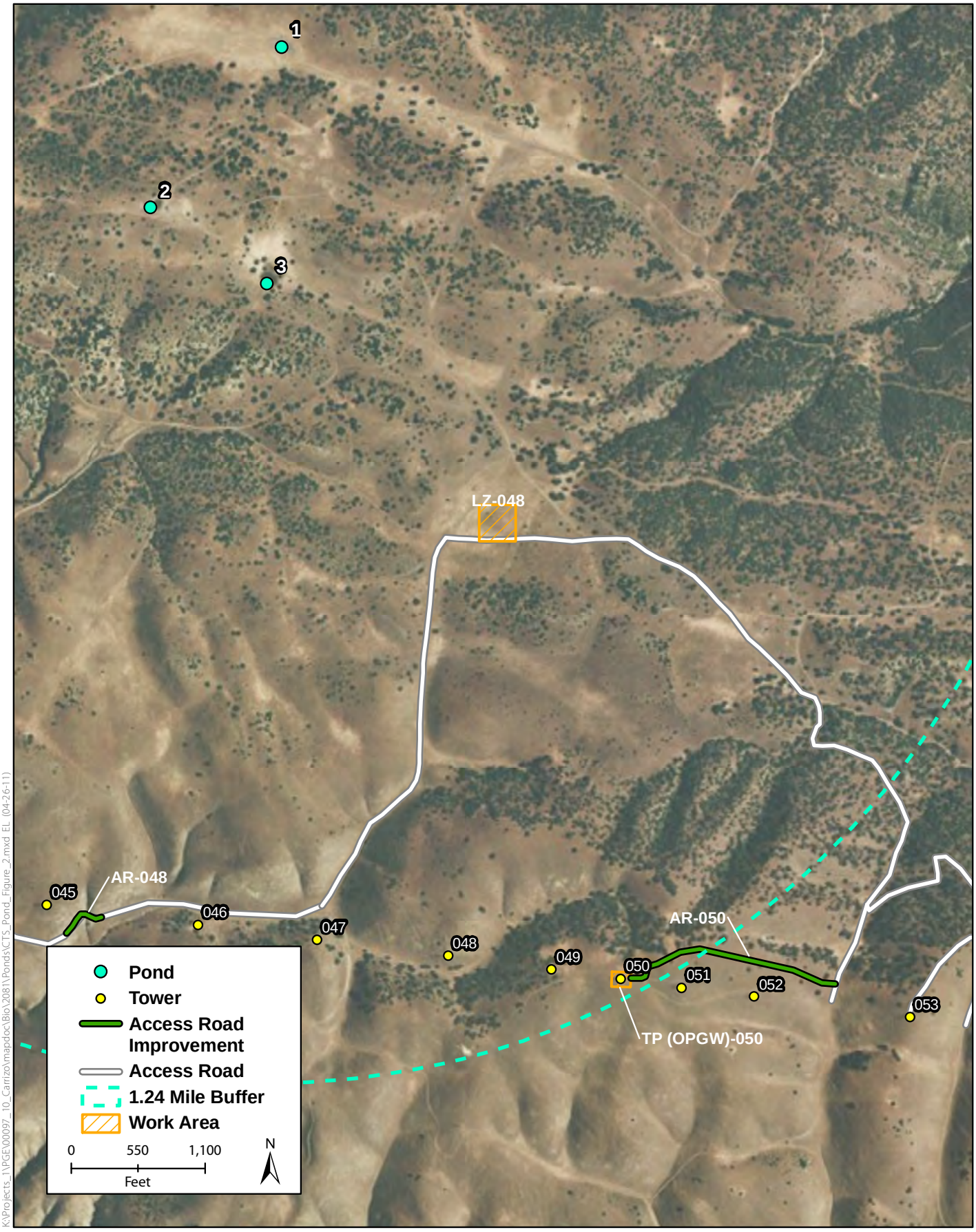
Figure 1 of 4
Ponds Within 1.24 Miles of Carrizo Work Areas



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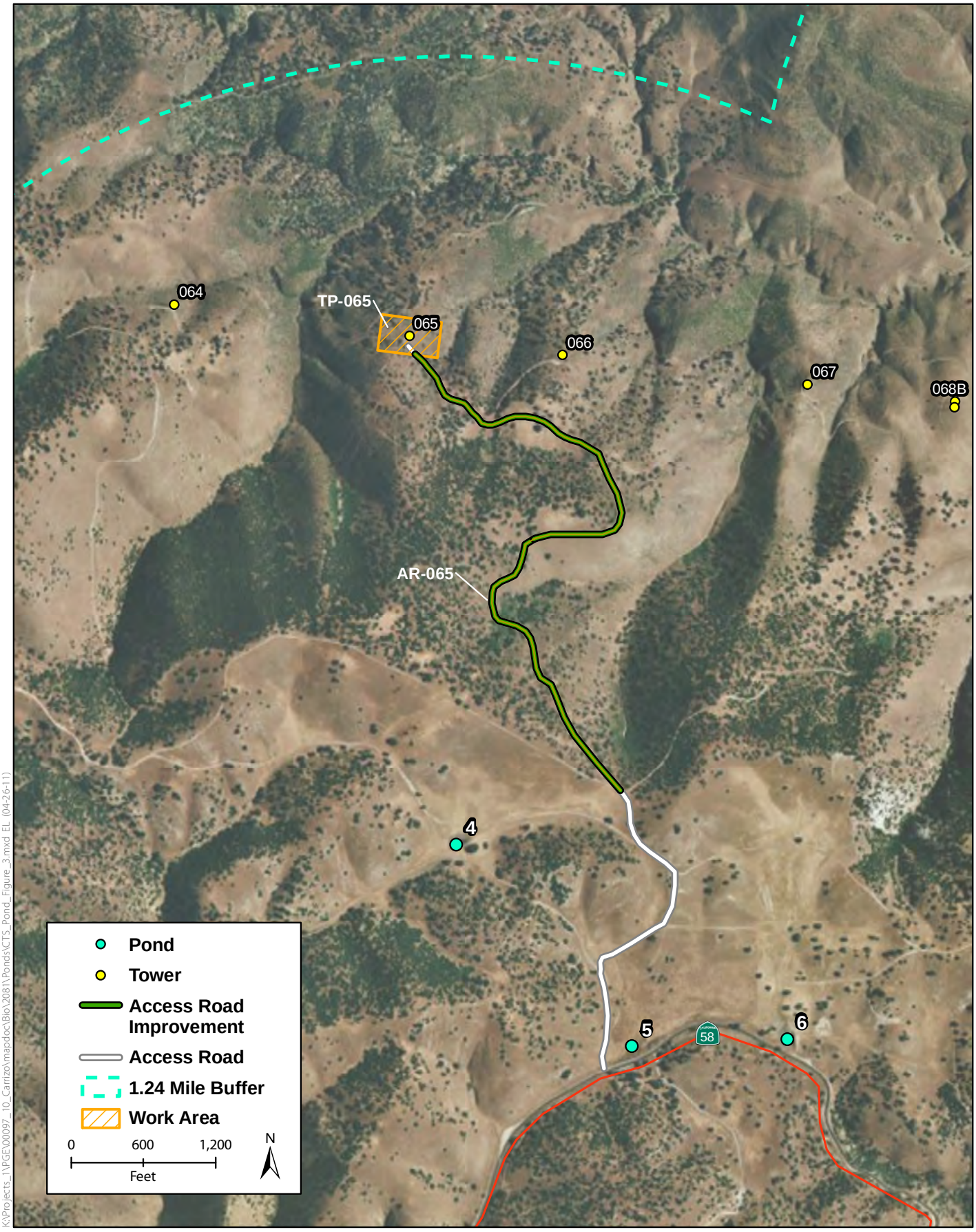
ICF INTERNATIONAL

Figure 2 of 4
Ponds Within 1.24 Miles of Carrizo Work Areas



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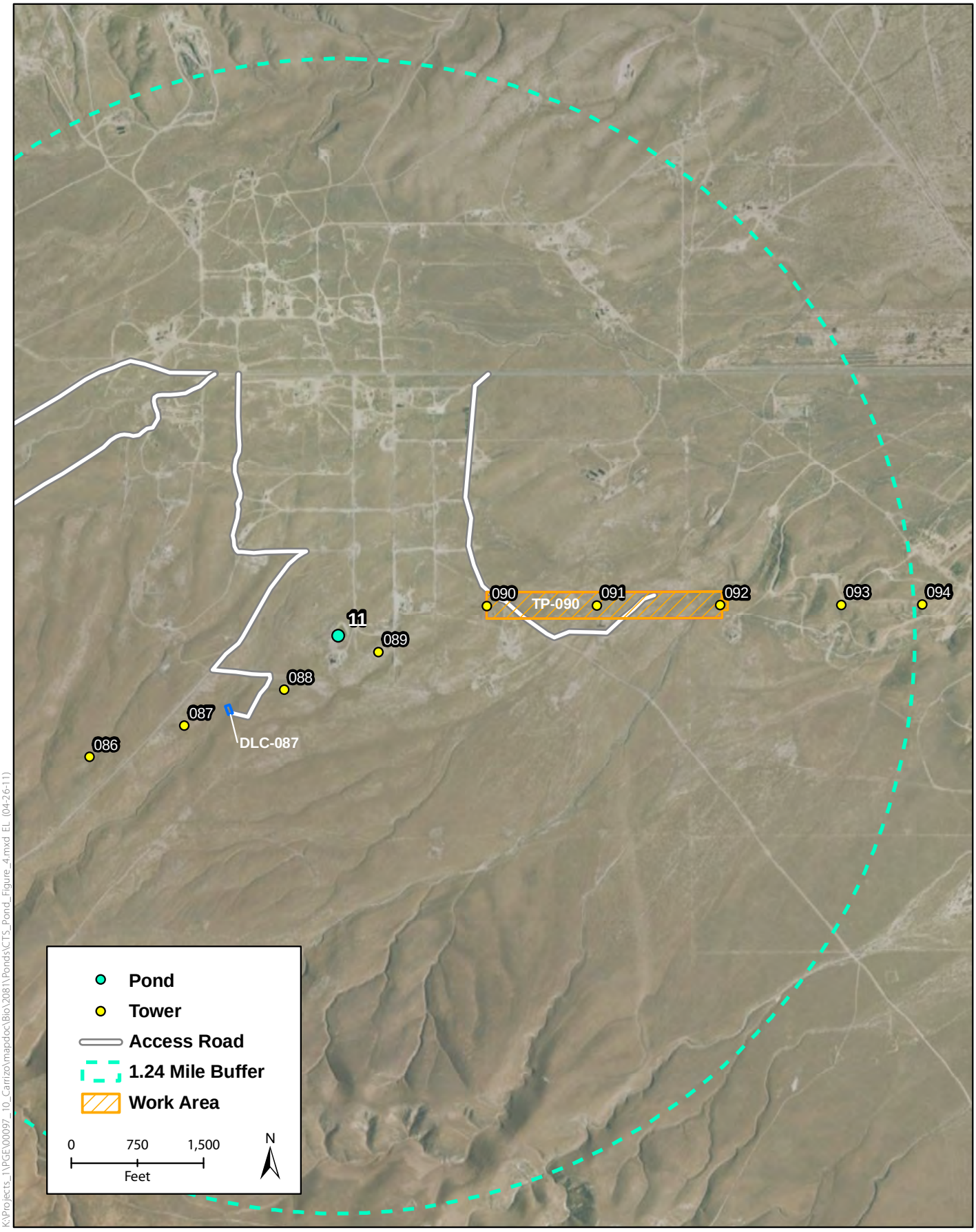
ICF INTERNATIONAL

Figure 3 of 4
Ponds Within 1.24 Miles of Carrizo Work Areas



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ICF INTERNATIONAL

Figure 4 of 4
Ponds Within 1.24 Miles of Carrizo Work Areas

MEMORANDUM

Date: April 28, 2011

To: File

From: Steve McMasters, Senior Planner
San Luis Obispo County, Planning and Building Department - Environmental Division

Subject: Additional Information on Related Action/Foreseeable Project Associated with PG&E Transmission Upgrades - Potential occurrence of California tiger salamander in Kern County

A Final Environmental Impact Report (EIR) was prepared by the San Luis Obispo County (County) Department of Planning and Building pursuant to the California Environmental Quality Act (CEQA) for the Topaz Solar Farm Project (Topaz), which was published on March 17, 2011. Appendix 4 of the Final EIR includes an evaluation of the environmental impacts associated with the transmission upgrades proposed by PG&E and each issue area chapter of the Final EIR includes a summary of this appendix.

This memorandum addresses the potential occurrence of California tiger salamander (*Ambystoma californiense*) a federally and State Threatened species that may occur along a portion of the proposed PG&E transmission line in Kern County. Preliminary information provided by PG&E indicates this species may have been located in a pond approximately 100 feet from PG&E Tower No. 72 located in Kern County east of the Topaz Project site. According to PG&E, one group of four eggs and embryos was detected in the pond. At the direction of the California Department of Fish and Game, PG&E intends to conduct further investigation to determine if this species is present in the pond.

As stated in Section C.6 of the Final EIR, California tiger salamanders have not been found within either proposed Option A, B or Alternative 3B.1. The CNDDB indicates a historic documentation of this species approximately 13 miles northwest of the project site in the southern corner of the USGS Packwood Creek 7.5" quadrangle. In March 2010, this species was detected from disjunct locations approximately 15 miles northwest of the project site near Grant and Twisselman Lakes (Hunt, 2010). Although the presence of onsite agricultural reservoirs provide permanent water for breeding and annual grassland used for cattle grazing, there is no indication this species is present on the project site. While the species is known to occur north and south of the Carrizo Plain this species has not been documented in the area despite extensive surveys by local experts (Hunt, 2010). This may be a function of historic disturbance and the saline water sources that occur in the region.

Additions to Appendix 4 of the Final EIR

Appendix 4 of the Final EIR provides CEQA documentation to support the proposed reconductoring of the existing 230 kV transmission line. Based on the potential discovery of this species in the project area, PG&E has recommended the following revisions to the last bullet in Special-Status Wildlife section on page Ap.4-62 of Appendix 4:

"The project area is outside of the known geographic range of the California tiger salamander, western patch nosed snake. PG&E is conducting surveys at the direction of CDFG, and it is possible, although not confirmed, that California tiger salamander larvae occur in a pond in Kern County near Tower 072 of the Reconductoring Project. If this potential finding is confirmed or if California tiger salamander is discovered at any other locations, PG&E will implement AMM-17 contained in Table Ap. 4-6 herein and referenced for California tiger salamander in Table 3-1 of Appendix 4E, as well as any other avoidance or conservation measures directed by CDFG and/or USFWS.

Examples of measures that may be developed in coordination with CDFG and/or USFWS to further ensure that impacts to any California tiger salamander are less than significant include the following:

- At least 15 days prior to the onset of activities, the applicant or project proponent shall submit the name(s) and credentials of biologists to USFWS who would conduct activities specified in the following measures.

- During project activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

- All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any riparian habitat or water body, or visquene plastic with adequate secondary containment will be used to fuel stationary equipment within 100 feet.

- Project sites shall be revegetated with an appropriate assemblage of native riparian and upland vegetation suitable for the area, at the direction of a qualified botanist.

- All excavated material shall be stored at a minimum of 150 feet from any culvert, wash, pond vernal pool or stream crossing.

- Tightly woven fiber netting or similar material shall be used for erosion control or other purposes to ensure that tiger salamander do not get trapped. Plastic monofilament netting shall not be used.

- The proposed action will not affect any suitable aquatic habitat.

- Construction activities in suitable California tiger salamander upland habitat will be restricted to the dry season, April 15 through October 31, if possible. If construction activities must occur within suitable tiger salamander habitat during the wet season due to the project schedule, when the species may be migrating overland to suitable breeding habitat, the perimeter of pull sites, staging areas, and/or landing zones will be fenced with exclusion fencing by October 15. Installation of exclusion fencing will occur under the supervision of a qualified biologist. The exclusion fencing will remain in place for the duration of construction and will be monitored during SWPPP inspections and by the biological monitors. Where access is necessary, gates will be installed with the exclusion fence.

- As necessary, erosion control measures will be implemented in these areas to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures

will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas.

- Locations of erosion control measures will be specified in the SWPPP. Erosion control measures will be furnished, constructed, maintained, and later removed as shown on the plans, as specified in the special provisions, and as directed by the project engineer.

- The biological monitor and construction foreman will be responsible for checking the exclusion fencing around the work areas daily to ensure that they are intact and upright. This will be especially critical during rain events, when flowing water can easily dislodge the fencing. Any necessary repairs will be immediately addressed. The biological monitor will document the results of the daily monitoring visits on construction monitoring log sheets.

- Surface-disturbing activities will be designed to minimize or eliminate effects to rodent burrows that may provide suitable aestivation habitat. Areas with a high concentration of burrows will be avoided by surface-disturbing activities to the maximum extent practicable. In addition, when a concentration of burrows is present in a project site, the area will be staked or flagged to ensure that work crews are aware of their location and to facilitate avoidance of the area.

- A preconstruction survey will be conducted each day immediately preceding construction activity that occurs in designated 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. Parked vehicles will be inspected each morning before they are moved. In work sites that occur within 300 feet of suitable aquatic habitat, the survey area will include a 150-foot buffer around the work area. The survey will include a careful inspection of all potential hiding spots, such as large downed woody debris, the perimeter of ponds, wetlands, and riparian areas. Any tiger salamanders found will be captured and held for a minimum amount of time necessary in order to relocate the animal to a suitable burrow a minimum of 300 feet outside of the work area.

- Nets or bare hands may be used to capture tiger salamanders. An approved biologist will not use soaps, oils, creams, lotions, insect repellents, or solvents of any sort on their hands within 2 hours before handling tiger salamanders. Latex gloves will not be used. To avoid transferring diseases or pathogens between aquatic habitats during the course of surveys or handling, the biologists will follow the Declining Amphibian Task Force's "Code of Practice." While in captivity, individuals will be kept in a cool, moist, aerated environment such as a bucket containing a damp sponge. Containers used for holding or transporting these species will be sanitized and will not contain any standing water.

- No construction activities in sensitive habitat areas will occur during rain events of greater than 0.25 inch within a 24-hour period. No construction activities will be conducted in areas where tiger salamanders may occur if there is a greater than 70% chance of rain based on the National Oceanic and Atmospheric Administration's National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the monitor.

Any California tiger salamander upland habitat temporarily affected by project-related activities will be restored to pre-project conditions. Site-specific restoration measures and success criteria will be outlined in the Restoration Plan, which will be part of the overall Habitat Mitigation Plan developed for the project. A monitoring report will be due to USFWS and CDFG annually that will include photo-documentation with pre- and post-project photos, and other information as specified in the Habitat Mitigation Plan."

PG&E has also suggested adding the following text to include a new California Tiger Salamander subsection on page Ap.4-69 of Appendix 4, after Pronghorn.

California Tiger Salamander

The California tiger salamander (*Ambystoma californiense*) is a federally listed threatened species in San Luis Obispo County, and it is listed as threatened under the California Endangered Species Act. The California tiger salamander (CTS) is endemic to California. California tiger salamanders are restricted to vernal pools and seasonal ponds, in grassland and oak savannah habitats, predominantly from sea level to 2,000 feet, in central California. As an adult, it is a large, stocky, terrestrial salamander with a broad, rounded snout. Larvae are fully aquatic and require standing bodies of fresh water (natural or artificial) that are typically inundated for a minimum of 12 weeks during an average rainfall year. Ponds or agricultural reservoirs with a hydro-period of more than two years can accumulate a diverse array of aquatic predators, including invertebrates, aquatic salamanders, and fishes (Semlitsch 2002). Ponds containing high densities of aquatic predators, especially non-native fishes or bullfrogs (Rana catesbeiana), appear to be unsuitable as breeding habitat. Adults migrate to and from breeding ponds during the rainy season beginning in early November, with greatest breeding activity occurring December through March (Stebbins 2003). Newly-metamorphosed CTS leave the pond and spend most of their adult life underground in burrows of California ground squirrels, gophers, and other animals.

In San Luis Obispo County, the current range of the CTS is restricted to seasonal ponds along the northern San Andreas Fault Zone, between Kerr Lake one mile south of the Monterey County line and Grant Lake at Palo Prieto Pass (CNDDB September 2010). The southern known extent of CTS in San Luis Obispo County at Grant Lake is approximately 13 miles northwest of the Action Area. Tiger salamanders in San Luis Obispo County represent the southern extent of the Central Coast Range genetically distinct population, which extends northwest to Monterey Bay (CDFG 2010). The CTS is not known to occur in the Carrizo Plain. East of the Temblors, the nearest known occurrence is approximately 19 miles north of the reconductoring project work area.

Subsequent or Supplemental CEQA Document is Not Required

In accordance with CEQA Guidelines Section 15162, a subsequent EIR is not required because no new significant environmental effects would occur, no substantial increase in the severity of previously identified significant effects would occur, and no substantial revisions to the EIR are required. Similarly, in accordance with CEQA Guidelines Section 15163, a Supplemental EIR is not required because no new significant environmental effects would occur, and no substantial increase in the severity of previously identified significant effects would occur.

Further, this additional information addresses a reasonably foreseeable project, which does not change any of the conclusions made in the Final EIR regarding the Topaz Solar Farm Project. The EIR utilized the best available information regarding the California tiger salamander including known records; a review

of the current range of the species and its historical distribution; and consultation with local experts on the species. Implementation of the measures noted above would reduce impacts to this species and are commonly implemented in areas known to support California tiger salamander.

Appendix 4A

Transmission Upgrades to PG&E Solar-Midway 230 kV Transmission Line

Prepared for
County of San Luis Obispo
Department of Planning and Building
San Luis Obispo, California 93408

Prepared by

Aspen Environmental Group

January 2011

Contents

Appendix 4A
Transmission Upgrades to PG&E Solar-Midway 230 kV Transmission Line

1. Introduction

The California Independent System Operator (CAISO) has determined that transmission line upgrades would be required to deliver the energy generated by two proposed solar projects on the Carrizo Plain (the proposed California Valley Solar Ranch [CVSR] Project and the Topaz Solar Farm [Topaz] Project) to the transmission grid.[1] Specifically, an approximately 35-mile segment of the PG&E Morro Bay–Midway 230 kilovolt (kV) transmission line would be required to be reconductored. Reconductoring is the process of installing new conductor wires on existing towers, with the possibility of modifying or replacing some towers, in order to increase the capacity of an existing transmission line. In addition to reconductoring, two new switching stations (also called switchyards) would be required to connect the 230 kV transmission lines from the solar project sites to PG&E's existing Morro Bay–Midway 230 kV transmission lines. The Caliente Switching Station would be constructed for the CVSR project and the Solar Switching Station would be constructed for the Topaz project.

The CVSR project is proposed by High Plains Ranch II, LLC, a wholly owned subsidiary of SunPower Corporation Systems (SunPower). SunPower proposes to construct and operate a 250 megawatt (MW) photovoltaic (PV) solar power plant on land zoned "Agriculture" in California Valley, an unincorporated community on the Carrizo Plain in eastern San Luis Obispo County. The project includes solar arrays that would cover nearly 1,900 acres, an electric substation, switching station, operations and maintenance facilities, public viewing areas, and an approximately 2.8-mile 230 kV generation tie-line. The Topaz project is proposed by Topaz Solar Farms LLC, a wholly owned subsidiary of First Solar, Inc. First Solar proposes to construct and operate a 550 MW PV solar power plant approximately 4 miles northwest of the CVSR site along Highway 58 and east of Bitterwater Road.

The switching stations and reconductoring projects are reasonably foreseeable projects that would be required as a result of construction of the proposed CVSR and Topaz projects. This analysis is being prepared for two reasons. First, sections 15165 and 15378 of the California Environmental Quality Act (CEQA) Guidelines require that an Environmental Impact Report (EIR) describe the impacts of the "whole of the action," including impacts associated with reasonably foreseeable projects required to implement the proposed project. This disclosure is made by the County of San Luis Obispo (County) as part of its consideration of the CVSR and Topaz projects. Second, in order for the PG&E upgrades to be constructed, they must comply with the California Public Utilities Commission's (CPUC) General Order 131-D (GO 131-D) permitting requirements. It is anticipated that the CPUC will be able to use this document to satisfy CEQA requirements in its own subsequent evaluation of PG&E's switching station and reconductoring projects. As soon as possible after the County's environmental review is completed, PG&E anticipates complying with GO 131-D's Notice of Construction (NOC) requirements or filing an Application for a Permit to Construct (PCT) or an Application for a Certificate of Public Convenience and Necessity (CPCN) with the CPUC, depending on final project scope and CPUC guidance. If one or more

[1] To interconnect the projects to the Morro Bay–Midway No. 1 and 2 lines requires an interconnection application that is processed under CAISO's Large Generator Interconnection Procedure, which is a part of CAISO's Tariff approved by the Federal Energy Regulatory Commission. For details regarding the CAISO's Large Generator Interconnection Procedure see Tariff Appendix U at http://www.caiso.com/docs/2002/06/11/2002061110300427214.html.

PTC or CPCN application is required, the CPUC would review and make a decision on PG&E's application(s) for reconductoring of the PG&E Solar-Midway 230 kV transmission line and/or the two switching stations.

2. Description of PG&E Upgrades

This section identifies the specific transmission line segment that would be reconductored by PG&E, and provides an overview of the reconductoring process. It describes the basic work involved in reconductoring a transmission line, as well as specific designs (when known) for the reconductoring project (project or proposed project).

Attached to this appendix (Appendix 4) are additional documents that supplement the project description and impact analysis. These are:

Appendix 4B.1 Switchyard Alternatives Overview Map
Appendix 4B.2 Switchyard Alternatives Grading and Drainage Plans
Appendix 4C Passive Repeater Foundation Layout
Appendix 4D Air Quality Assessment
Appendix 4E.1 Biological Resources Report
Appendix 4E.2 Addendum 2 to Biological Resources Report
Appendix 4E.3 Botanical Survey Report
Appendix 4F Parcel Survey Tracking Table
Appendix 4G PG&E Response to County Comments Memo

2.1 Project Description

Reconductoring

Reconductoring would occur on both circuits of the PG&E Morro Bay–Midway double-circuit 230 kV transmission line between a new 230kV PG&E switching station (Solar Switching Station) at the point of interconnection of the Topaz Solar Farm Project and the existing Midway Substation in Kern County. The existing transmission line extends from PG&E's Morro Bay Substation in the City of Morro Bay, San Luis Obispo County, California to PG&E's Midway Substation in the City of Buttonwillow, Kern County, California. However, only the portion of the line between the solar energy projects on the Carrizo Plain and Midway Substation would be reconductored, as shown in Figure Ap.4A-1. This segment includes both the Caliente Switching Station (for the CVSR Project) and the Solar Switching Station (for the Topaz Project). In all, approximately 35 miles of the transmission line would be reconductored, ranging in elevation from 80 feet above mean sea level (msl) (at the Midway Substation) to 3,600 feet above msl (in the Temblor Range). Figure Ap.4A-1 shows an overview of the entire project and Figures Ap.4A-2a through Ap.4A-2f provide additional detail. Note that all figures are provided in separate files on the Draft EIR CD, and are listed at the end of this document.

The 35-mile portion of the existing transmission line proposed for reconductoring is supported by 171 lattice steel towers (LST), some of which would require modification or replacement to accommodate the new conductors, which are heavier and operate at a higher temperature than the existing conductors. The specific number of towers to be replaced has not yet been determined by PG&E. The existing 1113 AA conductor is 1.0440 lbs/foot and the replacement 954 ACSS conductor would be 1.2270 lbs/foot.

Most of these towers are double-circuit towers, with the exception of eight single-circuit transposition towers, two single-circuit substation dead-end structures at Midway Substation, and one double-circuit tubular steel pole (TSP) at Midway Substation. 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 Solar Switching Station and the Midway Substation varies between 75 and 128 feet wide. For approximately 6 miles extending westerly from the Topaz Solar Farm on the Carrizo Plain, the transmission line is adjacent to a ROW with a 115 kV transmission line. The wider sections of ROW within the 230 kV transmission corridor are located near transposition towers (where the positions of the conductors are changed at four separate sites along the path). The transmission line segment to be reconductored would begin at the Solar Switching Station required for interconnection of the Topaz Solar Farm to the PG&E 230 kV transmission system.

The Solar Switching Station would be located north of the existing PG&E transmission line corridor within the Topaz Solar Farm boundary. As shown on Figure Ap.4A-1, the station would be approximately one mile north of Highway 58 on the Carrizo Plain in an unincorporated portion of eastern San Luis Obispo County at an elevation of 2,030 feet above msl. The County released the Draft EIR for the Topaz Solar Farm in October 2010.

From the Solar Switching Station at Milepost (MP) 0, the reconductored transmission line follows a path due east for 7.2 miles, passing within 325 feet of a residence at MP 0.5, crossing Soda Lake Road at MP 1.5, and looping into the proposed CVSR Project switching station (Caliente Switching Station) in the vicinity of MP 7. The up to 9-acre switching station would be located south of the existing PG&E 230 kV transmission line and the existing PG&E 115 kV transmission line. The location of the switching station is subject to change based on final site selection.

At MP 7.3, the transmission line turns east-southeast for 3.0 miles and crosses the Temblor Range into Kern County at MP 10.3. The line then proceeds east for 4.7 miles and northeast for 3.5 miles, crossing a number of tributaries of Salt Creek between MP 11 and MP 16. The transmission line then turns due east for 1.2 miles, northeast for 0.4 miles, and east again for another 14.1 miles, crossing Lost Hills Road at MP 21.7, Highway 33 (West Side Highway) at MP 22.8, a petroleum pipeline at MP 27.2, the California Aqueduct at MP 29.0, Highway 58 at MP 29.5, and the West Side Canal (Kern River Flood Canal) at MP 29.8. The transmission line turns northeast for 0.4 miles and then north for 0.4 miles, once again crossing Highway 58 at MP 30.0 before entering Midway Substation at MP 35.0 and elevation 80 feet above msl. A detailed illustration of the route is included on Figures Ap.4A-2a to Ap.4A-2f.

Switching Stations

Solar Switching Station (Topaz Project)

The Topaz Solar Farm would interconnect with PG&E transmission lines using a three-bay, six-position breaker and a half configuration switching station (see Figure Ap.4A-3). No alternative sites to the proposed Solar Switching Station are considered.

PG&E's Switching Station, called the Solar Switching Station, would contain nine 230 kV gas-insulated circuit breakers. Two positions of this switching station would be used to connect the Topaz Solar Farm output to the switching station and the remaining four positions would be used to loop the PG&E line through the switching station. The PG&E Solar Switching Station work area would be approximately 600 by 650 feet (9 acres) with a buffer zone and would be enclosed by a fence separate from the adjacent Topaz Solar Farm substation. The switching station would require additional area for the incoming and existing transmission line, the dimensions with the transmission line would be 880 by 715 feet. PG&E would install night lighting at the switching station for security purposes.

To interconnect the Topaz Solar Farm, both circuits of the Morro Bay–Midway 230 kV double-circuit line would be looped from the transmission corridor into the new Solar Switching Station adjacent to the transmission corridor and then back to the transmission corridor. The loop lines would be approximately 200 to 400 feet in length. A total of four new circuits would be constructed between the existing transmission corridor and the new switching station (two in and two out of the switching station) with two circuits per tower line.
Two new double-circuit lattice steel transmission towers and four tubular steel poles would be installed to accommodate the looping of PG&E's 230 kV line into the Solar Switching Station. It is expected that the two lattice structures would be located within or adjacent to the existing PG&E transmission line ROW. The four tubular steel poles would be located on either side of the new PG&E Solar Switching Station to position the transmission conductors for proper ingress and egress to the station.

Caliente Switching Station Alternatives (CVSR Project)

The proposed CVSR switching station, called the Caliente Switching Station, would potentially 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, similar to the Topaz Solar Farm. The 230 kV interconnection 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 500 feet by 600 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. The overall work area for the switching station would be approximately 600 feet by 650 feet (9 acres). PG&E would install night lighting at the switching station for security purposes. Figure Ap.4A-4b illustrates the location of the six switching station alternatives. At the time of publication of the Draft EIR, the preferred location for the Caliente Switching Station is Alternative 3; however, for the purposes of this document all switching station options are analyzed at a similar level of detail. PG&E would own and operate the switching station, which would be located on a separate parcel, which would be created through a separate process with the County.

The area of interconnection between the CVSR project and the PG&E transmission line is within and adjacent to the San Andreas Fault zone. In order to avoid active fault traces, PG&E and SunPower are currently evaluating six potential sites for the Caliente Switching Station. These six alternative sites are illustrated in Figure Ap.4A-4b and detailed engineering plans for the six alternative sites are shown in

Appendix 4B. Appendix 4B also includes estimated scopes of work, expected to be undertaken by PG&E, required for the interconnection of the proposed switching station to the existing, double-circuit 230-kV transmission line. SunPower notes that because the entire PG&E 230 kV transmission line would loop through the Caliente Switching Station, the seismic concerns relate to the integrity of the entire 230 kV line and not only the electricity generated at the CVSR solar facility.

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 east of the fault zone and Sites 4, 5, and 6 west of it.
- Sites 1 and 2 are at a similar elevation (approximately 200 feet higher than Sites 4, 5, and 6).
- Site 3 it 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.
- Sites 4, 5, and 6 are at approximately the same elevation and are nearly adjacent to each other.

Switching Station M3

Switching Station Site 3 is the preferred switching station location due to its distance from the San Andreas Fault. SunPower submitted additional information on this site with its comment letter on the Draft EIR, including a series of project layout and other design changes, to reduce or avoid impacts from the Switching Station Site 3 option. SunPower's modified design features are referred to collectively herein as the "Switching Station M3." These features are discussed in detail below.

The Switching Station M3 would be generally in the same location as the previously proposed Site 3, situated just south of the existing PG&E Morro Bay–Midway 230 kV transmission line and north of the existing PG&E 115 kV transmission line (see Figure Ap.4A-4c). Consistent with the original proposed design, the switching station would be surfaced with a combination of concrete pads, compacted road base for internal access roads, and compacted earth. Night lighting would be installed at the switching station for security purposes.

As initially proposed, the Caliente Switching Station was described as a 6.9-acre fenced switching station in a 9-acre work area, located immediately south of the existing PG&E Morro Bay–Midway 230 kV transmission line.

- The design of the switching station has been modified to reduce the footprint to a 4.7-acre fenced switching station (compared to 6.9 acres).
- The fenced switching station area would be approximately 430 feet by 479 feet (reduced from 500 feet by 600 feet), subject to final siting and engineering.

Site Grading. As initially proposed, preparation for construction of the switching station at Switching Station Site 3 would have required extensive grading and cut-and-fill, with approximately 287,500 cubic yards of cut and 38,400 cubic yards of fill, with a net export (after compaction is considered) of approximately 243,340 cubic yards of soil. The DEIR indicated that the excess soil from the grading of the switching station would be exported to the Twisselman Aggregate Surface Mine. However, this large amount of exported material would require design changes at the mine, which may not have been feasible.

Changes to the layout and design of the switching station would significantly reduce the amount of grading and cut-and-fill that would be required for the Switching Station M3. As a result, the earthwork requirement for its construction would be balanced, and the need to export soil has been eliminated. The total area of disturbance from construction of the Switching Station M3 also is reduced from 15.0 to 14.0 acres. Figure Ap.4A-4d illustrates the conceptual grading and plan drawing of the Switching Station M3.

Temporary Switching Station Equipment. The Caliente Switching Station would be completed during the first phase of construction of the CVSR Project. However, in order for SunPower to begin operation as soon as the first tracker systems or solar modules are deployed and can generate solar power, a timely interconnection with PG&E's existing Morro Bay–Midway 230 kV transmission line is required. SunPower would install some switching station equipment as a temporary connection prior to PG&E's construction of the permanent switching station facilities.[2]

All temporary equipment would be installed within the Switching Station M3 site. The only exception to this is that there would be a temporary, approximately 322-foot, single-circuit "tap" transmission line connecting the temporary switching station equipment within Switching Station Site 3 to the PG&E Morro Bay to Midway No. 1 230 kV 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 Switching Station M3 site.

The impact analysis in Section 3 below incorporates the Switching Station M3 design features in place of the previously addressed Site 3, where specific reference is made to this location.

Switching Station Equipment

Two short transmission line segments would be required to connect the proposed switching station to the existing Morro Bay–Midway double-circuit 230 kV transmission line. These line segments would require facilities modifications on the 230 kV and potentially on the 115 kV lines, as described below.

Modifications to the existing PG&E 115 kV transmission line facilities could include the following:

- Remove two (2) existing 115 kV towers;
- Install two (2) low profile, horizontally configured towers.

Modifications to the existing Morro Bay–Midway 230 kV double-circuit transmission line facilities could include the following:

- Install two (2) new 230 kV dead-end towers;
- Remove one (1) existing tangent lattice tower.

Construction of new 230 kV transmission line facilities would include the following:

- Install two (2) new tangent double-circuit, steel monopole towers midway between the existing Morro Bay–Midway 230 kV transmission line and the proposed switching station (one tangent tower would be required in each line segment);

[2] The DEIR already anticipates the installation of such temporary electrical facilities at the switchyard – see DEIR page 14: "Temporary facilities include … electrical equipment within the substation and switchyard."

- Install two (2) double-circuit, steel monopole dead-end towers and one (1) single-circuit, steel monopole tower near the proposed Caliente Switching Station;

Heights of all proposed tower modifications and new towers would be determined based on the heights of existing conductors and the need to provide clearance above ground and to any obstructions, based on the CPUC's General Order 95 and the National Electrical Safety Code (NESC). Pending detailed engineering design, the proposed towers may be up to 150 feet in height. This height would be required if it is determined that the 230 kV interconnect lines should pass over the 115 kV line located between the switching station and the 230 kV line without modifying the existing 115 kV structures.

Optical Ground Wire

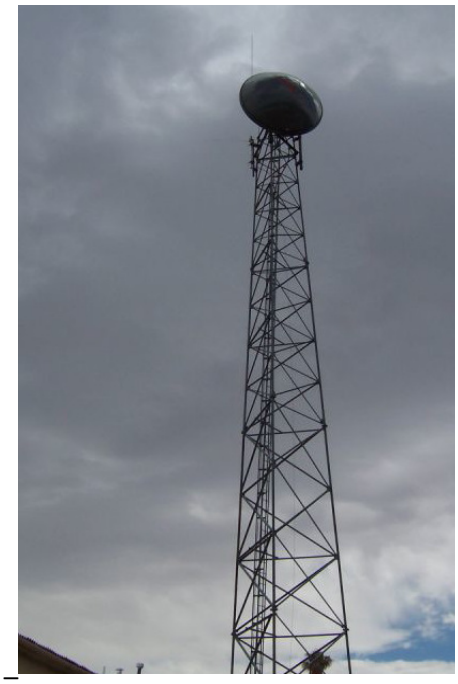
A new optical ground wire (OPGW) would be installed between the Solar Switching Station and Midway Substation. The OPGW is both a static line and a fiber optic communication line. It would be installed along with a pure static line on the top of the towers using a small "tent-like" structure for mounting to the tower tops.

Microwave Tower and Reflector

PG&E would install an approximately 175-foot tall microwave tower at the Caliente Switching Station site and at the Solar Switching site. The microwave tower would be a self supporting unpainted lattice steel structure. The microwave antennas are typically grey.

At least one microwave reflector would be required off-site. Depending on the final locations of the switching stations, it is possible that one microwave reflector would suffice for both switching stations. However, the number and location(s) of the microwave reflector(s) would be determined based on the final location of the switching stations. The location of the microwave reflector for the Solar Switching Station is unknown at this time. PG&E has identified locations for the Caliente Switching Station microwave reflector based on the switching stations alternatives. Impacts of the microwave reflector for the Solar Switching Station, if required, are assumed to be similar to those of the microwave reflector required for the Caliente Switching Station. The reflector would be mounted on a structure approximately 30 feet tall and would be approximately the size of a billboard. A typical microwave reflector is approximately 10 feet by 24 to 32 feet (Microflect, 1970). It would be painted to blend in with the surrounding landscape.

PG&E is considering two site options for the Caliente Switching Station. Microwave reflector option A would be used for the Caliente Switching Station Alternatives 1, 2, 4, 5, and 6. Microwave reflector option B would be used for the Caliente Switching Station Alternative 3. The two microwave reflector option locations are shown on Figure Ap.4A-4e. Images of a typical microwave tower and a typical microwave reflector are shown below.



Microwave Tower

Microwave Reflector

2.2 Land Uses Along Transmission Line Right-of-Way

The area around the transmission line corridor and switching stations is primarily undeveloped along the westernmost 30 miles of the route of the Solar-Midway segment. Only two residential structures are located near the reconductoring project, 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 at MP 22 to MP 24. Active agricultural operations occur within and adjacent to the ROW. These are grazing and dryland grain cultivation operations west of MP 30.8 and irrigated crop production east of MP 30.8. Portions of the ROW have been disturbed by vegetation management practices beneath the existing transmission line, by the construction of access roads, and by ongoing maintenance activities. Between where the line crosses Highway 58 near MP 30 until it enters the Midway Substation at about MP 35, the transmission line parallels Highway 58 (Jeppi Road) approximately 0.3 miles to the south of the road. Between MP 31 and MP 33.4, the highway has scattered individual homes along its northern side. From MP 33.4 until it enters the Midway Substation near MP 35, the alignment is approximately 0.3 miles south of the town of Buttonwillow, which is primarily on the north side of the highway.

Existing land uses along the approximately 35-mile transmission line segment are shown on Figures Ap.4-2a through Ap.4-2f, and land uses are defined by milepost in Table Ap.4-1.

Table Ap.4-1. PG&E Transmission Upgrades Project - Existing Land Uses

Location	Location(s)	Land Use Classifications	Specific Land Uses
MP 0–2.7	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 (State Highway 33)	Agriculture, Public Facilities and Utilities	Grazing, State Highway 33, Lost Hills Road, Natural Gas Pipeline
MP 22.8 - 30.8	County of Kern, Caltrans (State Highway 58)	Agriculture, Public Facilities and Utilities	Grazing, Crop Production, State Highway 58, Petroleum Pipelines, Natural Gas Pipeline, California Aqueduct, Unnamed Drainages
MP 30.8-35.0	County of Kern, Caltrans (State Highway 58)	Agriculture, Public Facilities and Utilities	Crop Production, West Side Canal, (Kern River Flood Canal), Unnamed Canals, Elk Grove Road, Unnamed Road, Palomas Road, Buttonwillow Drive, Mirasol Avenue, Southern Pacific Railroad, State Highway 58, Midway Substation

2.3 Construction Methods

Reconductoring

In general, reconductoring is accomplished by disconnecting an old conductor and using it to pull a sock line (rope) through travelers or sheave blocks (temporary pulleys) mounted on each tower, until the sock line reaches the end of the section to be reconductored. Workers climb the tower or use a helicopter to access the tower in order to place the travelers on each tower and route the old conductor through the travelers. Once in place, the sock line is then used to pull the new conductors into place. An alternative is to connect the old conductor directly to the new conductor and use it to pull the new conductor into place.

The work would involve 20-person work crews on each end of the segment being replaced. Crews would generally be equipped with large tractor/trailer units used to feed out the new line or wind in the old line on trailer-mounted spools. Two or three utility trucks carrying tools and other materials would also be employed. One crew would set up at a “pull site” near a tower at one end of the pull, and the other crew would set up a “tension site” near a tower at the other end of the pull. As a safety precaution, ground rods (copper rods, 5/8-inch in diameter and long enough to be driven to firm ground with approximately one foot protruding above ground) would be installed on each end of designated pull sites prior to pulling and tensioning work and removed once work is complete. Ground rods would also be attached to any equipment used near an energized conductor. The tensioning crew would employ a tensioner truck, which carries a large drum winch that is used to put rear tension on the conductor being pulled. Each pull is generally one to five miles in length, and each conductor is pulled separately (one phase of each circuit per pull) until all three phases of a circuit are in place. The tensioning site crew would access the tower and disconnect the old conductor. The old conductor would be attached to a sock line or directly, to the new conductor located on spools on tensioner trucks.

The pull site crew would also climb each tower or be transported to the tower arms via helicopter, disconnect the old conductors, and attach them to take up spools on trucks below the tower. Other crews would set up temporary netting structures across busy roads and other areas as needed to protect those areas in the unlikely event that a conductor breaks and falls to the ground.

Once all protective structures are in place and the pull and tension sites are ready, the pulling crew would begin to wind the old conductors onto spools mounted on trucks, thereby pulling the sock line (or new conductor) through the pulleys. The tensioning crew would keep the old conductor taut, preventing it from sagging to the ground or into other objects in the right-of-way. If a sock line is used, once the sock line is in place, the crews would repeat the process, winding the sock line onto a take-up reel, thereby pulling the new conductor in place. Once the new conductor is in place, it would be disconnected from the pulleys, relocated to a higher position (if a cage top tower extension was installed), and permanently mounted to the end of new insulator strings.

Generally, new conductors are pulled through one to five miles of transmission towers at a time, depending on the length of conductor on the reels, the presence of angle towers, and the availability of suitable set-up locations.

Because the work is overhead between the pull and tensions sites, the potential for environmental impact is generally nonexistent between the two sites. Therefore, this analysis focuses particularly on examining potential effects at the pulling and tensioning sites and other locations that could be disturbed by truck movement or helicopter operations. Activities between the pull and tension sites are generally restricted to (1) accessing the towers (by pick-up truck to the tower then climbing, by truck-mounted aerial bucket, or by helicopter) to place pulleys, remove the old conductor, and fasten the new conductor once stringing is completed; and (2) work on the tower structure to repair or replace spars that are damaged, or to replace insulators.

Though the exact locations of pull and tension sites are not known at the time of publication of this Draft EIR, Figures Ap.4-2a to Ap.4-2f show the full range of anticipated pull and tension sites along the 230 kV corridor and Table Ap.4-2 includes preliminary estimates of ground disturbance for the work areas. Some of the criteria used in selecting the final pull and tension sites include: accessibility for vehicles; presence of a flat or nearly flat land in-line along the ROW for equipment set-up; and land use, habitat, environmental, or cultural factors that may restrict work at various locations. Pulling and tensioning would normally take place at “dead-end” sites, which are towers where the transmission line is physically connected to the tower rather than merely passing through insulator clamps. In general, they are located where one spool of conductor is spliced to the next spool. Dead-end sites are generally located at angle towers (where the alignment changes direction), but also can be located at towers that are in-line with the route, such as where the conductor is spanning long distances across canyons or gorges. Dead-end towers have significant structural strength and resist the forces of pulling. Pull and tension sites could also be established in-line between standard suspension towers where needed to limit the pulling distance or to address areas that have limited access or set-up restrictions. Along the route, pull and tension sites would be located approximately 1 to 6 miles apart.

During reconductoring, work crews replace the insulator strings connected to the towers. This work involves accessing the towers by climbing, truck-mounted aerial bucket, or helicopter in order to get personnel and material to the appropriate position on the tower. For the reconductoring project, depending on terrain and work required by helicopter, approximately nine landing zones would be used. Crews would then remove the old insulator strings and install new ones. The new insulators would be delivered by aerial bucket truck and trailer or by helicopter and held in place by the aerial bucket or rigging attached to the tower. The towers would also be inspected for corrosion prior to reconductoring

and, if necessary, would be repaired. Repairs can include corrosion removal by mechanical means, re-galvanizing, and repainting.

Construction equipment would mostly be refueled at landing zones or construction yards along the transmission line. Equipment may be refueled along the transmission line if necessary. This would occur at least 100 feet from drainages, with secondary containment and appropriate clean up equipment onsite in case of a spill.

Once the old conductors and insulators are removed, they would be recycled or disposed of in an appropriate landfill facility.

Tower Replacement

The specific towers and locations of towers that would be replaced are unknown at the time of publication of this Draft EIR. For the purposes of the environmental analysis, it is assumed that 10 percent of the 171 LSTs (17 towers) would be replaced. Replacement LSTs would generally be erected within 75 feet of the original tower and would be sited to avoid sensitive resources.

Exact pull and tension site locations are also unknown at the time of publication of this Draft EIR. As pull and tension sites are generally flexible, their locations would be selected by PG&E upon completion of the biological reconnaissance surveys and cultural resources surveys for the reconductoring project to minimize impacts to sensitive resources. Figures Ap.4-2a to Ap.4-2f show the preliminary locations of potential tension and pull sites; however, the exact locations would be developed during detailed project engineering. Depending on the terrain and the number of angles and dead-end towers, approximately 17 pull and tension sites and 3 construction work areas at road crossings would be used. In addition, there would be a work area at each switching station and 6 helicopter landing zones (see Table Ap.4-2). Some pull and tension sites may also be used as staging areas and landing zones. Towers either would be constructed and erected at the tower site using a crane or constructed offsite and transported to the site by helicopter.

The new LSTs 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 equipped with augers of various sizes depending on the diameter and depth requirements of the hole to be drilled. 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. Such anchoring systems may also be used where economically and technically justified. 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. Soil excavated for foundations dug by hand would be distributed locally. At some of these sites it may be necessary to deliver and remove equipment, material, and personnel via helicopter.

At the LST component fabrication plant, structural members would be bundled and shipped by rail or truck to the construction yards, and then trucked to the individual tower sites (if the crane method is to be used) or a central assembly yard (if the helicopter method is to be used). For towers that are to be erected using the crane method, LSTs would be assembled at laydown areas at each site, and then

erected and bolted to the foundations. Tower assembly would begin with the hauling and stacking of bundles of steel at tower locations. This activity would require use of several tractors with 40-foot trailers and a rough terrain forklift. After steel is delivered and stacked, crews would proceed with assembly of leg extensions, body panels, boxed sections, and bridges. The steel work would be completed by a combined erection and torquing crew with a lattice boom crane. The construction crew may opt to install insulators and travelers at this time. Ground disturbance would generally be limited to work areas around towers to be replaced, typically 200 feet by 200 feet for individual towers and 300 feet by 300 feet for centralized laydown areas or landing zones.

A minimum 80 ton crane would be used to assemble tower sections in areas where road access is available to tower sites and impacts to biological and cultural resources would be minimal. The crane pad would be set up in-line, within approximately 100 feet to the side of the existing transmission tower.

A helicopter would be used to erect towers at tower sites inaccessible by crane due to terrain or avoidance measures for sensitive resources. Use of helicopters for installation eliminates land disturbance associated with crane pads, tower site laydown areas, and vehicle traffic from steel delivery to structure sites. All construction work in remote work sites would be completed by hand with the assistance of portable compressors, portable hydraulic accumulators, portable concrete mixers, or buckets of ready-mix concrete that would be flown into the tower sites. Remote work sites would be located on disturbed land to avoid biological or cultural impacts or where impacts could be reduced to a less-than-significant level with appropriate measures incorporated.

Temporary guard structures would be used if necessary to protect roadways should a non-energized line fall during reconductoring. Guard structures typically consist of two or four wooden poles and cross beams attached to the tow poles. They are generally installed in pairs with a net strung between them, but in some cases a net would not be required. A line truck would be used to auger and set the wood poles. Guard structure poles would be removed following reconductoring and the holes backfilled.

The use of helicopters for the erection of LSTs would be in accordance with PG&E specifications and would be similar to methods detailed in the Code of Safe Practices (CSP Section 11), 2002 Edition, and the PG&E Helicopter Operations Manual, which was completed by PG&E and its International Brotherhood of Electrical Workers (IBEW) Union in 2002.

The operations area of the helicopters would be limited to helicopter staging areas near construction locations (landing zones) that are considered safe locations for take-off and landing and the transmission line corridor. Final siting of helicopter fly yards and staging areas would be conducted with the input of the helicopter contractor, affected private landowners, and land management agencies. Each staging area would be a maximum of 300 feet by 300 feet.

Helicopter fueling would occur at landing zones, and offsite at an existing licensed refueling facilities or airports using the helicopter contractor's fuel truck. Fueling would be supervised by the helicopter fuel service provider, and SWPPP measures would be followed, as applicable. The helicopter and fuel truck would stay overnight at a local airport or at a staging area if adequate security is in place.

Tower Modifications

The height of approximately every other tower (approximately 85 towers) would be raised by approximately 20 feet in order to accommodate the new conductor and simultaneously satisfy conductor ground clearance requirements. The new conductor would be about the same diameter and weight as the existing conductor, but it would operate at higher operating temperatures, which would

cause it to sag more than the existing conductor. In addition, certain towers may require modification of their foundations or superstructures to accommodate the new, higher-temperature conductor as the new conductor would contain a steel core that enables higher tensioning between towers.

To strengthen tower foundations, concrete from the existing footings is broken away to expose the steel reinforcements. A new/replacement concrete footing, called a grade beam, is poured between each existing footing. Superstructures are typically strengthened by replacement, modification, or addition of pieces of steel lattice, as determined by engineering analysis specific to each tower. In a worst case situation, a new, stronger replacement tower with new foundations would need to be installed, in-line, within approximately 50 to 75 feet of the existing tower.

Two methods are used to raise the heights of towers, including:

- adding "mid-cage" or base extensions to the towers, or
- adding "cage-top" extensions to the top of the tower.

The first method requires lifting the tower at the middle of the cage. A tower lift crane is staged in-line next to the tower, and its four arms are clamped to the four outside tower support legs. The tower support legs are unbolted from the lower tower section mid-cage (below the crane attachment points), the tower is lifted, and the mid-cage extension is installed. Once the mid-cage extension is installed and secured to the lower tower section, the crane is detached, leaving the tower in its new elevated position. If a tower lift crane cannot be used, tower leg extensions can be completed at ground level using a larger crane, manual construction techniques, track style equipment, or helicopters. A level area of approximately 25 by 40 feet would be graded immediately adjacent to the tower to serve as a crane pad. Temporary wood pole support(s) (shoo-fly) would be constructed adjacent to the tower to support the conductors while the crane lifts the tower. The tower extension would then be installed, the conductors replaced, and the temporary wood pole supports removed.

The second method entails installing the new extension at the top of the tower with the use of a crane or helicopter. The cage top extension is installed on the top of the tower, above all the cross arms. For the crane method, a level area of about 25 by 40 feet would be graded immediately adjacent to the tower to serve as a crane pad. Existing conductors would be left in place. During a helicopter cage top extension installation, one 230kV circuit would remain energized and the other de-energized, but if a crane lifts the cage top into place on the tower, both 230kV circuits would be de-energized. Once the cage top extensions are installed on a string of towers, the conductors would be de-energized and elevated to their new position. The new insulator strings and conductor pulleys would be installed at this time to facilitate the reconductoring activities that follow. The old tower arms and insulator strings would be removed once the conductors are relocated to their new positions. Figure Ap.4-5 shows typical support structures and dead end towers with cage top extensions.

Complete tower replacement would occur where mid-cage, base, or cage top extensions are deemed to be too difficult.

Access Road Modification

Existing access roads would be maintained and widened as required for construction activities. Access roads serving towers requiring modification or replacement and roads serving associated pull and tension sites, laydown areas, and landing zones would be evaluated for vegetation removal, repair, and restoration requirements. The roads would be required to be large enough to accommodate large bucket trucks and semi-truck traffic for delivery of material and large equipment (e.g., cranes, graders,

and dozers). Access roads would typically be graded with a six-wheel road grader and/or a D-6 bull dozer 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 typically be used except to stabilize soft underlying soils.

Switching Stations

Construction of the Solar and Caliente Switching Stations and the interconnection between the existing Morro Bay–Midway 230 kV line and the new stations would be undertaken by PG&E. Construction of transmission facilities would be scheduled roughly in parallel with the switching station construction to ensure adequate transmission line capacity is available when the new switching stations become active.

Construction of the loop lines would include disturbance at locations where excavation for tower and pole locations would occur and towers and poles would be installed. Wheeled vehicles for transportation of conductor spools, and line-pulling and tensioning equipment would traverse the transmission line construction area.

Construction activities related to grading, creation of access roads, and cut-and-fill requirements would be generally similar among Caliente Switching Station alternative sites 1 and 2, and between sites 4, 5, and 6, due to similar, relatively flat terrain, existing land use, and proximity to existing dirt roads among the two groupings of site locations. Construction requirements for site 3 would differ from any of the other site locations due to steepness of terrain, elevation, and distance from existing dirt roads. However, the revised design for Switching Station Site M3 would not require export of cut or fill material.

Optical Ground Wire

A new optical ground wire (OPGW) would be installed between the Solar Switching Station and Midway Substations. The OPGW is both a static line (lightning protection) and a fiber optic communication line. It would be installed along with a pure static line on the top of the towers using a small "tent-like" structure for mounting to the tower tops. The static wire and OPGW would be installed at the same time the new conductors would be installed on the tower line and pulled in a similar fashion. Installation of the static wire and OPGW would be finished by the end of the reconductoring project. Figure Ap.4A-5 shows typical support structures and dead end towers with cage top and fiber optic line extensions.

Ground Disturbance

Estimated ground disturbance associated with access roads, switching stations, tension and pull sites, land zones, line and roadway crossings, and other components are preliminarily estimated in Table Ap.4A-2 below and would be finalized during final project engineering and design.

The work areas for each of the anticipated 17 pull sites would be approximately 300 feet by 300 feet (2.1 acres each, 35.7 acres total), and would be located within the ROW outside of the existing access road footprint. Each of the switching stations would require an approximately 9-acre work area and access roads would disturb approximately 27.2 acres. In addition, landing zones, powerline and roadway crossings, and fiber optic stringing would disturb approximately 21 additional acres.

Table Ap.4A-2. Preliminary Areas of Disturbance by Work Area

Work Area	County	Dimensions & Site Description
Solar Switching Station Work Area	SLO	• 600 feet x 650 feet (9.0 acres)
Caliente Switching Station Work Area	SLO	• 600 feet x 650 feet (9.0 acres)
Tension/Pull (T/P) Sites	SLO and Kern	• 300 feet x 300 feet (2.1 acres) each • Approximately 22 T/P sites required (9 in SLO County and 13 in Kern County; 35.7 acres total)
Landing Zones	SLO and Kern	• 300 feet x 300 feet work area next to PG&E warehouse (2.1 acres) in SLO County • Triangle shape layout (4.5 acres) in SLO County • 300 feet x 300 feet (2.1 acres) in Kern County • 75 feet x 200 feet (0.3 acres) in Kern County • 150 feet x150 feet (0.5 acres) in Kern County • 300 feet x 300 feet (2.1 acres) in Kern County
Access Roads	SLO and Kern	• Approximately 27.2 acres total
Single Distribution Line Crossing	Kern	• 50 feet x 50 feet potential disturbance (0.4 acres) each • Approximately 7 separate distribution line crossings required
Two Distribution Line Crossings	Kern	• 100 feet x 50 feet potential disturbance (0.6 acres) • Approximately 5 separate double distribution line crossings required
Foreign Line Crossing	Kern	• 100 feet x 50 feet potential disturbance (0.1 acres)
Caneras-Taft 70 kV and Temblor-Kernridge 115 kV Transmission Line Crossings	Kern	• 100 feet x 50 feet potential disturbance (0.1 acres)
Belridge Tap 70 kV Transmission Line Crossing	Kern	• 75 feet x 50 feet potential disturbance (0.1 acres)
Diablo Midway #2 500 kV Transmission Line Crossing	Kern	• 100 feet x 50 feet potential disturbance (0.1 acres)
Fiber Line Stringing	Kern	• 1,250 feet x 30 feet (0.9 acres)
Road Crossing Work Areas	Kern	• Highway 33: 75 feet x 50 feet potential disturbance (0.1 acres) • Highway 58: 50 feet x 50 feet potential disturbance (0.1 acres) • Highway 58: 7.0 acres

Source: PG&E, 2010; updated April 9, 2010.

2.4 Construction Requirements

Equipment and Personnel

Reconductoring work, including tower replacement and modification, would be completed primarily 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 related to this project are expected to take approximately 20 months to complete.

The maximum estimated number of personnel required for construction labor would be approximately 50 individuals. Table Ap.4A-3 summarizes required construction equipment and its intended use for construction of access roads, laydown areas, and landing zones and the replacement or removal of towers. Table Ap.4A-4 presents the equipment work requirements for reconductoring, including the anticipated duration of equipment use. The equipment to be used for switching station construction is listed in Table Ap.4A-5.

Table Ap.4A-3. Solar-Midway 230 kV Reconductoring 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
Powered road roller	Subgrade compaction
ASV 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
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	Dist control and compaction at grading locations.
2 standard line bucket trucks	Reconductoring activities
Fire Suppression Equipment	Laydown Areas, Landing Zones

Table Ap.4A-4. Solar-Midway 230 kV Reconductoring Equipment Work Requirements

Equipment	Number	Hours/ Day	Days/ Week	Months Used**	Total Project Hours	Total Equipment Hours
Reconductoring						
Cranes (80 ton)	2	7	4	8	963	1,926
Pick-up trucks	4	4	4	8	550	2,202
Standard line trucks	4	7	4	8	963	3,853

Table Ap.4A-4. Solar-Midway 230 kV Reconductoring Equipment Work Requirements

Equipment	Number	Hours/ Day	Days/ Week	Months Used**	Total Project Hours	Total Equipment Hours
Large line bucket trucks	2	7	4	8	963	1,926
Dozer	1	6	4	8	826	826
Semi truck w/reel haulers	2	5	4	8	688	1,376
Bell 500 helicopter	1	8	4	1.2	165	165
Bell 205 helicopter	1	8	4	2.2	303	303
Semi-flat bed delivery truck	1	4	3	8	413	413
Tensioner/take-up reel semi truck	2	5	4	8	688	1,376
Tower Work						
Fork lift	1	3	4	12	619	619
Crane	1	3	4	12	619	619
Generators	2	10	4	12	2,064	4,128
Crew trucks	2	5	4	12	1,032	2,064
Fueling truck	1	3	4	5	258	258
Compressor	1	6	4	4	413	413
Sikorsky Skycrane*	1	8	4	1	32	32
Bell 500 helicopter	1	8	4	1.6	220	220
Bell 205 helicopter	1	8	4	2	275	275
Concrete truck	1	8	2	4	275	275
Mechanic truck	1	1	1	12	206	206
Truck w/ scrap trailer	1	2	1	12	103	103
Track mounted foundation auger	1	6	2	4	206	206
Semi truck w/ lowboy transportation	1	4	3	6	310	310
Shared Equipment						
Water truck*	1	6	4	10	1,032	1,032
Grader*	1	9	4	5	774	774
ASV mower*	1	9	4	4	619	619
Front-end loader*	1	2	3	5	219	129
Dump truck*	1	5	3	5	323	323

* Assumes equipment needed for 10 percent tower replacement, or approximately 17 towers.
**Not necessarily consecutive months; total project months.

Table Ap.4A-5. PG&E Carrizo to Midway Project Switching Station Equipment List

Equipment	Equipment Pieces	URBEMIS Name
Solar Switching Station (First Solar)		
60 Ton Crane	N/A	Cranes
Back Hoe	N/A	Excavators
Forklift	N/A	Forklifts
Generator	N/A	Generator Sets
Water Truck	2	Water Trucks
Dozer/Ripper	1	Rubber Tired Dozers
Sheep's Foot Compactor	1	Surfacing Equipment
Grader	1	Graders

Table Ap.4A-5. PG&E Carrizo to Midway Project Switching Station Equipment List

Equipment	Equipment Pieces	URBEMIS Name
Roller	1	Rollers
Loader	1	Rubber Tired Loaders
Skip Loader	1	Rubber Tired Loaders
Paddle Wheel Earthmover	1	Scrapers
Transport Trucks*	N/A	NA
1 Ton Truck*	N/A	NA
Transport Trucks (End Dumps & Belly Dumps)*	10	NA
Fuel Truck*	1	NA
Work Trucks**	N/A	NA
Caliente Switching Station (SunPower)		
60 Ton Crane	N/A	Cranes
Back Hoe	N/A	Excavators
Forklift	N/A	Forklifts
Generator	N/A	Generator Sets
Water Truck	2	Water Trucks
Dozer/Ripper	1	Rubber Tired Dozers
Sheep's Foot Compactor	1	Surfacing Equipment
Grader	1	Graders
Roller	1	Rollers
Loader	1	Rubber Tired Loaders
Skip Loader	1	Rubber Tired Loaders
Paddle Wheel Earthmover	1	Scrapers
Transport Trucks*	N/A	NA
1 Ton Truck*	N/A	NA
Transport Trucks (End Dumps & Belly Dumps)*	10	NA
Fuel Truck*	1	NA
Work Trucks**	N/A	NA

Schedule

As described above, reconductoring work, including tower replacement and modification, is expected to last approximately 20 months. According to current plans, construction would begin in August 2011 and would be substantially complete by February 2013. Construction would proceed as follows:

- **Access road modifications.** Beginning in August 2011, access roads serving towers to be modified or replaced and associated tension and pull sites, laydown areas, and landing zones would be graded and widened, as required for construction activities. Road modifications would take approximately 1 month to complete.
- **Fly yards and staging areas.** Beginning in August 2011, crews would spend several days bringing equipment and materials to staging areas within the substations or laydown area/fly yard locations. A given fly yard would be in use during work on the corresponding section of the transmission line. Helicopters would be used for both tower modification work and replacement of conductors along

the line, especially in biologically-sensitive and difficult-to-access areas. Populating fly yards and staging areas would take approximately 1 month.

- **Tower work.** Beginning in August 2011, tower replacement and modification would occur along the transmission line in advance of reconductoring. The duration of tower replacement and modification work would be approximately 18 months. Construction work on towers would follow multiple steps over the course of several visits to the tower site, as described chronologically below:
  - Initial evaluation and site preparation for construction;
  - Installation of required tower extensions or tower replacement;
  - Raising of existing conductor to new conductor height on the towers;
  - Installation of travelers and insulators on all towers;
  - Reconductoring of the line;
  - Removal of travelers and placement of conductors on the insulators ("clipping" the conductors);
  - Removal of all unused arms and associated equipment below the new conductor.

  Tower work would be complete by approximately February 2013.
- **Guard structures.** From June 1, 2011 to January 1, 2012, any required guard poles (with or without nets) would be placed prior to pulling and tensioning any section of line crossing a state highway or other obstacle in which guard poles and/or nets are deemed necessary. Guard poles and nets would be placed and removed during the dry season to avoid access during the wet season in biologically sensitive areas. Guard poles and nets would be removed between or April 1, 2012 and November 1, 2012.
- **Reconductoring.** Reconductoring would occur over the course of 12 months, beginning by August 2011, and would be completed in sections as towers are raised or replaced. Because the line that would be under construction is an active transmission line, the timing of pulling and tensioning would depend on load conditions and the ability to take the line out of service. This activity would be restricted to low load conditions when line clearances could be achieved and would be complete by December 2012. In some cases, one side (one circuit) of the 230 kV line may be de-energized to enable reconductoring work on that side of the corridor while the other side (second circuit) of the 230 kV line would remain energized. Some work activities may require both circuits to be de-energized. This would be scheduled with PG&E's Transmission Operations group in coordination with the CAISO.
- **Restoration.** Restoration of any temporarily disturbed areas would occur within one year of disturbance for all sites. For access roads modified for construction, these would be re-established with an emphasis on long-term erosion control to support long-term operations and maintenance activities. This may involve seeding roads with a native seed mix and/or installing water bars on steep slopes. Road restoration would be in compliance with the General Construction Stormwater National Pollutant Discharge Elimination System (NPDES) Permit. Final restoration of all temporary work sites is expected to occur no later than December of 2013.
- **Switching Stations.** The area used for the switching stations would be cleared and graded during the start of the construction period for the solar projects. Stations would be constructed after the site preparation activities are completed. The switching stations would be completed during the first year of installation, allowing the proposed solar projects to begin operation as soon as the first tracker systems or solar modules are deployed and can generate solar power.

2.5 Applicant Proposed Measures

PG&E proposes to implement specific measures during construction and operation to ensure that the upgrades would create minimal environmental impacts and be constructed in a manner consistent with applicable rules and regulations. These measures are proposed for implementation during the design, construction, and operation of the project in order to avoid or minimize potential environmental impacts, and are called Applicant Proposed Measures.

Applicant Proposed Measures (APMs) listed in Table Ap.4A-6 are considered part of the reconductoring project and are considered in the evaluation of environmental impacts in Section 3 of this appendix. CPUC approval would be based on PG&E adhering to the project as described in this appendix, including this project description and all APMs.

Table Ap.4A-6 details each APM by environmental issue area. After publication of the Draft EIR, this appendix was revised to recognize all measures to reduce impacts as APMs. As a result, Table Ap.4A-6 now presents all of the APMs defined in the Draft EIR as well as most of the mitigation measures that were presented in the Draft EIR. All are now considered APMs, and all of the measures in Table Ap.4A-6 have been accepted by PG&E.

The conversion of mitigation measure into APMs is not presented in tracked changes (strikeout/underline) in this document. To increase readability, all mitigation measures have been moved into table Ap.4A6, and then changes to individual measure are tracked to show where changes have been made. Also, the mitigation measure numbers that were used in the Draft EIR are presented in parentheses below the new APM identifier in the first column of the table.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

	Aesthetic Resources
AE-1 (MM AE-2.1)	**Prepare and implement an exterior lighting plan**. The Applicant shall develop and implement an exterior lighting plan. The plan shall define the height, location, and intensity of all exterior lighting. All lighting fixtures shall be positioned 'down and into' the development and shielded so that neither the lamp nor the related reflector interior surface is visible from surrounding properties and key viewing areas. All lighting poles, fixtures, and hoods shall be dark colored.
AE-2 (MM AE-2.2)	**Paint microwave reflector to reduce visibility**. Fourteen days prior to ordering the microwave reflector, PG&E shall provide the County and its consultants a palate from which to select the color for the proposed microwave reflector. The microwave reflector shall be painted a neutral, subdued color to match the existing natural background and lessen its visual impact and glare as seen from public vantage points and improving cross-plain views from State Highway 58.
	Agricultural Resources
LU-1	**Agriculture impacts avoidance.** To avoid potential impacts to agriculture, PG&E will work with farmers and ranchers to conduct its work between their harvest and planting periods where and whenever possible. In areas containing permanent crops (i.e., grape vines, tree orchard, etc.) that must be removed and replaced to gain access to poles sites for construction purposes, PG&E will provide compensation to landowners for crop loss and other reasonable and associated costs as soon as practicable after completion of construction. Access across active crop areas will be negotiated with the owners in advance of any construction activities.
AG-1 (MM AG-1.1)	**Coordinate construction activities with agricultural landowners.** Prior to commencement of transmission line construction/ground disturbing activities, PG&E shall coordinate with property owners on such lands to (1) schedule construction activities so as to minimize disruption to agricultural operations; and (2) ensure that any areas damaged or disturbed by construction are restored to a condition that closely approximates conditions that existed prior to disturbance. This may include activities such as soil preparation, regrading, and reseeding. Prior to commencement of ground disturbing activities, PG&E shall submit to the CPUC the dates when landowners are notified of the start of construction.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

AG-2 (MM AG-2.1)	**Mitigate the loss of state-designated prime farmland through permanent preservation of off-site farmlands.** The Applicant shall mitigate for the permanent loss of 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. The easement shall provide conservation acreage at a ratio of 1:1 for direct permanent impacts.
	Air Quality
AIR-1 (SLO County)	**Implement SLOAPCD's Standard Mitigation Measures, as appropriate and necessary, for Construction Equipment:** • Maintain all construction equipment in proper tune according to manufacturer's specifications. • Fuel all off-road and portable diesel powered equipment with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road). • Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation. • Use on-road heavy-duty trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation. • Limit idling of all on and off-road diesel equipment to 5 minutes or less. Post signs in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit. • Prohibit diesel idling within 1,000 feet of sensitive receptors. • Avoid staging and queuing areas within 1,000 feet of sensitive receptors. • Electrify equipment when feasible. • Substitute gasoline-powered in place of diesel-powered equipment, where feasible.
AIR-1 (Kern Co.)	**Implement Best Management Practices (BMPs) to Reduce Construction Tailpipe Emissions:** If applicable and feasible, PG&E will implement the following measures to reduce already less-than-significant tailpipe emissions from diesel-powered construction equipment in Kern County. These measures include: • Maximize the use of diesel construction equipment meeting CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines. • Use emission control devices at least as effective as the original factory-installed equipment. • Locate stationary diesel-powered equipment and haul truck staging areas as far as practicable from sensitive receptors. • Substitute gasoline-powered for diesel-powered equipment when feasible.
AIR-2	**Minimize Greenhouse Gas Emissions during Construction:** PG&E will incorporate the following measures into its construction plans to further reduce already less-than-significant GHG emissions: • Encourage construction workers to carpool by establishing carpooling to construction sites where feasible to do so. • Encourage recycling of construction waste.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

AIR-3 (MM AQ-1.1)	**Reduce Construction Vehicle Emissions (NOx, ROG, and DPM).** During all construction/ground disturbing activities, the Applicant shall implement the following methods to reduce vehicle emissions (NOx, ROG, and DPM) from construction equipment: a. Maintain all construction equipment in proper tune according to manufacturer's specifications; b. Fuel all off-road and portable diesel powered equipment with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); c. Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines (e.g., Tier 3 and Tier 4, where feasible), and comply with the State Off-Road Regulation (CCR Title 13, Article 4.8, Chapter 9, Section 2449); d. Use on-road heavy-duty diesel trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation; e. Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g., captive or NOx exempt area fleets) may be eligible by providing alternative compliance; f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and/or job sites to remind drivers and operators of the 5 minute idling limit; g. PG&E will apply a "common sense" approach to vehicle use; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences; h. Staging and queuing areas within San Luis Obispo County shall not be located within 1,000 feet of sensitive receptors; i. Electrify equipment when feasible (i.e., concrete batch plant); j. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.
AIR-4 (MM AQ-1.2)	**Develop Construction Activity Management Plan (CAMP**). Prior to issuance of permits and commencement of construction/ground disturbing activities, the Applicant shall develop a Construction Activity Management Plan (CAMP) and submit it to the San Luis Obispo County APCD for their review and approval. This shall include verification by the County of APCD's approval. The CAMP shall include, but not be limited to, the following elements: a. A Dust Control Management Plan that encompasses all, but is not limited to, dust control measures that were listed above in the "dust control measures" section; b. Schedule construction truck trips during non-peak hours to reduce peak hour emissions; and c. Phase construction activities, if appropriate.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

AIR-5 (MM AQ-1.3)	**Reduce Fugitive Dust.** Prior to issuance of construction permits and during construction/ground disturbing activities, the proposed project shall implement the following measures to minimize nuisance impacts and to significantly reduce fugitive dust emissions: a. Reduce the amount of the disturbed area where possible; b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible; c. All dirt stock pile areas shall be sprayed daily as needed; d. Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following completion of any soil disturbing activities; e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established; f. All non-road disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD; g. All roadways, driveways, sidewalks, etc. to be paved shall be completed as soon as possible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used; h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site; i. Cover all trucks hauling dirt, sand, soil, or other loose materials or maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114; j. Implement manual street sweeping of ingress/egress points from unpaved roads onto paved streets; k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible; l. Present all of these fugitive dust mitigation measures on grading and building plans; and m. The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust offsite. The name and telephone number of such persons shall be provided.
AIR-6	**Payment of Impact Fees.** To the extent that the San Luis Obispo APCD determines, after considering all APMs and mitigation measures identified in this EIR and the First Solar EIR, as well as the air quality benefits in reducing air pollutants that will result from operation of these solar project, that project applicants are required to provide offsite mitigation through the offsets program, PG&E will pay its prorated share of the total fees imposed for the combined air pollution generated by construction of the California Valley Solar Ranch Project and PG&E's switching stations and reconductoring projects in direct proportion to the air pollutants generated by construction of PG&E's project components.
	Greenhouse Gases
GHG-1	**GHG emissions minimization**. PG&E is implementing the following voluntary company-wide actions to further reduce GHG emissions. • PG&E is an active member of the SF_6 Emission Reduction partnership for Electrical Power Systems, a voluntary program between the USEPA and electric power companies that focuses on reducing emissions of SF_6 from transmission and distribution operations. Since 1998, PG&E has reduced the SF_6 leak rate by 89 percent and absolute SF_6 emissions by 83 percent. • PG&E supports the Natural Gas STAR, a program promoting the reduction of methane from natural gas pipeline operations. Since 1998, PG&E has avoided the release of thousands of tons of methane. • In June 2007, PG&E launched the ClimateSmart program, a voluntary GHG emissions reduction program that allows its customers to balance out the GHG emissions produced by the energy they use, making their energy use "climate neutral". For ClimateSmart customers, PG&E calculates the amount needed to fund sufficient GHG emissions reduction projects in California to make their energy use "climate neutral". This is added to the customer's monthly energy bill and is tax deductable. • PG&E is offsetting all of the GHG emissions associated with energy used in PG&E's buildings by participating in its ClimateSmart program. In 2007, this amounted to over 50,000 tons of CO_2 reductions. • PG&E will implement the appropriate CARB AB-32 Early Action Measures as they become effective.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

GHG-2 (MM GHG-2.1)	**Avoid sulfur hexafluoride emissions.** PG&E shall ensure that project equipment, specifically the circuit breakers at switching stations, are incorporated into PG&E's system-wide SF_6 emissions reduction program.
	Biological Resources
	There are 3 types of APMs for biological resources: • **BO-x**: The first items listed are general Biological Resources APMs for the Solar-Midway reconductoring project. • **AMM-x**: These are Avoidance and Mitigation Measures (AMM) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan (HCP; December 2007), which would be implemented by PG&E when working in areas of natural vegetation and where practicable. • **APM BIO-x**: These are species-or habitat-specific Biological Resources APMs for the Solar-Midway reconductoring project. Some of the APMs reference specific AMM measures listed above.
BO-1	**General avoidance of biological resources impacts**. • Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the Project area will be deposited in closed trash containers. Trash containers will be removed from the Project area at the end of each working day. • Parking. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas as identified in this document. Off-road parking shall only be permitted in previously identified and designated work areas. • Route and speed limitations. Vehicles will be confined to established roadways and pre-approved access roads, overland routes and access areas. Access routes and temporary work areas will be limited to the minimum necessary to achieve the Project goals. Routes and boundaries of work areas, including access roads, will be clearly mapped prior to initiating Project construction. Vehicular speeds will be kept to 15 mph on unpaved roads. • Maintenance and refueling. All equipment will be maintained such that there will be no leaks of automotive fluids such as fuels, solvents, or oils. All refueling and maintenance of vehicles and other construction equipment will be restricted to designated staging areas located at least 100 feet from any down gradient aquatic habitat unless otherwise isolated from habitat. Proper spill prevention and cleanup equipment shall be maintained in all refueling areas. • Minimization of fire hazard. During fire season in designated State Responsibility Areas, all stationary gasoline-powered equipment operated off paved or maintained gravel/dirt roads will have federal or state approved spark arrestors. All off-road vehicles will be equipped with a backpack pump filled with water and a shovel. All fuel trucks will carry a large fire extinguisher with a minimum rating of 40 B:C, and all equipment parking and storage areas will be cleared of all flammable materials. • Pets and firearms: No pets or firearms will be permitted at the Project site.
BO-2	**Avoidance of impacts to natural habitats**. • Minimization of grading and vegetation removal along access roads and pole work areas. Clearing and grading will be limited to previous access roads that have become overgrown with vegetation. Overland access routes and work areas around pole locations will not require any grading or vegetation removal other than minimal tree trimming as described in the Project description. • Re-vegetation. Since clearing and grading is limited to reestablishment of existing roads, no re-vegetation is needed for the Project. Temporarily disturbed vegetation is expected to recover without the need for reseeding.
BO-3	**Avoidance of and minimization of potential impacts to wetlands and water resources**. Stormwater Pollution Prevention Plan and erosion control measures. A Stormwater Pollution Prevention Plan (SWPPP) will be developed that describes sediment and hazardous materials control, fueling and equipment management practices, and other factors deemed necessary for the Project. Erosion control measures will be implemented where necessary to reduce erosion and sedimentation in wetlands, waters of the United States, and waters of the state, as well as aquatic habitat occupied by sensitive species. Erosion control measures will be monitored on a regularly scheduled basis, particularly during times of heavy rainfall. Corrective measures will be implemented in the event erosion control strategies are inadequate. Sediment/erosion control measures will be continued at the Project site until such time that soil stabilization is deemed adequate. Brush or other similar debris material will not be placed within any stream channel or on its banks. No Project work activity is planned within the limits of any stream channel.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

BO-4	An environmental monitor would conduct an environmental awareness program for all construction and on-site personnel prior to the beginning of construction activities. Training would include a discussion of avoidance and minimization measures being implemented to protect biological resources as well as the terms and conditions of the Biological Opinion and other permits. Training would include information on the federal and state Endangered Species Acts and the consequences of noncompliance with these acts. Under this program, workers would be informed about the presence, life history, and habitat requirements of all special-status species with a potential to be affected within the project area. Training would include information on state and federal laws protecting nesting birds, wetlands, and other water resources. An educational brochure would be produced for construction crews working on the project. The brochure would include color photos of sensitive species as well as a discussion of mitigation measures. The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.
BO-5	An environmental monitor would be onsite during all ground-disturbing construction activities in or near sensitive habitats previously identified by a qualified biologist. The monitor would ensure implementation of and compliance with all avoidance and mitigation measures. The monitor would have the authority to stop work or determine alternative work practices in consultation with agencies and construction personnel as appropriate if construction activities are likely to impact sensitive biological resources. The environmental monitor would document monitoring activities in daily logs to document construction activities and environmental compliance. The daily logs would be included in the project report submitted to the appropriate agencies following completion of construction. The environmental monitor would be responsible for reporting any capture and relocation, harm, entrapment, or death of a listed species to the USFWS and/or the CDFG and for reporting any permit violations in a timely manner and as indicated in their respective permits. Weekly monitoring reports would be submitted to CPUC, and to any resource agencies (upon request), throughout construction. A final project summary report would be submitted to the CPUC 90 days after the completion of construction activities.
BO-6	Sensitive resources identified during pre-construction surveys in the project vicinity would be mapped and clearly marked in the field. Such areas would be avoided during construction to the extent practicable and/or additional measures specific to sensitive species types as described herein and that may be required by the USACE, FWS, CDFG, and RWQCB permits, would be implemented to avoid or minimize impacts.
BO-7	A pre-construction survey would be conducted by a qualified botanist or biologist prior to commencement of construction in each area. All rare plant populations would be appropriately marked or flagged for exclusion, or as appropriate, the limits of construction will be marked between the population and the work area. Surveys and marking or flagging must be completed no more than 30 days prior to construction. In the event that any previously unidentified listed plants, or CNPS List 1-3 plants cannot be avoided, PG&E would consult with the USFWS and/or the CDFG (depending on whether the species is on the federal or state list of sensitive species) to determine appropriate measures to minimize effects to the species and its habitat during construction of the project, as well as during operation and maintenance. The CPUC would be informed of the results of any agency consultations.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

BO-8	Pre-construction surveys would be conducted by a qualified biologist for burrowing owls for all project work areas that provide suitable nesting or wintering habitat (annual grasslands and pastures). The work area surveys would take place within the ROW, covering the work area and surrounding areas visible from the ROW. The survey would include checking for the burrowing owl and owl signs (e.g., white wash at burrow entrances). If ground-disturbing activities in suitable habitat are delayed or suspended for more than 30 days after the pre-construction surveys, the site would be resurveyed. If no burrowing owls are detected, no further mitigation is necessary. If active burrows are found near a work area, work in the vicinity of the burrows would be limited as follows: • No disturbance would occur within approximately 160 feet (50 meters) of occupied burrows during the non-breeding season of September 1 through January 31, or within approximately 250 feet (75 meters) during the breeding season of February 1 through August 31 • The limits of the exclusion zone in the project work area will be clearly marked with signs, flagging and/or fencing If work within these limits is unavoidable while burrows are active, work would only take place within the presence of a qualified monitor who would monitor to determine if the owls show signs of disturbance or, upon prior approval from CDFG a passive relocation effort (displacing the owls from the work area) may be conducted as described below, and subject to the approval of the CDFG. Passive relocation of owls may occur during the non-breeding season (September 1 through January 31) with prior approval from CDFG. Passive relocation would include installing one-way doors on the entrances of burrows. The one-way doors would be left in place for 48 hours to ensure the owls have vacated the nest site. Owls would not be relocated during the breeding season.
BO-9	The open ends of light-duty steel poles would be inspected before moving or plugged during storage to prevent harm to burrowing owls or any other sensitive species inhabiting the pole openings.
BO-10	Pre-construction bird nesting surveys for pull sites or locations of pole replacement or clearing and grading activities would be conducted seasonally before work performed between February 1 and August 15. Pre-construction surveys would be conducted within the ROW and from the ROW of areas visible from the ROW. To the extent possible, working in the vicinity of active nests would be avoided; however, if avoidance is not practicable, a buffer zone, as determined by a qualified biologist, would be maintained around the active nest to prevent nest abandonment. In the event that work would take place within 50 feet (250 feet for raptors) of an active nest, a biological monitor would monitor the activity of the nesting birds during work to determine if construction activities are resulting in significant disturbance to the birds. If the qualified biologist determines that work is disrupting nesting, then work in that area would be halted until nesting is completed and the young have fledged. Monitoring guidelines would be provided in an Avian Protection Plan to be submitted to the USFWS and CDFG for review and approval prior to construction. Documentation of Plan approval would be submitted to the CPUC for recordkeeping. Installation of the replacement power lines would conform to PG&E's most current version of Bird and Wildlife Protection Standards, and would include the use of bird guards.
The following are Avoidance and Mitigation Measures (AMM) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan (HCP; December 2007), which would be implemented by PG&E when working in areas of natural vegetation and where practicable. Measures would be considered practicable where physically possible and where they would not be in conflict with other regulatory obligations or safety considerations. These AMMs listed below would be considered Biological Resources APMs for the Solar-Midway reconductoring project, and are denoted by their code as stated in the HCP, for clarity.	
AMM-1	Employees and contractors performing O&M activities will receive ongoing environmental education. Training will include review of environmental laws and guidelines that must be followed by all personnel to reduce or avoid effects on covered species during O&M activities.
AMM-2	Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
AMM-3	The development of new access and ROW roads by PG&E will be minimized, and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.
AMM-4	Vehicles will not exceed a speed limit of 15 mph in the ROWs or on unpaved roads within sensitive land-cover types.
AMM-5	Trash dumping, firearms, open fires (such as barbecues) not required by the O&M activity, hunting, and pets (except for safety in remote locations) will be prohibited in O&M work activity sites.
AMM-6	No vehicles will be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

AMM-7	During any reconstruction of existing overhead electric facilities in areas with a high risk of wildlife electrocution (e.g., nut/fruit orchards, riparian corridors, areas along canal or creek banks, PG&E's raptor concentration zone [RCZ]), PG&E will use insulated jumper wires and bird/animal guards for equipment insulator bushings or will construct lines to conform to the latest revision of PG&E's Bird and Wildlife Protection Standards.
AMM-8	During fire season in designated State Responsibility Areas (SRAs), all motorized equipment will have federal or state approved spark arrestors; a backpack pump filled with water and a shovel will be carried on all vehicles; and fire-resistant mats and/or windscreens will be used when welding. In addition, during fire "red flag" conditions as determined by California Department of Forestry (CDF), welding will be curtailed, each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C, and all equipment parking and storage areas will be cleared of all flammable materials.
AMM-9	Erosion control measures will be implemented where necessary to reduce erosion and sedimentation in wetlands, waters of the United States, and waters of the state, and habitat occupied by covered animal and plant species when O&M activities are the source of potential erosion problems.
AMM-10	If an activity disturbs more than 0.25 acre in a grassland, and the landowner approves or it is within PG&E rights and standard practices, the area should be returned to pre-existing conditions and broadcast-seeded using a commercial seed mix. Seed mixtures/straw used for erosion control on projects of all sizes within grasslands will be certified weed-free. PG&E shall not broadcast seed (or apply in other manner) any commercial seed or seed-mix to disturbance sites within other natural land-cover types, within any vernal pool community, or within occupied habitat for any plant covered-species.
AMM-11	When routine O&M activities are conducted in an area of potential VELB habitat, a qualified individual will survey for the presence of elderberry plants within a minimum of 20 feet from the worksite. If elderberry plants have one or more stems measuring 1 inch or more in diameter at ground level are present, the qualified individual will flag those areas to avoid or minimize potential impacts on elderberry plants. If impacts (pruning/trimming, removal, ground disturbance or damage) are unavoidable or occur, then additional measures identified in the VELB conservation plan and compliance brochure will be implemented. The VELB compliance brochure must be carried in all vehicles performing O&M activities within the potential range of VELB.
AMM-12	If a covered plant species is present, a qualified biologist will stake and flag exclusion zones of 100 feet around plant occupied habitat (both the standing individuals and the seed bank individuals) of the covered species prior to O&M activities*. (Note: AMM 11 addresses elderberry plants and valley elderberry longhorn beetle.)
AMM-13	If a covered annual plant species is present, O&M activities will occur after plant senescence and prior to the first significant rain to the extent practicable.
AMM-14	If a covered plant species is present, the upper 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. (This measure will be used as an AMM for narrow endemic plants only after approval by USFWS and DFG during the *Confer Process.*)
AMM-15	If vernal pools are present, a qualified biologist will stake and flag an exclusion zone prior to O&M activities. The exclusion zone will encompass 250 feet .* Work will be avoided after the first significant rain until June 1, or until pools remain dry for 72 hours.
AMM-16	If suitable habitat for giant garter snake or California red-legged frog is present and protocol-level surveys have not been conducted, a qualified biologist will stake and flag an exclusion zone of 250 feet around the habitat prior to O&M activities.* Work will be avoided within this zone from October 1 to May 1 for giant garter snake and from the first significant rain to May 1 for California red-legged frog.
AMM-17	If suitable habitat for covered amphibians and reptiles is present and protocol-level surveys have not been conducted, a qualified biologist will conduct preconstruction surveys prior to O&M activities involving excavation. If necessary, barrier fencing will be constructed around the worksite to prevent reentry by the covered amphibians and reptiles. A qualified biologist will stake and flag an exclusion zone of 50 feet around the potentially occupied habitat.* No monofilament plastic will be used for erosion control in the vicinity of listed amphibians and reptiles. Barrier fencing will be removed upon completion of work. Crews will also inspect trenches left open for more than 24 hours for trapped amphibians and reptiles. A qualified biologist will be contacted before trapped amphibians or reptiles (excluding blunt nosed leopard lizard and limestone salamander) are moved to nearby suitable habitat.
AMM-18	If western burrowing owls are present at the site, a qualified biologist will work with O&M staff to determine whether an exclusion zone of 160 feet during the non-nesting season and 250 feet during the nesting season can be established. If it cannot, an experienced burrowing owl biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

AMM-19	If a Swainson's hawk nest or white-tailed kite nest is known to be within 0.25 mile of a planned worksite, a qualified biologist will evaluate the effects of the planned O&M activity. If the biologist determines that the activity would disrupt nesting, a buffer and limited operation period (LOP) during the nesting season (March 15–June 30) will be implemented. Evaluations will be performed in consultation with the local DFG representative.
AMM-20	PG&E staff shall avoid occupied or potentially occupied burrows identified by a qualified biologist within two core-areas for San Joaquin antelope squirrel and giant kangaroo rat identified by DFG. If occupied or potentially occupied burrows in the core areas cannot be avoided, a qualified PG&E biologist shall stake and flag a work-exclusion zone of at least 30 feet* and remain on-sight as a biological monitor, or the biologist shall stake and flag a work exclusion zone of 50 feet around active burrows prior to covered activities at the job site. If work must proceed in the exclusion zone, PG&E will pursue techniques to minimize direct mortality including using approved biologists to trap and hold the species in captivity, and excavating and closing burrows. The approved biologist will hold an ESA Section 10(a)(1)(A) permit for the species. The approved biologist will release the mammals as soon as possible when the work is complete. If active (occupied or potentially occupied) burrows for San Joaquin antelope squirrel or giant or Tipton kangaroo rat are present outside the two core areas identified by DFG, a qualified biologist will stake and flag an exclusion zone of 30 feet and remain on-site as a biological monitor, or the biologist shall stake and flag a work exclusion zone of 50 feet around the burrows prior to O&M activities on the job site.
AMM-21	If San Joaquin kit fox dens are present, their disturbance and destruction will be avoided where possible. However, if dens are located within the proposed work area and cannot be avoided during construction, qualified biologists will determine if the dens are occupied. If unoccupied, the qualified biologist will remove these dens by hand excavating them in accordance with USFWS procedures (U.S. Fish and Wildlife Service, 1999). Exclusion zones will be implemented following USFWS procedures (U.S. Fish and Wildlife Service, 1999) or the latest USFWS procedures. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and DFG. Pipes will be capped and exit ramps will also be installed in these areas to avoid direct mortality.
AMM-22	All vegetation management activities will implement the nest protection program to avoid and minimize effects on Swainson's hawk, white-tailed kite, golden eagle, bald eagle, and other nesting birds. Additionally, trained pre-inspectors will use current data from DFG and CNDDB and professional judgment to determine whether active Swainson's hawk, golden eagle, or bald eagle nests are located near proposed work. If pre-inspectors identify an active nest near a proposed work area, they will prescribe measures to avoid nest abandonment and other adverse effects to these species, including working the line another time of year, maintaining a 500-foot setback, or if the line is in need of emergency pruning, contacting HCP Administrator.
AMM-23	If medium or large disturbance covered activities take place within 0.5 miles of an active breeding colony of tricolored blackbirds or bank swallows or a small disturbance covered activities take place within 350 feet of an active breeding colony of these species a qualified biologist will evaluate the site prior to work during the breeding season (April 1-July 31). If an active colony of either species could be disrupted by the covered activity, the biologist will stake and flag an exclusion zone of at least 350 feet around the colony prior to O&M activities at the site. This exclusion zone will be established in the field based on site conditions, the covered activity, and professional judgment by a qualified PG&E biologist and will be greater than the minimum distance. Work will not occur in this exclusion zone during April 1–July 31.*
AMM-24	If activities take place in blunt-nosed leopard lizard within the range of the species and outside the road shoulder, PG&E staff will identify if burrows are present and if work can avoid burrows. If work cannot avoid the burrows, a qualified biologist will evaluate the site for occupancy and stake and flag an exclusion zone of 50 feet around the burrows prior to O&M activities at the job site.*
AMM-25	If activities take place in designated occupied habitat[1] of Buena Vista Lake shrew, a qualified biologist will stake and flag an exclusion zone of 100 feet* around all suitable habitat, and PG&E staff will minimize the use of mechanical equipment and the area of ground disturbance.
AMM-26	If activities take place in designated occupied habitat[1] of the riparian brush rabbit, a qualified biologist will stake and flag an exclusion zone of 100 feet* around all suitable habitat, and PG&E staff will minimize the use of mechanical equipment and the area of ground disturbance. Work will be avoided during the reproductive period (January 1 to May 31).
AMM-27	If activities take place in designated occupied habitat[1] of the riparian woodrat, a qualified biologist will stake and flag an exclusion zone of the maximum practicable distance up to 100 feet around all suitable habitat, and PG&E staff will minimize the use of mechanical equipment and the area of ground disturbance.
AMM-28	If activities take place in designated occupied habitat[1] of the limestone salamander, a qualified biologist will stake and flag an exclusion zone of the maximum practicable distance up to 100 feet around all suitable habitat, and PG&E staff will minimize the use of mechanical equipment and minimize the area of ground disturbance.

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AMM-29	No herbicide will be applied within 100 feet of exclusion zones, except when applied to cut stumps or frilled stems or injected into stems.
AMM-30	Trees being felled in the vicinity of an exclusion zone will be directionally felled away from the zone, where possible. If this is not feasible, the tree will be removed in sections.
The following are species-specific Biological Resources APMs for the Solar-Midway reconductoring project. Some of the APMs reference specific AMM measures listed above.	
APM BIO-1	**Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan.** The blunt-nosed leopard lizard is a covered species in the HCP. The following avoidance and minimization measure from the HCP addresses blunt-nosed leopard lizards: "AMM-24: If activities take place in suitable blunt-nosed leopard lizard habitat within the range of the species and outside the road shoulder, PG&E staff will identify if burrows are present and if work can avoid the burrows. If work cannot avoid the burrows, a qualified biologist will evaluate the site for occupancy and stake and flag an exclusion zone of 50 feet around the burrows prior to O&M activities at the job site. " [this text is not included under AMM-24 in our table] "If an exclusion zone cannot extend the specified distance from the habitat, the biologist will stake and flag a restricted activity zone of the maximum practicable distance from the exclusion zone around the habitat. This exclusion zone distance is a guideline that may be modified by a qualified biologist, based on site-specific conditions (including habituation by the species to background disturbance levels). Measures are practicable where physically possible and not conflicting with other regulatory obligations or safety considerations; O&M activities will be prohibited or greatly restricted within restricted activity zones. However, vehicle operation on existing roads and foot travel will be permitted. A qualified biologist will monitor O&M activities near flagged exclusion and restricted activity zones. Within 60 days after O&M activities have been completed at a given worksite, all staking and flagging will be removed.
APM BIO-2	**Avoid and/or minimize potential impacts to blunt-nosed leopard lizards by establishing work areas in locations that will have the least negative impacts.** When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist will walk ahead of construction vehicles and identify a route for the vehicles to follow that will avoid burrows to the greatest extent practicable. If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.
APM BIO-3	**Fence work areas, cover burrows with plywood mats, and conduct protocol surveys if burrows cannot be avoided.** If burrows occurring within the work area cannot be avoided, the work area will be fenced using material that blunt-nosed leopard lizards cannot climb. Protocol surveys will be conducted to determine if blunt-nosed leopard lizards occur within the fenced area. If blunt-nosed leopard lizards do occur, the burrows that occur along the vehicle access route will be covered with plywood mats during O&M activities and removed before the end of the work day. If necessary, contact a CDFG or USFWS representative so that the lizards may be passively relocated.
APM BIO-4	**Conduct work in suitable blunt-nosed leopard lizard habitat during the active season.** To lessen the potential of entrapping blunt-nosed leopard lizards in burrows, construction activities should occur during the active seasons for the blunt-nosed leopard lizards (generally April 15 through June 30 and August 1 through September 15).
APM BIO-5	**Conduct work in suitable habitat during periods when the species are most active.** When construction activities occur in habitat suitable for San Joaquin whipsnake and coast horned lizard, when practicable, the work should be conduct work in suitable habitat during warm weather, when these species are most likely to be active. Drive slowly on access roads and overland while in suitable habitat to allow these species to move out of the way of vehicles.
APM BIO-6	**Remove existing nests on towers, trim trees, and remove shrubs during the non-breeding season.** To lessen the potential for nesting birds, especially raptors, from nesting on the towers, PG&E crews should remove existing nests on towers during the non-breeding season (September 1 through February 28). PG&E should also trim any trees or remove any shrubs that could provide nesting habitat during the non-breeding season.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

APM BIO-7	**Conduct preconstruction surveys for active special-status and non-special-status raptors and migratory birds.** Construction activities are anticipated to occur mainly during the nesting season for migratory birds and raptors (generally March through August). PG&E will retain a qualified wildlife biologist to conduct preconstruction surveys for nesting birds for all construction activities that occur within or near suitable breeding habitat. The surveys will be conducted no more than 1 week prior to the start of construction activities and will cover all affected areas, including construction areas and staging areas where ground disturbance or vegetation clearing is required. If no active nests are detected, a letter report documenting survey methods and findings will be submitted to CDFG, and no further mitigation is required.
APM BIO-8	**Implement measures to avoid active nests.** If surveys indicate that migratory bird or raptor nests do occur in areas where construction activities will take place, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the nest site until after the breeding season or until a wildlife biologist determines that the young have fledged. Generally, the buffer zones are 50 feet for nesting passerine birds and 250 feet for nesting raptors other than Swainson's hawks. However, the extent of these buffers will be determined through coordination with CDFG and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances. Active nests occurring in or near the study area will be monitored during construction by the onsite monitor. If the onsite monitor determines that birds on the nest are stressed (e.g., a bird constantly leaving an active nest or a bird not returning to the nest regularly to feed chicks), construction will be halted and CDFG contacted to determine a further course of action.
APM BIO-9	**Conduct preconstruction surveys for active western burrowing owl burrows.** CDFG (1995) recommends that preconstruction surveys be conducted at all work areas (except paved areas) in project study areas and in a 250 foot-wide buffer zone around the work areas to locate active burrowing owl burrows. PG&E will retain a qualified biologist to conduct preconstruction surveys for active burrows no more than 30 days prior to the start of construction according to the CDFG guidelines. The surveys will include a nesting season survey and a wintering season survey, which is the season immediately preceding construction. If no burrowing owls are detected, a letter report documenting survey methods and findings will be submitted to CDFG, and no further mitigation is required.
APM BIO-10	**Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active burrows are observed during the preconstruction surveys in both Kern and San Luis Obispo Counties.** "AMM-18: If western burrowing owls are present at the site, a qualified biologist will work with O&M staff to determine whether an exclusion zone of 160 feet during the non-nesting season and 250 feet during the nesting season can be established. If it cannot, an experienced burrowing owl biologist will develop a site-specific plan (i.e. a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls." If the owls show signs of disturbance or, upon prior approval from CDFG, a passive relocation effort may be conducted as described below, and subject to the approval of CDFG. Passive relocation of western burrowing owls may occur during the non-breeding season (September 1 through January 31) with prior approval from CDFG. Passive relocation would include installing one-way doors on the entrances of burrows. The one-way doors would be left in place for 48 hours to ensure the owls have vacated the nest site. Owls would not be relocated during the breeding season.
APM BIO-11	**Implement preconstruction measure outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan.** "AMM-22: PG&E will retain qualified biologists to determine whether active Swainson's hawk or white-tailed kite nests are located within 0.25 mile of the proposed work area. If the biologists identify an active nest within 0.25 mile of the proposed work area, they will prescribe measures to avoid nest abandonment and other adverse effects to these species, including working the line another time of year or maintaining an appropriate setback for those species. Evaluations will be performed in consultation with the local DFG representative"
APM BIO-12	**Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active Swainson's hawk or white-tailed kite nests are observed during the preconstruction surveys.** "AMM-19: If a Swainson's hawk or white-tailed kite nest is known to be within 0.25 mile of a planned worksite, a qualified biologist will evaluate the effects of the planned O&M activity. If the biologist determines that the activity would disrupt nesting, a buffer and limited operation period (LOP) during the nesting season (March 15-June 30) will be implemented. Evaluations will be performed in consultation with the local DFG representative."

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

APM BIO-13	**Avoid and/or minimize potential impacts to San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse by establishing work areas in locations that will have the least negative impacts.** When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist will walk ahead of construction vehicles and identify a route for the vehicles to follow that will avoid burrows to the greatest extent practicable. If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.
APM BIO-14	**Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when working in suitable San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse habitat in Kern and San Luis Obispo Counties.** "AMM-20: PG&E staff shall avoid occupied or potentially occupied burrows identified by a qualified biologist within suitable habitat for San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse. If occupied or potentially occupied burrows cannot be avoided, a qualified biologist shall stake and flag a work-exclusion zone of at least 30 feet and remain on-site as a biological monitor, or the biologist shall stake and flag a work exclusion zone of 50 feet around active burrows prior to covered activities at the job site. If work must proceed in the exclusion zone, PG&E will pursue techniques to minimize direct mortality; which may include having approved biologists trap and hold species in captivity, and excavating and closing burrows. The approved biologist will release the mammals as soon as possible when the work is complete." Another possible technique that may be implemented to minimize direct mortality will be to cover suitable burrows that occur along the vehicle access route with plywood mats during O&M activities. These boards will be removed before the end of the work day.
APM BIO-15	**Implement avoidance and minimization measures to reduce impacts to American badgers.** Avoid suitable burrows to the greatest extent possible. Drive slowly to allow badgers to move out of work area. If potential dens are present in the construction site and cannot be avoided, the following measures are required to avoid potential significant impacts to the American badger: • If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent badgers from re-using them during construction. • If the qualified biologist determines that potential dens may be active, the entrances of the dens shall be blocked with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project disturbance. The den entrances shall be blocked to an incrementally greater degree over the three to five day period. After the qualified biologist determines that badgers have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.
APM BIO-16	**Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in suitable San Joaquin kit fox habitat in Kern and San Luis Obispo Counties.** "AMM-21: If San Joaquin kit fox dens are present, their disturbance and destruction will be avoided where possible. However, if dens are located within the proposed work area and cannot be avoided during construction, a qualified biologist will determine if the dens are occupied. If unoccupied, the qualified biologist will remove dens by hand excavating them in accordance with USFWS procedures. Exclusion zones will be implemented following USFWS procedures. The radius of these zones will follow current standards or will be as follows: Potential Den- 50 feet; Known Den-100 feet; Natal or Pupping Den-to be determined on a case-by-case basis in coordination with the USFWS and DFG. Pipes will be capped and exit ramps will be installed in excavated trenches in these areas to avoid direct mortality."
APM BIO-17	**May or may not be required pending agency communications.** Biologists will consult with CDFG biologists to determine if calving areas for tule elk or pronghorn occur near the project. If calving grounds do occur near the project, construction activities should be rescheduled to occur after the calving season, generally May through July.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

APM BIO-18	**Implement avoidance measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in occupied habitat for special status plants.** "AMM-11: When routine O&M activities are conducted in an area of potential valley elderberry longhorn beetle habitat, a qualified individual will survey for the presence of elderberry plants within a minimum of 20 feet from the worksite. If elderberry plants have one or more stems measuring 1 inch or more in diameter at ground level are present, the qualified individual will flag those areas to avoid or minimize potential impacts on elderberry plants. If impacts (pruning/trimming, removal, ground disturbance or damage) are unavoidable or occur, then additional measures identified in the VELB conservation plan and compliance brochure will be implemented. The VELB compliance brochure must be carried in all vehicles performing O&M activities within the potential range of VELB." "AMM 12 - If a covered plant species is present, a qualified biologist will stake and flag exclusion zones of 100 feet around plant occupied habitat (both the standing individuals and the seed bank individuals) of the covered species prior to O&M activities." "AMM 13 - If a covered annual plant species is present, O&M activities will occur after plant senescence and prior to the first significant rain to the extent practicable." "AMM 14 - If a covered plant species is present, the upper 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. (This measure will be used as an AMM for narrow endemic plants only after approval by USFWS and DFG).
APM BIO-19	**Minimize impacts to special status plants to the extent possible.** In order to minimize impacts to known and unknown occurrences of special status plants which that cannot be fully avoided, PG&E will conduct surveys in all previously unsurveyed areas which potentially support special-status plants. PG&E will use existing access roads and disturbed areas as much as possible, and will establish work zones in the least densely occupied areas of the population(s). Grading with the applicable work zones will be prohibited and shrub removal, if required, will be conducted by hand and will be limited to the minimum amount of removal necessary to complete project activities.
APM BIO-20	**Implement management practices to control the introduction and spread of invasive plants.** Prior to construction, PG&E will identify the location of noxious weed species of concern within areas that will be disturbed as part of the project. Appropriate management practices will be designed by a botanist and implemented during construction to reduce the likelihood of spreading already established weeds into new areas or increasing their abundance, and of introducing new weed species to the project area. Actions to prevent noxious weed establishment will be described within the SWPPP prepared for the project, and will be consistent with PG&E's draft Invasive Plant Management Strategy. The project SWPPP will include BMPs such as using construction equipment that has been cleaned of soil and plant parts, including seeds, before entering the project area and using weed-free straw for erosion control. Disturbed areas will be revegetated with appropriate locally-based native seed mixes.
APM BIO-21	**Implement general protection measures for waters of the United States.** During construction, PG&E will implement the following measures to minimize or avoid impacts to waters of the United States: • Establish exclusion zones and minimize the amount of area disturbed to the minimum amount necessary to complete the work. Align work areas to avoid wetland areas and margins as much as feasible. • Delineate wetland areas within proximity to work areas, and restrict construction personnel and equipment from entering fenced protected areas. • Conduct all fueling of vehicles, equipment, and helicopters at least 100 feet from wetlands and other waterbodies (see general AMM 6 in this section for appropriate protection measures). • To the extent feasible, complete road construction adjacent or within waters of the United States during the dry season. If it is not feasible to complete road construction work during the dry season, PG&E will use appropriate erosion control measures for the site. • Install temporary bridges to span waters of the United States during wet season for equipment crossings.
(MM BR-1.1) No longer required	
MM BR-1.2 [Deleted]	

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

APM BIO-22 (MM BR-1.3) **Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan.**

Compensation. To compensate for permanent impacts to giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel, the Applicant shall acquire parcels of land at a 3:1 ratio, containing suitable and occupied habitat for these species. The habitat must not already be public land and shall be located within the Carrizo Plain. The preserved habitat for permanent impacts to the species noted above shall be of equal or greater habitat quality to the impacted areas in terms of soil features, extent of disturbance, vegetative structure, and composition and shall contain verified extant populations, of a similar size to those impacted, of giant kangaroo rat and/or San Joaquin kit fox and/or San Joaquin antelope squirrel. Depending on availability, lands may have to be acquired in different locations, at the specified ratios, to satisfy mitigation for each of the above species. If one parcel of land meets the habitat and population requirements for all three species, separate acquisitions would not be required.

A conservation easement would need to be recorded on all property associated with the mitigation lands as to protect the existing plant resources in perpetuity. A conservation easement could be held by CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands shall be monitored and maintained per the requirements set forth the Habitat Mitigation and Monitoring Plan prepared for the project and discussed below.

The location of all lands proposed for mitigation land must be submitted to the CPUC for review and approval, prior to the issuance of a grading permit.

Habitat Mitigation and Monitoring Plan. To ensure the success of on-site preserved land and acquired mitigation lands required for compensation of permanent impacts to vegetative communities and listed or special-status plants and wildlife, the applicant shall retain a qualified biologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP). The HMMP shall be submitted to the CPUC, prior to the issuance of a notice to proceed for construction. The HMMP shall include, at a minimum, the following information:

1. Summary of anticipated habitat impacts and the proposed mitigation.
2. Detailed description of the location and boundaries of undisturbed project areas proposed for preservation and off-site mitigation lands and a description of existing site-wide conditions.
3. Discussion of measures to be undertaken to enhance (e.g., through focused management) the on-site preserved habitat and off-site mitigation lands for listed and special-status species.
4. Dedication of adequate funds consistent with the PAR analysis required for CDFG and USFWS permit requirements.
5. Description of management and maintenance measures (e.g., managed grazing, fencing maintenance).
6. Discussion of habitat and species monitoring measures for on-site preservation areas and off-site mitigation lands, including specific, objectives, performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.
7. Development of a monitoring strategy for the monitoring of indirect impacts to vegetation and wildlife from alteration to the solar and hydric regimes as a result of solar panels.
8. Development of a monitoring strategy, which shall serve to document the persistence of giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel populations within the project site. This monitoring shall be conducted for a minimum of 5 years after the completion of construction activities. The strategy, should include, at the minimum, the following:
    a) Documentation of pre-project population levels for the species noted above, based on results of focused pre-construction surveys and previously supplied applicant data.
    b) On-going monitoring of species populations upon completion of construction activities, while the project is in operation, for a minimum of three years.
    c) Monitoring of reference populations for each of these species in areas that contain undisturbed habitat, such as the Carrizo Plain National Monument.
    d) An analysis of the comparison of percent changes in population levels at the project and reference sites to be used in the determination of additional compensatory mitigation.
9. A contingency plan for mitigation elements that do not meet performance or final success criteria within 5 years; this plan shall include specific triggers for remediation if performance criteria are not being met and a description of the process by which remediation of problems within the mitigation site (e.g., presence of noxious weeds) shall occur.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

APM BIO-23 (MM BR-3.1)	**Focused pre-construction surveys for blunt-nosed leopard lizard and implementation of avoidance measures.** Prior to commencing any site disturbance, the Applicant shall implement pre-construction reconnaissance level surveys (minimum of 3 surveys) for blunt-nosed leopard lizard. Surveys shall be conducted by a qualified biologist(s) knowledgeable about the species prior to the initiation of ground disturbance in each of the proposed switching station locations. If present, active blunt-nosed leopard lizard burrows shall be flagged and PG&E shall cease all work activities within 50 feet of the sighting, or as otherwise directed by USFWS and CDFG. Protocol level surveys shall then be conducted within the switching stations in which the species was observed to determine their distribution on the site. Work may not resume until the protocol surveys have been completed. Upon completion of surveys a 1,000-foot buffer shall be placed around all active blunt-nosed leopard lizard habitat. The buffer may be adjusted pending the approval of the USFWS and CDFG. A minimum of 1,000 feet of linear exclusionary fencing shall be erected to prevent blunt-nose access work areas. Fencing shall consist of 36-inch tall silt fencing which will be partially buried to a depth of 6 inches. Each end of the fencing shall be monitored, during daily construction activities, to insure that no blunt-nosed leopard lizards enter active work areas. Where previously sighted, the biologist shall conduct clearance surveys each morning, prior to initiation of daily construction activities, to ensure that no lizards have entered the work area over night. The fencing and monitoring shall remain in place until work in that area is complete or additional protocol-level surveys yield negative results for blunt-nosed in the previously occupied areas. Should a blunt nosed leopard lizard enter the work area, all construction activities shall cease within 300-feet of the animal until it has left the area on its own. The buffer and work stoppage will remain in effect in these areas until such a time that Protocol surveys yield negative results for the species. The resumes of the proposed biologist(s) shall be provided to the CPUC, CDFG, and USFWS for concurrence prior to the commencement of surveys.
APM BIO-24 (MM BR-3.2)	**Compensation for impacts to occupied blunt-nosed leopard lizard**. The Applicant shall compensate for temporary impacts to occupied blunt-nosed leopard lizard habitat at a minimum 0.5:1 ratio. The mitigation areas must provide occupied habitat that is of equal or greater habitat quality compared to the impacted habitat, and must be located within the Carrizo Plain. A conservation easement would need to be recorded on all property associated with the mitigation lands as to protect the existing resources in perpetuity. A conservation easement could be held by CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands shall be monitored and maintained per the requirements set forth the Habitat Mitigation and Monitoring Plan prepared for the project. If lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox, San Joaquin antelope squirrel (discussed below), and/or vegetation communities (discussed above) contain similar amounts of occupied habitat similar in size to that of the impacted blunt-nosed leopard lizard habitat, of equal or greater habitat value, no further mitigation would be required. The location of all lands proposed for mitigation land must be submitted to the CPUC, CDFG and USFWS for review and approval, prior to the issuance of a grading permit.
APM BIO-25 (MM BR-4.1)	**Focused pre-construction surveys for San Joaquin whipsnakes and coast horned lizard and implementation of avoidance measures.** PG&E shall retain a qualified biologist approved by USFWS and CDFG to conduct pre-construction surveys immediately prior to (i.e., the morning of the commencement of) construction of the switching stations. If San Joaquin whipsnakes or coast horned lizards are found within the area of disturbance the biologist shall passively relocate the animals to a preapproved location outside the project area. The candidate locations for species relocation shall be identified prior to construction and based on the size and type of habitat present, the potential for negative interactions with resident species, and species range.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

	Cultural Resources
CR-1	**Pre-construction Worker Education Program.** PG&E will design and implement a Worker Education Program that will be provided to all Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the Worker Education Program. The Worker Education Program shall include, at a minimum: • A review of archaeology, history, prehistory and Native American cultures associated with historical resources in the Project vicinity. • A review of applicable local, state and federal ordinances, laws and regulations pertaining to historic preservation. • A discussion of site avoidance requirements and procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Project. • A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies. • A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, PG&E policies and other applicable laws and regulations. The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.
CR-2	**Unanticipated discoveries management**. In the unlikely event that previously unidentified cultural resources are uncovered during implementation of the Project, all work within 165 feet (50 meters) of the discovery will be halted and redirected to another location. PG&E's cultural resources specialist or his/her designated representative will inspect the discovery and determine whether further investigation is required. If the discovery can be avoided and no further impacts will occur, the resource will be documented on State of California Department of Parks and Recreation cultural resource records and no further effort will be required. If the resource cannot be avoided and may be subject to further impact, PG&E will evaluate the significance and CRHR eligibility of the resources, and implement data recovery excavation or other appropriate treatment measures if warranted.
CR-3 (MM CR-2.4)	**Follow State Health and Safety Code Section 7050.5 if human remains identified**. If human remains or possible human remains are encountered at any stage in the project, the Applicant shall be responsible for following the State Health and Safety Code Sections 7050.5 regarding handling, treatment, and disposition of those remains. Section 7050.5 states that the County Coroner must be notified immediately when any remains are found that might be human in origin. The Coroner will determine whether the remains are Native American and archaeological in nature. If the remains are not archaeological and Native American, the Coroner will take possession immediately. If the remains are archaeological and Native American, the Coroner will notify the California Native American Heritage Commission; the Commission will identify the Most Likely Descendant (MLD) for the remains. With the permission of the land owner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the Commission. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. The MLD will decide on the appropriate treatment and disposition of the remains, in consultation with the landowner or his/her representative.
Note:	**The following Cultural Resources APMs were inadvertently omitted from the Draft EIR. They are re-numbered from the PG&E Cultural Resources Inventory Report. The numbers from the CRIR are shown in parentheses below the APM number.**
CR-4 (CUl-1 in CRIR)	**Install Silt Fencing along Existing Access Roads and Prohibit Grading along the Fenced Road Segments**. Prior to construction, a PG&E cultural resources specialist or PG&E's authorized agent will install standard 2-ft-tall silt fencing along the edge of existing access roads that are located near where cultural resources are known to exist. The fencing will be installed parallel to the road, between the road and the resource. The length of the fencing shall equal the width of the resource area plus 100 feet, such that the fencing extends 50 feet in both directions beyond the width of the resource. PG&E will map the location of silt fencing on construction plans to ensure implementation of this APM. PG&E or its authorized agent will inspect the fencing on a weekly basis to ensure its integrity and that of the cultural resource. PG&E will prohibit grading along the fenced portions of the access roads.
CR-5 (CUl-5 in CRIR)	**Obtain a Clearance on the Foreign Transmission Line Crossing near Tower 159**. PG&E will obtain a clearance on the foreign transmission line that crosses the Morro Bay–Midway 230-kV Transmission Line. The line clearance will eliminate the need to build a crossing structure on site P-15-4014 [Prehistoric midden site with human remains].

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

CR-6 (CUL-6 in CRIR)	**Protect Transmission Line Crossing with a Truck-Mounted Bucket.** PG&E will use a truck-mounted bucket on an electrically grounded vehicle to guard the foreign transmission line crossing. Use of a vehicle to protect the crossing will eliminate the need for excavation into P-15-4014[Prehistoric midden site with human remains],although the vehicle will still have the potential to crush and displace archaeological materials on the site surface. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.
CR-7 (CUL-7 in CRIR)	**Build Low-Impact Crossing Structure on P-15-4014.** PG&E will build a low-impact, scaffold-style crossing structure on the surface of P-15-4014 [Prehistoric midden site with human remains]. This structure will substitute smaller 2 x 4 supports for the minimum of two 46-cm (18-inch)-diameter poles that are typically used to construct crossing structures. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.
CR-8 (CUL-9 in CRIR)	**Avoidance Through Project Design**. [This APM is to address impact to a cultural resource near Tower 143 PG&E has decided not to replace or modify Tower 143. Therefore, this APM no longer is applicable.]
CR-9 (CUL-10 in CRIR)	**Evaluate P-15-1493's Significance and Prepare and Implement a Site-Specific Archaeological Treatment Plan.** If avoidance is not feasible, PG&E will evaluate P-15-1493 [Prehistoric site] for eligibility to the NRHP and CRHR. If P-15-1493 is found to be ineligible for the NRHP and CRHR, no further work is needed at the site. If P-15-1493 is eligible for the NRHP and CRHR, PG&E will prepare a work plan describing criteria for significance, including a research design, and conduct a test excavation at the site. PG&E shall extend to the USACE, SHPO, and any other consulting parties the opportunity to comment on the work plan prior to its implementation. Should P-15-1493 qualify for listing in the NRHP and CRHR, PG&E will prepare and implement a site-specific archaeological treatment plan at P-15-1493. The USACE, SHPO, and any other consulting parties will review the plan during Section 106 consultation. The plan will describe the proposed construction work and approximate volume of site damage expected, methods for the recovery of archaeological materials, laboratory methods, and reporting of results. PG&E will prepare and implement the plan prior to construction.
CR-10 (APM CUL-13 in CRIR)	**Survey Unexamined Areas for the Presence of Cultural Resources.** As PG&E identifies new project elements or gains access to previously unexamined areas, PG&E will retain qualified cultural resource specialists to survey the area(s) prior to construction. The survey results will be reported in a cultural resources inventory report that meets the standards promulgated in Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 Federal Register 44716–44742) and the Office of Historic Preservation's (1990) Archaeological Resource Management Reports (ARMR): Recommended Contents and Format. PG&E will forward the report to the appropriate agencies during Section 106 consultation. Construction in the unexamined areas will not commence until the report is approved by the appropriate agencies.

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PAL-1 (MM PA-1.1)	**Paleontological Monitoring and Treatment Plan**. Prior to construction permit issuance, the Applicant shall retain a qualified paleontologist to prepare a Paleontological Monitoring and Treatment Plan (Plan), and submit the plan to the CPUC for review and approval. The plan shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques. The Plan shall identify construction impact areas of high sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered. The Plan shall detail the criteria to be used to determine whether an encountered resource is significant, and if it should be avoided or recovered for its data potential. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally-accredited repository, data analysis, and reporting. The Plan shall outline a coordination strategy to ensure that a qualified paleontological monitor will conduct full-time monitoring of all ground disturbance during grading activities in the 'deeper' sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Plan shall determine what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring. The Plan shall define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors shall be defined by the project paleontological resource specialist, following examination of sufficient, representative excavations.
PAL-2 (MM PA-1.2)	**Paleontology Construction Monitoring**. PG&E will implement construction monitoring during excavations more than 2 feet deep in areas of high sensitivity units, excluding auguring or hand-digging for pole or tower fitting holes, because fossils are not recoverable in auger holes and augering crushes rock material, obscuring the identification of fossils. This excavation shall be closely monitored by a qualified Principal Paleontologist or his/her designated assistant. Paleontologist monitors will have the authority to halt or redirect work temporarily in order to assess and/or recover paleontological remains, and to establish buffer zones around potentially significant specimens using flagging on lath until the find is assessed by the Principal Paleontologist. The qualified paleontologist shall have a minimum of a B.A. in Geology or Paleontology, and a minimum of one year of paleontological monitoring experience in local or similar sediments.
PAL-3 (MM PA-1.3)	**Paleontological data recovery**. If avoidance of significant paleontological resources is not feasible during construction/ground disturbing activities, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) shall be carried out by the Applicant, in accordance to the approved Paleontological Monitoring and Treatment Plan per APM PAL-1 (Paleontological Monitoring and Treatment Plan).
PAL-4 (MM PA-1.4)	**Construction Personnel Training**. Prior to the initiation of construction or ground-disturbing activities, all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. The Applicant shall complete training for all applicable personnel. Training shall inform all applicable personnel of the procedures to be followed upon the discovery of paleontological materials. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or offsite by the Applicant, its representatives, or employees shall not be allowed. Violators shall be subject to prosecution under the appropriate State and federal laws. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction: a. All construction contracts shall include clauses that require grading personnel to attend training so they are aware of the potential for inadvertently exposing subsurface paleontological resources, their responsibility to avoid and protect all such resources, and the penalties for collection, vandalism, or inadvertent destruction of paleontological resources. b. A qualified paleontologist shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential paleontological resources, and procedures and notifications required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils. c. Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be diverted and the Applicant's paleontologist notified. Once the find has been inspected and a preliminary assessment made, the Applicant's paleontologist shall notify the CPUC and proceed with data recovery in accordance with the approved Treatment Plan. **d.** Prior to final inspection or occupancy, whichever occurs first, the paleontologist shall prepare a final report to be submitted to the CPUC that summarizes impacts to paleontological resources and impact minimization efforts and provides the results of all data recovery efforts.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

	Geology, Mineral Resources, and Soils
GM-1	**Soft or loose soils during construction minimization**. Where soft or loose soils are encountered during construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve soft or loose soils encountered during construction. Such measures may include: • Locating construction facilities and operations away from areas of soft and loose soil. • Over-excavating soft or loose soils and replacing them with engineered backfill materials. • Increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction. Treating soft or loose soils in place with binding or cementing agents. Construction activities in areas where soft or loose soils are encountered will be scheduled for the dry season to allow safe and reliable equipment access.
MM G-1.1 (Deleted)	
GM-2 (MM G-1.2)	**Protect against slope instability**. Based on the results of any geotechnical study performed as a part of the original Morro Bay–Midway 230 kV transmission line project, and in consultation with Kern County, appropriate support and protection measures shall be designed and implemented to maintain the stability of slopes adjacent to any re-graded access or spur roads, work areas, or replacement towers during and after the reconductoring work. Any tower site, work area, or road to be re-graded between MP 12 and MP 13 shall be evaluated with respect to potential landslides by means of air photo interpretation and geologic reconnaissance mapping. If towers would be replaced in an area of landslide potential, a California-registered Professional Geotechnical Engineer shall evaluate the potential for geotechnical hazards and unstable slopes on slopes with over 15 percent gradient. Design measures shall include, but are not limited to, retaining walls, visqueen, removal of unstable materials, and avoidance of highly unstable areas. Appropriate construction methods and procedures, in accordance with State and federal health and safety codes, shall be followed to protect the safety of workers and the public during drilling and excavation operations. PG&E shall submit final engineering plans and the geotechnical report, if applicable, to CPUC and Kern County for review at least 30 days prior to construction.
GM-3 (MM GE-2.1)	**Reduce effects of groundshaking.** Prior to issuance of construction permits, the design-level geotechnical investigations performed by the Applicant shall include site-specific seismic analyses in the vicinity of MP 8 and the Caliente Switching Station where new structures will be located to evaluate ground accelerations for design of project components. Based on these findings, project structure designs shall be modified/strengthened, as deemed appropriate by the project engineer, if the anticipated seismic forces are found to be greater than standard design load stresses on project structures. Study results and proposed design modifications shall be provided to the CPUC for review before final project design and prior to construction permit issuance.
GM-4 (MM GE-3.1)	**Avoid placement of project structures within active fault zones**. Prior to final project design, PG&E shall perform a fault evaluation study where new structures will be located near the Caliente Switching Station to confirm the location of mapped traces of active and potentially active faults at the Caliente Switching Station and transmission line alignment. The study would identify mapped fault locations in the area and determine locations for switching station and support structures that would avoid mapped fault traces. Compliance with this measure shall be documented to CPUC in a report submitted for review at least 60 days prior to the start of construction.
	Hazards and Hazardous Materials
HM-1/WQ-1	**Environmental Training and Monitoring Program (ETMP) development and implementation.** An environmental training program will be established to communicate to all field personnel any environmental concerns and appropriate work practices, including spill prevention and response measures and Best Management Practices (BMPs). The training program will emphasize site-specific physical conditions to improve hazard prevention (e.g., identification of flow paths to nearest waterbodies) and will include a review of all site-specific plans, including but not limited to the Project's SWPPP, Erosion Control and Sediment Transport Plan, Health and Safety Plan, and Hazardous Substances Control and Emergency Response Plan. A monitoring program will also be implemented to ensure that the plans are followed throughout the construction period. BMPs, as identified in the Project SWPPP and Erosion Control and Sediment Transport Plan, will also be implemented during the Project to minimize the risk of an accidental release and to provide the necessary information for emergency response.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

HM-2	PG&E would submit a **Hazardous Substance Control and Emergency Response Plan** to the CPUC for recordkeeping at least 30 days prior to project construction. The plan would identify methods and techniques to minimize the exposure of the public to potentially hazardous materials during all phases of project construction through operation. The plan would require implementing appropriate control methods and approved containment and spill-control practices (i.e., spill control plan) for construction and materials stored on-site. All hazardous materials and hazardous wastes would be handled, stored, and disposed of, in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. With the exception of the poles, all hazardous materials would be collected in project-specific containers at the site, and transported to a PG&E service center designated as a PG&E consolidation site. Poles would be scheduled for transportation to the appropriate licensed Class 1 or a composite-lined portion of a solid waste landfill. The plan would include, but not be limited to, the following: • Proper disposal of potentially contaminated soils • Vehicles and equipment parking near sensitive resource areas during construction Emergency response and reporting procedures to address hazardous material spills.
HM-3	PG&E would prepare a site-specific **Health and Safety Plan (HSP)** to ensure that potential safety hazards would be kept at a minimum. The HSP would include elements that establish worker training and emergency response procedures relevant to project activities. The plan would be submitted to the CPUC at least 30 days prior to construction for CPUC recordkeeping.
HM-4	If it is necessary to store any chemicals on-site, they would be managed in accordance with all applicable regulations. Material Safety Data Sheets would be maintained and kept available on-site, as applicable.
HM-5	In the event that soils suspected of being contaminated (based on evidence from visual, olfactory, or other means) are removed during excavation activities along the power line corridor, the excavated soil would be tested and, if contaminated above hazardous levels, would be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil would require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations.
HM-6	PG&E would prepare and submit a Fire Prevention and Response Plan to the CPUC and to local fire protection authorities for notification at least 30 days prior to construction. The plan would include fire protection and prevention methods for all components of the project during construction. The plan would include procedures to reduce the potential for igniting combustible materials by preventing electrical hazards, use of flammable materials, and smoking onsite during construction and maintenance procedures. Project personnel would be directed to park away from dry vegetation; to equip vehicles with fire extinguishers; not to smoke; and to carry water, shovels, and fire extinguishers in times of high fire hazard.
HM-7 (MM HZ-1.1)	**Use licensed herbicide applicator**. Prior to energization or final inspection (whichever occurs first), the contractor or personnel applying herbicides must have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and waterbodies, herbicides shall not be applied directly to wildlife, products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied within 50 feet of any surface waterbody when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.
HM-8 (MM HZ-5.1)	**Cease work during Red Flag Warnings**. When a Red Flag Warning is issued by the National Weather Service for all or part of the project area, PG&E shall cease all activities in any affected areas that involve a high potential for starting fires as outlined in the Fire Prevention and Response Plan submitted to the CPUC. This provision shall be clearly stated in the fire safety plan. A designated Emergency Response Liaison shall ensure implementation of a system that allows for immediate receipt of Red Flag Warning information from the Los Angeles/Oxnard office of the National Weather Service.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

	Hydrology and Water Quality
WQ-1/HM-1	**Environmental Training and Monitoring Program (ETMP) development and implementation**. An environmental training program will be established to communicate to all field personnel any environmental concerns and appropriate work practices, including spill prevention and response measures and Best Management Practices (BMPs). The training program will emphasize site-specific physical conditions to improve hazard prevention (e.g., identification of flow paths to nearest waterbodies) and will include a review of all site-specific plans, including but not limited to the Project's SWPPP, Erosion Control and Sediment Transport Plan, Health and Safety Plan, and Hazardous Substances Control and Emergency Response Plan. A monitoring program will also be implemented to ensure that the plans are followed throughout the construction period. BMPs, as identified in the Project SWPPP and Erosion Control and Sediment Transport Plan, will also be implemented during the Project to minimize the risk of an accidental release and to provide the necessary information for emergency response.
WQ-2	Following project approval, PG&E would prepare and implement a **SWPPP** to minimize construction impacts on surface and groundwater quality. Implementation of the SWPPP would help stabilize graded areas and waterways and reduce erosion and sedimentation. The plan would designate BMPs that would be adhered to during construction activities. Erosion and sediment control measures, such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (e.g., flagging) would be installed before the onset of winter rains or any anticipated storm events. Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities, as necessary. During construction, measures would be in place to ensure that contaminants are not discharged from the construction sites.
WQ-3	PG&E would prepare an **Erosion Control and Sediment Transport Plan (ECSTP)** as an element of the SWPPP describing BMPs, to be used during construction. The plan would address construction in or near sensitive areas described in Section 3.5 Biological Resources. BMPs, where applicable would be designed based on specific criteria from recognized BMP design guidance manuals. Erosion-minimizing efforts may include measures such as: • Avoiding excessive disturbance of steep slopes • Defining ingress and egress within the project area • Implementing a dust control program during construction • Restricting access to sensitive areas • Using vehicle mats in wet areas • Revegetating disturbed areas where applicable following construction • Proper containment of stockpiled soils (including construction of berms in areas near water bodies, wetlands, or drainage channels) Erosion control measures identified in the ECSTP would be installed in an area before clearing begins during the wet season in that area and before the onset of winter rains or any anticipated storm events. Temporary measures such as silt fences or wattles, intended to minimize sediment transport from temporarily disturbed areas, would remain in place until disturbed areas have stabilized. The ECSTP would be submitted to the CPUC for review at least 30 days prior to the commencement of construction. The plan would be revised and updated as needed, and re-submitted to the CPUC if construction activities evolve to the point that the existing approved ECSTP does not adequately address the project.
WQ-4 (MM WR-1.1)	**Install pervious and/or high-roughness groundcover at switching stations or other permanent facilities.** In the design plans, groundcover for the new switching stations shall be comprised of a pervious and/or high-roughness material (e.g., gravel) to the maximum extent feasible, in order to ensure maximum percolation of rainfall after construction. Detention/retention basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10-year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimics the natural condition as much as possible.
	Noise
NO-1	**Noise minimization with portable barriers**. Compressors and other small stationary equipment will be shielded with portable barriers in proximity to residential areas.
NO-2	**Noise minimization with "quiet" equipment.** "Quiet" equipment (i.e., equipment that incorporates noise-control elements into the design—compressors have "quiet" models) will be used during construction whenever possible.
NO-3	**Noise minimization through direction of exhaust**. Equipment exhaust stacks and vents will be directed away from buildings.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

NO-4	**Noise minimization through truck traffic routing**. Truck traffic will be routed away from noise-sensitive areas where feasible.
NO-5	**Noise disruption minimization through residential notification**. PG&E will coordinate with the County of San Luis Obispo to notify residents within both Kern and San Luis Obispo Counties that are located near the power lines of the timeframe for the construction activities.
MM NS-3.1 (Deleted)	
	Traffic and Transportation
TF-1	PG&E would develop a project-specific **Traffic Management Plan (TMP)**, which would be submitted to the CPUC for review at least 30 days prior to construction. The TMP would conform to the California Joint Utility Traffic Control Committee's *Work Area Protection and Traffic Control Manual*. The TMP would include the following: • Standard safety practices, including installation of appropriate barriers between work zones and transportation facilities, placement of appropriate signage, and use of traffic control devices. • Flaggers and/or signage would be used to guide vehicles through or around construction zones using proper construction techniques. • Provision that all equipment and materials would be stored in designated staging areas on or adjacent to the work sites in a manner that minimizes traffic obstructions and maximizes sign visibility. Vehicle speeds would be limited to safe levels as appropriate for all roads, including access roads and overland routes without existing, posted speed limits.
TF-2 (MM TR-1.1)	**Prepare and implement traffic control plan.** Prior to the start of construction, the Applicant shall submit a Traffic Control Plan (TCP) to the CPUC and Caltrans. The TCP shall: • define the locations of project access points and locations of any temporary lane closures; • identify and make provision for circumstances requiring the use of flag persons, warning signs, lights, barricades, cones, etc. to provide safe work areas in the vicinity of the project site and to warn, control, protect, and expedite vehicular and pedestrian traffic; • include signage placed along all proposed construction haul routes and alternate haul routes at appropriate intervals notifying drivers of the presence of construction traffic on those roadways; • identify alternative routes for construction-related truck and shuttle traffic in the event of a closure of Shell Creek Road; • include signage placed along the south and north shoulders of Highway 58 at appropriate intervals (as recommended in Part 7 of Traffic Control for School Areas of the California Manual on Uniform Traffic Control Devices) in the vicinity of the Carissa Plains Elementary School notifying drivers of the school entrance and school traffic. The TCP shall include a Truck and Bus Safety Plan that ensures that: • construction material and equipment deliveries requiring pilot cars are limited to traveling along Highway 41/46 and Highway 58 during off peak hours (i.e., between 9:00 AM and 4:00 PM); • designated worker pick-up and drop-off areas are located on-site and do not result in construction-related shuttle buses parking or queuing along Highway 58; • all vendors and suppliers creating construction worker transportation adhere to the prohibition of buses over 40 feet in length on Highway 58; • all construction truck and bus drivers are informed of and required to adhere to the designated traffic haul routes; • drivers of all delivery trucks and passenger buses shall follow the routes defined for the solar project. The measures included in the TCP shall be consistent with the guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), and the Work Area Traffic Control Handbook (WATCH). Copies of the TCP shall be provided to the CPUC for approval at least 30 days prior to the start of construction.

Table Ap.4A-6. PG&E Applicant Proposed Measures – Solar-Midway Reconductoring

TF-3 (MM TR-3.1)	**Repair roadway damage.** The Applicant shall restore all public roads, easements, rights-of-way (ROWs), and infrastructure (such as signs, utility poles, and cattle guards) within the public road ROWs that have been damaged due to project-related construction activities or traffic in accordance with required Caltrans or local encroachment permits. Restoration shall be to original or near-original condition and undertaken in a timely manner, in consultation with San Luis Obispo County, Kern County, and Caltrans, as appropriate. Within 60 calendar days after completion of construction, the project owner shall meet with San Luis Obispo and Kern Counties and Caltrans (if applicable) to identify sections of public ROW to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public ROW repairs, the project owner shall provide a letter signed by the San Luis Obispo County, Kern County, and Caltrans stating their satisfaction with the repairs. Prior to commencing construction, the Applicant shall consult with San Luis Obispo County, Kern County, and Caltrans and notify them of the proposed schedule for project construction. The Applicant shall review with these agencies the feasibility of postponing public right-of-way repair or improvement activities in areas affected by project construction until project construction is completed. The Applicant shall coordinate with the agencies regarding any concurrent road restoration or improvement activities that are planned or in progress and cannot be postponed. The Applicant shall coordinate with the CPUC, San Luis Obispo County, Kern County, and Caltrans on an ongoing basis to ensure other development projects contributing to traffic on Highway 41/46, Highway 58, Bitterwater Road, and Shell Creek Road during the same time frame as the proposed project would contribute to the repair of damage.
	Public Services
PS-1 (MM PS-2.1) (Deleted)	
PS-2 (MM PS-2.2)(Deleted)	

* If an exclusion zone cannot extend the specified distance from the habitat, the biologist will stake and flag a restricted activity zone of the maximum practicable distance from the exclusion zone around the habitat. This exclusion zone distance is a guideline that may be modified by a qualified biologist, based on site-specific conditions (including habituation by the species to background disturbance levels). Measures are practicable where physically possible and not conflicting with other regulatory obligations or safety considerations; O&M activities will be prohibited or greatly restricted within restricted activity zones. However, vehicle operation on existing roads and foot travel will be permitted. A qualified biologist will monitor O&M activities near flagged exclusion and restricted activity zones. Within 60 days after O&M activities have been completed at a given worksite, all staking and flagging will be removed.

[1] Designated occupied habitat is defined in the HCP as all land within 2 miles of a CNDDB occurrence polygon, and suitable habitat within 5 miles of a CNDDB occurrence polygon. The boundaries of each designated occupied habitat is defined in the HCP and mapped in HCP Appendix I.

3. Environmental Impact Analysis

Environmental impacts are evaluated based on PG&E's commitment to implement all of the APMs presented in Table AP.4A-6. Since all of these measures will be implemented, all impacts described in this section will be less than significant. No impact "class" designations are presented in this analysis because all impacts are fully mitigated. The APMs and AMMs in Table Ap.4A-6 are considered to be part of the switching station and reconductoring projects. As such, they would be implemented as part of the projects. The specific APMs and AMMs that would address a potentially significant impact are cited where appropriate. As PG&E will conducting the reconductoring and will own and operate the switching stations, it is assumed that all APMs and AMMs in Table Ap.4A-6 apply equally to the reconductoring effort and to construction and operation of the switching stations.

3.1 Introduction

This appendix describes the potential environmental impacts associated with the construction and operation of the proposed reconductoring of the PG&E Solar-Midway 230 kV transmission line. Based on CEQA requirements and the scoping issues raised in the CVSR and Topaz CEQA processes, this appendix presents impact analysis in the following issue areas:

3.2 Aesthetics
3.3 Agriculture
3.4 Air Quality
3.5 Climate Change
3.6 Biological Resources
3.7 Cultural and Paleontological Resources
3.8 Geology, Mineral Resources, and Soils
3.9 Hazards and Hazardous Materials
3.10 Land Use and Recreation
3.11 Noise
3.12 Population and Housing
3.13 Public Services, Utilities, and Service Systems
3.14 Transportation and Circulation
3.15 Water Resources

Environmental Assessment Methodology

The methodology used to determine potential impacts of the proposed project consists of three key components, summarized below. These factors are discussed for each issue area in Sections 3.2 through Section 3.15, which follow this introduction.

- **Environmental Setting.** The environmental setting describes existing conditions in the project site that may change as a result of the construction and operation of the proposed project. The environmental setting used for the impact analysis reflects the conditions at the time of the issuance of the Notice of Preparation for the California Valley Solar Ranch project (March 1, 2010).
- **Environmental Impacts and APMs.** This section evaluates the environmental impacts of the proposed project based on predetermined, specific significance criteria. In determining the significance of impacts, the assessment has found that existing regulations and other public agency requirements, as well as Applicant Proposed Measures, will reduce all impacts to less than significant levels.

Within each discipline's analysis, six switching station locations are evaluated for the CVSR Caliente Switching Station. Only one site is evaluated for the Topaz Solar Switching Station.

Applicant Proposed Measures. As defined in Section 2.5 above, PG&E has incorporated design features, measures, and procedures into the description of its proposed project to avoid or reduce impact from project construction and operation. These measures are referred to as Applicant Proposed Measures

(APMs) in this document and are considered in the analysis of impacts and in the determinations of impact significance.

3.2 Aesthetic Resources

Environmental Setting

The existing transmission corridor passes through the northern portion of the Carrizo Plan for approximately 7 miles, crosses the Temblor Range for approximately 10 miles, and traverses the San Joaquin Valley for approximately 17 miles. The dominant visual characteristic of the Carrizo Plain landscape in the vicinity of the existing transmission line is long, unobstructed views across the Plain to a mountainous backdrop. The visual character of the Temblor Range in the vicinity of the existing transmission line is that of remote, rolling hills dotted with patchy shrubland vegetation. The visual character of the San Joaquin Valley in the vicinity of the existing transmission line is an extensive, somewhat hazy valley with an intensive agricultural character.

There are two structures that are potentially occupied residences within 1,000 feet of the existing transmission line at MP 0.5 and MP 1.2 in the Carrizo Plain, and there are an additional 21 structures that are potentially occupied residences within 2,000 feet of the existing transmission line between MP 25 and MP 32.5 in the San Joaquin Valley. The existing transmission line is within the foreground viewshed of numerous residences and one school in the community of Buttonwillow between MP 32.5 and MP 34, at a distance of approximately 1,500 feet. The visual character in the community of Buttonwillow is predominantly industrial, due to the presence of the Midway Substation and the convergence of numerous transmission lines from the surrounding landscape. The existing transmission line is located within approximately 2,000 feet of Highway 58 for the easternmost five miles of the transmission line route.

Solar Switching Station

The Solar Switching Station (Topaz Project) would be located north of the existing PG&E transmission line corridor within the Topaz Project boundary, and approximately one mile north of Highway 58. The nearest residence to the switching station (APN 072-301-003) would be over 3,500 feet southwest of the proposed site. In addition, two occupied residences are between 4,500 and 5,250 feet northeast of the proposed Solar Switching Station (APNs 072-051-026 and 072-061-030, respectively). Switching station equipment would range in height from approximately 16 feet to 55 feet.

Caliente Switching Station Alternatives

Caliente Switching Station Alternatives 1, 2, 4, 5, and 6. These five Caliente Switching Station (CVSR project) alternatives would be located approximately 2 miles north of Highway 58 along the existing 115 kV transmission line. They would be screened from view from the highway by intervening topography. The nearest residence to the switching station would be more than 2 miles from the proposed site. Switching station equipment would range in height from approximately 20 feet to 55 feet; however, heights for all modifications would be determined based on vertical positions of existing structures.

Caliente Switching Station Alternative 3. Switching station Site 3 (specifically site M3, as modified in this Final EIR) is located approximately 2,500 feet from the eastern boundary of the Alquist-Priolo Fault Hazard Zone for the San Andreas Fault. It is the highest in elevation of the six alternatives, ranging in elevation from 2,785 feet to 2,835 feet, roughly 200 feet above the sites 1 and 2 and almost 400 feet above sites 4, 5, and 6.

Microwave Tower and Reflector. The microwave tower would be approximately 175 feet in height and would be located within the Caliente Switching Station footprint. The microwave tower would likely be a self-supporting lattice unpainted, galvanized steel structure. The microwave antennas are standard grey in color. The microwave reflector location would be dependent on which switching station alternative is built. The higher elevation of switching station alternative 3 requires the microwave reflector to be placed in a different position than switching station alternatives 1, 2, 4, 5, and 6. The locations of microwave reflector option A (for switching station alternatives 1, 2, 4, 5, and 6) and option B (for switching station alternative 3) can be seen in Figure Ap.4A-4c. The microwave reflectors can be painted any color to match the surrounding environment.

Environmental Impacts

Impact AE-1: Short-term visibility of construction activities, equipment, and night lighting

Construction would occur over approximately 20 months.

Switching Stations. The Caliente Switching Station would be constructed during Phase 1 of CVSR project construction, and would involve site clearing and grading followed by construction of the facility. The switching station would be completed during the first year of solar array installation and temporary facilities would initially be installed. This would allow the proposed CVSR to begin operation as soon as the first tracker systems are deployed and can generate solar power. The movement of equipment, materials, and workers to and from the site would be visible, but would be short term and transient. This would be a less than significant impact.

The Solar Switching Station site would be cleared and graded during the start of the construction for the Topaz project overall. The switching station would be completed during the first year of the project, allowing the proposed solar project to begin operation as soon as the first solar modules are deployed and can generate solar power. Unlike the Caliente Switching Station, the Solar Switching Station would be located in the interior of the Topaz project site, adjacent to the 230 kV transmission line and approximately 1 mile from Highway 58. Given its location a mile away in the interior of the project site and because there would be construction generally around the site for site preparation and installation of solar units, the short term visual impact during construction would be less than significant.

Reconductoring. Although the reconductoring project is a linear project that would occur across 35 miles, construction activities would be of short duration in any single location. This would minimize viewer exposure of the 23 or more sensitive receptors (residences) located in the Carrizo Plain and in the vicinity of the community of Buttonwillow. The 6 proposed fly yards and staging areas would each be used for approximately 3 months during tower modifications and 1.5 months for reconductoring activities. Construction activities would introduce heavy trucks, cranes, and helicopters into the foreground view of sensitive receptors in the vicinity of the community of Buttonwillow and in the Carrizo Plain. Night construction is not anticipated, but temporary portable lighting may be used as needed when construction begins or ends in dark conditions. APM AIR-5 would minimize visual impacts from dust during construction by watering down construction areas and enforcing reduced vehicle speeds. Impacts from construction activities would be temporary and limited in nature and would be considered less than significant.

Impact AE-2: Project would introduce structure contrast, industrial character, view blockage, skylining and glare

Switching Stations. The Caliente Switching Station and microwave tower and reflector would be located just south of the existing PG&E transmission corridor and approximately 2 miles north of Highway 58. Switching Station Alternatives 4 through 6 would not be visible from the highway as they are hidden from view by intervening topography. Switching Station Alternatives 1 through 3 would be visible along portions of eastbound Highway 58; however, because of the distance between the switching station alternatives and the highway, approximately 3 miles, the switching stations would not dominate the view of the observer and viewers would have only distance views of the switching station. There are no nearby sensitive viewing receptors.

The Solar Switching Station would be located within the project boundary and north of the existing PG&E transmission line corridor. The site is approximately one mile north of Highway 58. The switching station site would be visible from Highway 58, but the views would be distant. In both Option A and Option B configurations of the Topaz project, three single family residences are northeast and northwest of the proposed location of the switching station. In addition, the switching station would be visible from a few residences southwest of the project boundary. All of these residences would be about 0.5 miles or more from the switching station and would therefore have distant views of the switching station across the solar panel arrays.

Both proposed switching stations would be unstaffed, but they would be lighted after dark. Specific details regarding the proposed night lighting are unknown at this time; however, PG&E security lighting from similar projects includes sodium vapor lamps and exterior lighting that uses non-glare light bulbs. Because of the rural nature of the Carrizo Plain, nighttime lighting at the switching station sites has the potential to be visually intrusive in the landscape and a source of nighttime glare. If all lighting is properly shielded, directed downward, and of minimum brightness necessary for safety, no direct or excessively bright reflective light would be anticipated off-site. APM AE-1 (Prepare and implement an exterior lighting plan) would be implemented to ensure that light and glare are properly minimized so that this impact would be less than significant.

Microwave Tower and Reflector. The microwave tower would be the tallest element constructed for the switching station, and would range between 80 feet at the Caliente Switching Station Alternative 2, and 175 feet at the other switching station alternative locations. Although the microwave tower would be tall, views of it would be distant and it would not dominate the view of the observer.

The microwave reflector would be located approximately 1.8 miles north of the existing PG&E transimmission corridor. Although it would be located far from Highway 58, it would be approximately 30 feet tall, it would be the size of a billboard. Views of the microwave reflector would be striking in an otherwise natural setting, especially if it were to glint. To ensure the reflector blends with the existing background and does not draw the attention of passangers along Highway 58, incorporation of an APM would be necessary. APM AE-2 (Paint microwave reflector to reduce visibility) would be implemented to ensure that views of the reflector are minimized so that this impact would be less than significant.

Reconductoring. The average height of existing towers is 118 feet, and the average height of towers with proposed extensions would be 127 feet. Maximum tower height could be 150 feet. Tower modifications 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. Receptors beyond approximately 2,000 feet from the existing transmission line would not be considered sensitive, as tower modifications would be

essentially unnoticeable to viewers at greater distances. Viewer sensitivity of receptors in the community of Buttonwillow would be low, as the existing visual character of Buttonwillow is dominated by transmission lines and the Midway Substation. The newly installed conductor would be a standard conductor (specular) and would reflect light and appear shiny to sensitive receptors in the vicinity of the line for the first 18 months after installation. Specular conductors typically grow dull and lose their reflective quality within 18 months of installation (PG&E, 2010). The increased tower heights and replacements of towers and conductor would not introduce a new source of structure contrast, industrial character, view blockage, or skylining. The new conductor would introduce a short-term source of specular reflection. Because long-term visual changes would be minimal, long-term aesthetic impacts of the new conductors would be considered less than significant.

3.3 Agriculture

Environmental Setting

The Solar Switching Station, the Caliente Switching Station alternatives, and microwave reflector would be located on land determined to be Important Farmland by the National Resource Conservation Service's (NRSC) Web Soil Survey (WSS). Additionally, the switching station locations fall on land with a zoning designation of Agriculture (AG). The proposed switching station sites and proposed microwave reflector would not be located on land currently under a Williamson Act contract.

Agricultural land under Williamson Act contract occurs along the existing 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. Active cotton production occurs along the existing ROW within California Department of Conservation designated Prime Farmlands between MP 30.8 and MP 35. Active grazing operations occur along the existing ROW from MP 1 through MP 30.8 and in the vicinity of the switching stations.

Environmental Impacts

Impact AG-1: Construction activities would temporarily interfere with Active Agricultural Operations

Switching Stations. Active agricultural operations would cease at the station locations during and after construction. For the Caliente Switching Station, areas not occupied by the station would be returned to agricultural use. To minimize disruption of grazing or other agricultural activity at the Caliente Switching Station site, APM AG-1 (Coordinate construction activities with agricultural landowners) would ensure that this impact to active agricultural operations would be less than significant, including grazing operations. With implementation of this measure, impacts would be less than significant. This would apply equally to all 6 alternative sites. For the Solar Switching Station, the surrounding land would be included in the Topaz solar project and would be used for solar panels. Therefore, Impact AG-1 is not applicable as there is no temporary interference. Impact AG-2 would apply.

Microwave Reflector. Active agricultural operations occur in the vicinity of the microwave reflector options. Construction of the proposed microwave reflector would disturb some land that would be actively grazed or in crops. As such, construction activities would temporarily disrupt active grazing or crop production operations. PG&E's existing ROW grants allow for compensation of crop damage if necessary. Work would be planned to allow flexibility in establish work near the beginning of construction in order to avoid crop damage. APM LU-1 ensures that PG&E work with farmers and ranchers to conduct work between harvest and planting periods whenever possible or provide compensation to landowners for crop losses. Because of the minor loss of active agriculture during the

construction of the microwave reflector, and with implementation of the APM, this impact would be less than significant.

Reconductoring. Active agricultural operations occur along most of the project ROW and in the vicinity of the switching stations. As listed in Table Ap.4A-2, the proposed upgrades would disturb some land that would be actively grazed or in crops. As such, construction activities would temporarily disrupt active grazing or crop production operations. PG&E's existing ROW grants allow for compensation of crop damage if necessary. Work would be planned to allow flexibility in establish work near the beginning of construction in order to avoid crop damage. APM LU-1 ensures that PG&E work with farmers and ranchers to conduct work between harvest and planting periods whenever possible or provide compensation to landowners for crop losses. In addition, APM AG-1 (Coordinate construction activities with agricultural landowners) would require coordination with landowners to ensure that this impact to active agricultural operations would be less than significant, including grazing operations. With implementation of this measure, impacts would be less than significant.

Impact AG-2: Permanent conversion of Important Farmland to non-agricultural use

Switching Stations. Each of the switching stations would permanently convert approximately 9 acres of farmland to a non-agricultural use. The Solar Switching Station would be located on land designated as Prime Farmland if irrigated, and the Caliente Switching Station would be located on land designated as Not Prime Farmland (NRCS, 2010). However, neither site is designated by the California Department of Conservation as prime farmland. The CPUC has determined that conversion of less than 10 acres of non-prime farmland is a less than significant impact. If the switching stations are located on state-designated prime farmland, then APM AG-2 (Mitigate the loss of state-designated prime farmland through permanent preservation of off-site farmlands) would reduce the impact to less than significant.

Reconductoring. The reconductoring work would be located within an existing PG&E ROW that passes through Prime Farmland for approximately 4.2 miles. Active crop production occurs along this stretch of the ROW, and two pull sites would likely be required to be located within the Prime Farmland of this transmission ROW. The pull sites would be approximately 300 feet by 300 feet (2.1 acres) and would be located within the ROW outside of the existing access road footprint.

A maximum of approximately 4.1 acres would be temporarily disturbed for this pull site and could be returned to agricultural production after a short construction interval. In addition, APM LU-1 ensures that PG&E work with farmers and ranchers to conduct work between harvest and planting periods whenever possible or provide compensation to landowners for crop losses. Implementation of this measure would ensure impacts to agriculture would be less than significant.

Impact AG-3: Permanent Conversion of Williamson Act contract lands to non-agricultural use

Switching Stations. The proposed switching station sites are not on land currently under a Williamson Act contract. Permanent conversion of Williamson Act contract lands would not occur.

Reconductoring. The reconductoring work would be located within an existing PG&E ROW that passes through land with active Williamson Act contracts for approximately 10.25 miles from MP 2.5 to MP 4.25, MP 8.3 to MP 11.3, MP 17 to MP 18, MP 18.5 to MP 19, MP 19.25 to MP 19.75 and MP 31.5 to MP 35. Active grazing operations and crop production occur through the ROW along these stretches of the transmission line, and several pull sites would likely be required to be located within the transmission ROW within Williamson Act parcels. Each pull site would be approximately 300 feet by 300 feet (2.1 acres), and would be located within the ROW outside of the existing access road footprint. It is estimated that approximately six pull sites (totaling 12.6 acres) would be required to be located within

active Williamson Act parcels. A maximum of approximately 12.6 acres would be temporarily disturbed and would be available to be returned to grazing or crop production after a short construction interval.

3.4 Air Quality

Environmental Setting

The United States Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data show compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The National and California Ambient Air Quality Standards (NAAQS and CAAQS, respectively) are provided in Table Ap.4A-7.

Table Ap.4A-7. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3
	Annual mean	20 µg/m^3	—
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3
	Annual mean	12 µg/m^3	15 µg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm
	Annual mean	0.030 ppm	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	—
	24-hour	0.04 ppm	0.14 ppm
	Annual mean	—	0.03 ppm

Notes: ppm=parts per million; µg/m^3= micrograms per cubic meter;
"—" = no standard
Source: CARB, 2010a: http://www.arb.ca.gov/html/ds.htm.

Existing Air Quality. San Luis Obispo County is within the jurisdiction of the San Luis Obispo County Air Pollution Control District (APCD), which is part of the South Central Coast Air Basin. Western Kern County is within the San Joaquin Valley APCD, which is part of the San Joaquin Valley Air Basin and includes seven other counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare.

Air quality in San Luis Obispo and western Kern Counties is contingent on several factors including the type, amount, and dispersion rates of pollutants being emitted within the two air basins. Major factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and the topographic and geographic features of the region.

San Luis Obispo County APCD is currently a non-attainment area for the State standards for atmospheric particulate matter, which is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes and mists. The San Joaquin Valley APCD is in a non-attainment area for both State and federal standards for particulate matter (PM). Particulate matter at high concentrations aggravates chronic respiratory illnesses such as bronchitis, emphysema, and asthma. Human activities that generate particulate matter include agricultural operations, industrial processes, fossil fuel combustion, construction and demolition operations, wood burning, and road dust entrained in the air. Natural sources include windblown dust, wildfire smoke, and sea spray salt.

San Luis Obispo County is a State-level non-attainment area for ozone. The San Joaquin Valley APCD is in a severe nonattainment area for both federal and State standards for ozone. Ozone is a secondary pollutant that is not produced directly by a source, but rather is formed by a reaction between nitrogen oxides (NOx) and reactive organic gases (ROGs) in the presence of sunlight. Ozone impacts public health at higher concentrations by aggravating asthma or causing respiratory irritation and other adverse effects on the lungs. It can also affect sensitive plant species by interfering with photosynthesis, and is there-

fore a threat to California agriculture and native vegetation. Primary emission sources of ROGs in San Luis Obispo County are motor vehicles (over 50 percent), organic solvents, the petroleum industry, and pesticides. Primary sources of NOx in San Luis Obispo County are motor vehicles (over 50 percent), public utility power generation, and fuel combustion by various industrial sources. Vehicle emissions contribute approximately 80 percent of the NOx and ROG emissions in the San Joaquin Valley APCD.

Table Ap.4A-8 summarizes the federal and State attainment status of criteria pollutants for the two APCDs based on the NAAQS and CAAQS, respectively.

Table Ap.4A-8. Attainment Status for the San Luis Obispo County and San Joaquin Valley Air Pollution Control Districts

	San Luis Obispo County APCD		San Joaquin Valley APCD	
Pollutant	**Federal**	**State**	**Federal**	**State**
Ozone – 1 Hr	Unclassified/Attainment	Non-attainment	Unclassified/Attainment	Non-attainment/Severe
Ozone – 8 Hr	Unclassified/Attainment	Non-attainment	Non-attainment/Serious	Non-attainment
PM10	Unclassified/Attainment	Non-attainment	Attainment	Non-attainment
PM2.5	Unclassified/Attainment	Attainment	Non-attainment	Non-attainment
CO	Unclassified	Attainment	Unclassified/Attainment	Unclassified/Attainment
NO_2	Unclassified	Attainment	Unclassified/Attainment	Attainment
SO_2	Unclassified	Attainment	Unclassified/Attainment	Attainment

Sensitive Receptors. Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases. There are two structures that are potentially occupied residences within 1,000 feet of the existing transmission line at MP 0.6 and MP 1.2 in the Carrizo Plain, and there are an additional 21 structures that are potentially occupied residences within 2,000 feet of the existing transmission line between MP 25 and MP 32.5 in the San Joaquin Valley. The existing transmission line is within 1,500 feet of numerous residences and one school in the community of Buttonwillow between MP 32.5 and MP 34. The closest residence to the Solar Switching Station (APN 072-301-003) would be located over 3,500 feet southwest of the proposed site. In addition, two occupied residences would be between 4,500 and 5,250 feet northeast of the Solar Switching Station (APNs 072-051-026 and 072-061-030, respectively). The nearest residence to the Caliente Switching Station alternatives would be more than 2 miles south of the proposed site.

Air Quality Regulatory Setting

Emissions from mobile and portable sources and temporary activities (like construction) are managed through a range of State and federal programs identified below.

- **U.S. 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 in order to attain the State ambient air quality standards. Off-road mobile sources include construction equipment. These standards and ongoing rulemaking jointly address emissions of nitrogen oxides (NOx) and toxic particulate matter from diesel combustion.
- **CARB Portable Equipment Registration Program.** This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register

their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

- **San Joaquin Valley APCD Rules 4101 and 4102 (Visible Emissions and Nuisances).** These rules apply to any source of air contaminants. They prohibit emissions of visible air contaminants to the atmosphere and any activity that creates a public nuisance.
- **San Joaquin Valley APCD Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).** This rule applies to the use of asphalt for paving, should it be necessary for covering the proposed underground facilities or for restoring roadways disturbed by project activities.
- **San Joaquin Valley APCD Regulation VIII (Fugitive PM10 Prohibitions).** These rules (Rules 8011 to 8081) are aimed at reducing fugitive PM10 emissions. Sources regulated under these rules include: construction, excavation, earthmoving activities, carryout and trackout, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. Regulation VIII was most recently revised in 2004. Violation of Regulation VIII would be subject to enforcement action by SJVAPCD. Regulation VIII requires implementation of various dust control measures (watering unpaved surfaces, minimizing vehicle speeds on unpaved surfaces, etc.) to ensure that visible dust emissions are substantially eliminated.
- **San Luis Obispo County APCD Rule 401 (Visible Emissions).** This rule prohibits any activity causing air contaminant emissions darker than Ringelmann Number 2 (or approximately 40 percent opacity) for more than an aggregate of three minutes in any consecutive 60-minute time period.
- **San Luis Obispo County APCD Rule 202 (Nuisance).** This rule prohibits any activity causing the discharge of air contaminants that cause or have a tendency to cause injury, detriment, nuisance, or annoyance to people and/or the public, or damage to any business or property.

Kern County Air Quality Thresholds. Projects subject to Kern County approvals may be compared to thresholds for operational emissions that are adopted by the Kern County Board of Supervisors for environmental documents prepared by the County under CEQA. While the thresholds are not relevant to the reconductoring project, they are provided here for informational purposes. Table Ap.4A-9 shows the Kern County thresholds as they may be used for determining whether cumulative effects of a project are "considerable" when located in the San Joaquin Valley Air Pollution Control District.

Table Ap.4A-9. Kern County Significance Thresholds

Reactive organic gases (ROG or VOC)	10 tons per year
NOx	10 tons per year
PM_{10}	15 tons per year

Source: Kern County, 2004.

Environmental Impacts

Significance Criteria

The following significance criteria for air quality were derived from the San Luis Obispo County APCD's *CEQA Air Quality Handbook* (2009a) and the San Joaquin Valley APCD Guide for Assessing and Mitigating Air Quality Impacts.

Significance Criteria for Construction-Related Emissions. Short-term construction emission thresholds for San Luis Obispo County, as stated in the APCD's *CEQA Air Quality Handbook* (2009a), involve two tiers shown in Table Ap.4A-10. If construction-related emissions of the reconductoring and switching stations exceed the Tier 2 threshold (6.3 ton/qtr for ROG + NOx), the APCD recommends implementing Standard Mitigation Measures, Best Available Control Technology (BACT) for construction equipment, a Construction Activity Management Plan (CAMP), and offsite mitigation. Implementing Standard Mitigation Measures, BACT, and a CAMP would be appropriate for construction exceeding the Tier 1 thresholds.

Table Ap.4A-10. Significance Thresholds for Construction Emissions

	Threshold[1]		
Pollutant of Concern	**Daily**	**Quarterly Tier 1**	**Quarterly Tier 2**
Ozone Precursors (ROG + NOx, Combined)	137 lbs	2.5 tons	6.3 tons
Diesel Particulate Matter (DPM)	7 lbs	0.13 tons	0.32 tons
Fugitive Particulate Matter (PM_{10}), Dust[2]	—	2.5 tons	—

1 - Daily and quarterly emission thresholds are based on the California Health & Safety Code and the CARB Carl Moyer Guidelines;
2 - Any project with a grading area greater than 4.0 acres of worked area can exceed the 2.5 ton PM10 quarterly threshold; "—" = No Reported Threshold.
Source: SLO County APCD, 2009a.

The San Joaquin Valley APCD recommends taking a qualitative approach to determine whether a significant impact would occur for PM_{10} and emphasizes implementation of effective and comprehensive control measures for fugitive dust. The San Joaquin Valley APCD recognizes that construction phase emissions are generally short-term in duration, and because of the high variability of PM_{10} emissions during construction, has determined that compliance with Regulation VIII for all sites and implementation of other appropriate control measures in the San Joaquin Valley APCD Guide for Assessing and Mitigating Air Quality Impacts sufficiently reduces PM_{10} impacts during construction so that impacts would not be significant (SJVAPCD, 2002).

Table Ap.4A-11. Significance Thresholds for Operational Emissions

	Threshold[1]	
Pollutant of Concern	**Daily**	**Annual**
Ozone Precursors ($ROG + NO_x$) [2]	25 lbs/day	25 tons/year
Diesel Particulate Matter (DPM) [2]	1.25 lbs/day	—
Fugitive Particulate Matter (PM_{10}), Dust	25 lbs/day	25 tons/year
CO	550 lbs/day	—

1 - Daily and annual emission thresholds are based on the California Health & Safety Code Division 26, Part 3, Chapter 10, Section 40918 and the CARB Carl Moyer Guidelines for DPM;
2 - URBEMIS – use winter operational emission data to compare to operational thresholds; "—" = No Reported Threshold.
Source: SLO County APCD, 2009a.

The San Joaquin Valley APCD recognizes that construction equipment and activities also emits carbon monoxide and ozone precursor emissions; however, it has determined that these emissions may cause a significant air quality impact only in the cases of very large or very intense construction projects (SJVAPCD, 2002). The guidelines indicate that projects permanently emitting more than 10 tons per year of ozone precursors (NOx or VOC) would have significant impacts to ozone.

Significance Criteria for Operational Emissions. The threshold criteria established by the San Luis Obispo County APCD to determine the significance and appropriate mitigation level for long-term operational emissions from a project are presented in Table Ap.4A-11. For Kern County, a project permanently emitting more than 10 tons per year of ozone precursors (NOx or VOC) could have a significant impact to ozone, and a project permanently emitting more than 15 tons per year of PM10 or PM2.5 could have a significant impact to particulate matter (Table Ap.4A-9).

In addition to exceeding the thresholds established for construction and operational emissions, a project may also have significant adverse impacts on air quality if it individually or cumulatively would result in:

- emissions of toxic or hazardous air pollutants in close proximity (i.e., 1,000 feet) to sensitive receptors;
- exceedance of a State or federal ambient air quality standard for any criteria pollutant (as determined by modeling); or
- inconsistency with the emissions reduction projections contained in an air quality management plan.

Impact AQ-1: Construction would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants

Switching Stations and Reconductoring. Construction of the switching stations and undertaking the reconductoring would have similar types of air quality impacts.

Exhaust from construction equipment results in short-term emissions of ROG, NOx, CO, SOx, PM_{10}, and $PM_{2.5}$. These emissions would occur in conjunction with diesel PM emissions (a toxic air contaminant). Forecasted levels of emissions ROG and NOx in the San Luis Obispo APCD would be approximately 0.42 tons per year and 2.20 tons per year, respectively (PG&E, 2010). These emissions would impact nonattainment ozone areas, but the levels would be less than the quantitative thresholds of significance established by the San Luis Obispo County APCD and the qualitative thresholds of the San Joaquin Valley APCD guidelines. Total emissions of CO, SOx, and diesel PM would be minimal as in both San Luis Obispo County and Kern County as indicated in Table Ap.4A-12A.

Fugitive PM emissions during construction would occur from soil disturbance and travel on paved and unpaved roads. The reconductoring and switching station construction is expected to exceed both quarterly Tier 1 and Tier 2 construction emissions thresholds for PM10 (fugitive dust). APM AIR-1 (for San Luis Obispo County) requires implementation of the San Luis Obispo APCD's Standard Mitigation Measures, as appropriate and necessary, for construction equipment; however, the PG&E APM is not specific as to when the APM would be necessary. APM AIR-1 (for Kern County) requires PG&E implement Best Management Practices (BMPs) to reduce construction tailpipe emissions. Without a specific activity management plan, the impact from construction equipment emissions could exceed the thresholds established by the San Luis Obispo County APCD. APM AIR-3 (Reduce construction vehicle emissions) would ensure that the APCD recommendations for controlling emissions from equipment would be implemented for both San Luis Obispo and Kern Counties. Because the project would also require up to 9 acres of grading for each of the two switching stations, APMs AIR-4 (Develop construction activity management plan (CAMP) and AIR-5 (Reduce fugitive dust) would be required to ensure reduction of fugitive dust from construction of the switching stations, as recommended by the San Luis Obispo County APCD. APM AIR-6 (Payment of impact fees) would ensure impacts to air quality during construction would be reduced to a less-than-significant level. With implementation of APMs AIR-3, 4, 5 and 6, air quality impacts during construction would be less than significant.

Table Ap.4A-12A. Total Construction Emissions in San Luis Obispo and Kern Counties

Emission Sources and Thresholds	ROG (ton/project)	NOx (ton/project)	Diesel Particulate Matter (ton/project)	PM10, Fugitive Dust (ton/project)	PM 2.5 (ton/project)	CO (ton/project)	SOx (ton/project)
Total Construction Emissions San Luis Obispo County (2011)	0.97	6.77	0.22	1.36	0.46	6.9	0.0
Total Construction Emissions Kern County (2011)	0.4	1.68	0.02	3.24	0.68	2.59	0.0
Total Construction Emissions San Luis Obispo County (2012)	0.46	4.84	0.17	0.78	0.29	3.76	0.0
Total Construction Emissions Kern County (2012)	1.07	4.4	0.06	0.02	0	4.42	0.0
Total Construction Emissions (2011)	**1.36**	**8.45**	**0.24**	**4.67**	**1.2**	**9.49**	**0.1**
Total Construction Emissions (2012)	**1.53**	**9.24**	**0.23**	**0.80**	**0.29**	**8.17**	**0.1**

Table Ap.4A-12B provides detailed information regarding quarterly construction emissions compared to the San Luis Obispo APCD Thresholds.

Table Ap.4A-12B. Total Quarterly Construction Emissions Versus San Luis Obispo APCD Thresholds

Emission Sources and Thresholds	ROG (ton/project)	NOx (ton/project)	Diesel Particulate Matter (ton/project)	PM10, Fugitive Dust (ton/project)	PM 2.5 (ton/project)	CO (ton/project)	SOx (ton/project)
Reconductoring Project Construction Emissions	0.33	1.22	0.0	0.0		0.0	0.0
First Solar Switching Station Project Construction Emissions	0.9	.99		0.0	0.0	0.79	0.0
Caliente Switching Station Project Construction Emissions	0.0	0.0	0.8	0.68	0.0	1.57	0.0
Maximum Quarterly Construction Emissions*	**0.42**	**2.20**	**0.8**	**0.68**	**0.2**	**2.36**	**0.0**
San Luis Obispo APCD Tier 1 Quarterly Threshold	2.5	*Combined with ROG*	0.13	2.5	0.2	None	None
APCD Tier 2 Quarterly Threshold	6.3	*Combined with ROG*	0.32	*Equal to Tier 1 Threshold*		---	---
Exceed Threshold?	***Yes***	***Yes***	***No***	***No***		***---***	***---***

*Reconductoring project is estimated to take approximately 20 months to complete. PG&E states that construction of transmission facilities would be scheduled to occur after the PG&E switching stations have been completed to allow each transmission circuit to be placed back in service immediately after it is interconnected to the new switching station. It is estimated that the switching stations would require up to 8 months of construction each; however, the PG&E air quality estimates for the project show only the First Solar Switching Station and the reconductoring upgrades overlapping during 2011. The construction of the Caliente Switching Station is estimated to occur during 2012, and is not expected to overlap with the other phases of construction. As such, the maximum quarterly construction emissions are not always for the same quarter.

Unmitigated construction emissions could exceed the designated San Luis Obispo APCD thresholds for criteria pollutants. APM AIR-3 through 5 are identified to reduce the production of ROGs, NOx, diesel PM, and PM10 from construction activities and to comply with San Luis Obispo APCD *CEQA Air Quality Handbook* (2009a). These measures would reduce construction emissions in a manner consistent with San Joaquin Valley guidelines. The resulting emissions after mitigation would not exceed the thresholds of significance for ROGs, NOx, or diesel PM, and impacts of fugitive dust (PM10) would be mitigated to a less than significant level through the extensive measures included in APM AIR-5. Implementing these measures would ensure that the construction activities would be consistent with local air quality rules and regulations and regional air quality management plans and impacts would be less than significant.

Impact AQ-2: Operation, maintenance, and inspections would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants

Switching Stations and Reconductoring. During operation, no stationary sources of criteria pollutants or toxic air contaminants would be associated with the reconductoring project. The switching stations would be unstaffed, therefore there would be no emissions associated with regular commuting. Low levels of emissions from mobile sources would occur as a result of using vehicles for periodic visits for electrical switching and routine maintenance. Routine maintenance and inspection would occur along the reconductored transmission line, similar to current practice. The air quality impact caused by emissions from project vehicular traffic for operations and maintenance would be less than significant.

3.5 Climate Change and Greenhouse Gas

Environmental Setting

Human activity contributes to emissions of six primary greenhouse gases (GHGs): CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). In response to Executive Order S-3-05 (June 2005), which declared California's particular vulnerability to climate change, the California Global Warming Solutions Act of 2006, Assembly Bill 32 (AB32), was signed into effect on September 27, 2006. In passing the bill, the California Legislature found that:

> *"Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems" (California Health & Safety Code, Sec. 38500, Division 25.5, Part 1).*

Emissions of CO_2 occur largely from combustion of fossil fuels. The major categories of fossil fuel combustion CO_2 sources can be broken into sectors for residential, commercial, industrial, transportation, and electricity generation. The transportation sector includes all motor gasoline and diesel fuel combustion, and the GHG emissions of this sector are not split into activities or uses (i.e., there is no separate estimate for the level of GHG emissions caused by gasoline or diesel fuel combustion related to statewide construction activities). Other GHG emissions tracked by State inventories occur in much smaller quantities. However, the global warming potential of CH_4 is about 21 times that of CO_2. The use of SF_6 in power transformers and circuit breakers along transmission lines also poses a concern because of its extremely high global warming potential (one pound of SF_6 is the equivalent warming potential of

approximately 23,900 pounds of CO_2) and the possible occurrence of a slow leak from the equipment. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO_2 emission rate (CO2e).

California is currently responsible for approximately 500 million metric tonnes of CO_2 equivalent (500 MMTCO2e) each year or between 1 and 2 percent of about 49,000 MMTCO2e emitted globally (IPCC, 2007). Electricity generation for use in California is responsible for about 80 to 90 MMTCO2e annually (depending on yearly variations) or between 20 and 25 percent of the total statewide GHG emissions. Statewide GHG emissions in 1990 were 427 MMTCO2e (CARB, 2007).

How global climate change may impact California's public health, infrastructure and natural resources is described in the 2009 Biennial Report of the California Climate Action Team (CAT, 2009). The Climate Action Team findings include: "extreme events from heat waves, floods, droughts, wildfires and bad air quality are likely to become more frequent in the future and pose serious challenges to Californians. These impacts pose growing demands on individuals, businesses and governments at the local, state, and federal levels to minimize vulnerabilities, prepare ahead of time, respond effectively, and recover and rebuild with a changing climate and environment in mind" (CAT, 2009).

For Central California, the number of days conducive to ozone formation in the San Joaquin Valley may rise by 75 to 85 percent by the end of the century, and sea-level rise may place additional pressure on the levee systems and increase the intensity of saltwater intrusion into coastal groundwater resources, leading to increased flooding and decreased freshwater availability (CAT, 2006; CAT, 2009).

The reconductoring project would require use of construction equipment that would emit GHGs. The project would occur in an area that does not include major anthropogenic GHG emission sources due to a low population density, limited agricultural activity, lack of major transportation facilities, and lack of large stationary sources of emissions. Native soils and vegetation currently provide a natural carbon sink.

Environmental Impacts

Significance Criteria

The following significance criteria for climate change and greenhouse gas emissions were derived from the current State CEQA Guidelines. The reconductoring project would be found to have a significant impact related to GHG emissions if the project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impact GHG-1: Construction would generate exhaust emissions of greenhouse gases

Switching Stations and Reconductoring. Construction of the switching stations and undertaking the reconductoring would have similar impacts.

Offsite manufacture of the project components, including new transmission towers, cage extensions, switching station components, and conductors, that would be delivered to and installed at the project site involves consumption of fossil fuels, metals, minerals, and water. Major resource requirements for energy input during production and manufacturing include: coal, oil, and natural gas; and for raw

materials making up the components and their installation: iron, and other metals and minerals. Coal would be consumed primarily to produce steel. Smaller quantities of oil and natural gas would be used in manufacturing and transporting the project components. The GHG emission rates and quantities of the raw materials and resources that would be consumed outside the project area, through manufacturing and long-distance transportation of the project components, have not been quantified, but they would be associated one time with project construction.

Construction would involve onsite activities and region-wide mobilization of numerous equipment (including helicopters) and personnel. These activities would cause short-term, unavoidable increases in GHG emissions. The construction GHG emissions would occur over approximately 20 months. APM AIR-2 (Minimize greenhouse gas emissions during construction) would minimize carbon emissions of construction activities by encouraging carpooling and encouraging recycling construction waste. PG&E stated that construction of the switching stations and reconductoring would result in approximately 1,185.89 metric tonnes of CO_2-equivalent (MTCO2e) for 2011 and approximately 1,241.99 MTCO2e for 2012 (PG&E, 2010). The construction-phase GHG emissions would be substantially less than the CARB Mandatory Reporting applicability level of 2,500 metric tonnes per year. As a result, the short-term emission of greenhouse gases during construction would be less than significant.

Impact GHG-2: Operation, maintenance, and inspections would generate exhaust emissions of greenhouse gases

Operation, maintenance, and inspections would cause GHG emissions, primarily CO_2 emissions, from use of the carbon-based fuels (gasoline and diesel) used by motor vehicles during inspections.

Switching Stations and Reconductoring. Reconductoring the line would not cause an increase in the baseline rate of maintenance and inspections; however, reconductoring would extend the life of the transmission line, which would result in maintenance and inspections for a longer duration than under baseline conditions. The construction of the two new switching stations would slightly increase maintenance requirements, but the switching stations would be located adjacent to the existing transmission corridor. Increased CO_2 emissions from maintenance and inspections would be minimal.

Another GHG emission source for the transmission reconductoring project and switching stations would be SF_6 from electrical equipment leakage. Sources of SF_6 would be small in quantity and emission rate, and would easily be controlled or minimized because the gas can be reused and recycled. Routine and safe operation requires that SF_6 be contained within electric power equipment.

PG&E would implement its routine measures to reduce potential SF_6 emissions from the switching station equipment and the switching station would be incorporated into PG&E's system-wide SF_6 emissions reduction program. These measures would include: SF_6 handling procedures; using a single, full-service SF_6 vendor to track SF_6 usage and recycling and to coordinate leak detection procedures; and keeping logs of "topping off" events (CPUC, 2009). APM GHG-2 (Avoid sulfur hexafluoride emissions) would ensure that the potential for SF_6 leaks is minimized by requiring PG&E to incorporate the switching stations into their system-wide program. In addition, implementation of APM GHG-1 (GHG emissions minimization) ensures that PG&E will adhere to its voluntary company-wide GHG emission reduction actions to further reduce and offset GHG emissions.

Land use conversion related to the reconductoring work would be minimal and temporary. Vegetated areas that provide a natural carbon sink would be restored at the end of the construction period. The nature of the reconductoring project, including mitigation for SF_6 control, ensures that GHG emissions related to long-term operation of the line would be minimal relative to baseline conditions.

The level of emissions for long-term operation of the reconductored line is expected to be substantially less than the level of 2,500 metric tonnes per year triggering CARB Mandatory Reporting. As a result, with implementation of APM GHG-1 and 2, GHG emissions caused by operation, maintenance, and inspection would be less than significant.

Impact GHG-3: The project would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Switching Stations and Reconductoring. The reconductoring project, including switching stations construction, would ensure the delivery of renewable energy to the regional grid to achieve compliance with the Renewable Portfolio Standard program and Renewable Electricity Standard (RES) requirements. As such, the reconductoring project would contribute to the successful implementation of AB32, the AB32 Scoping Plan, and Executive Order S-14-08. The reconductoring project would not conflict with any other applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The project would not conflict with any applicable plan, policy or regulation for GHG reduction or managing global climate change, and no impact would occur.

3.6 Biological Resources

Biological resources in the project region were determined by a review of existing information and field surveys. The key sources of data and information accessed during the review are listed below:

- A search of the CNDDB for special-status plant and wildlife occurrences within a 10-mile radius of the project area (California Natural Diversity Database 2010).
- Revised biological resources assessment report for the CVSR Project (URS and H.T. Harvey 2009).
- Biological report for the Topaz Solar Farm (Althouse and Meade 2009).
- Biological Resources Report for the Carrizo to Midway Reconductoring Project (ICF International 2010).

Initial assessment-level botanical and wildlife surveys were conducted within the project area on February 22 and 23, 2010 and March 10 and 11, 2010. Another general assessment of only wildlife occurred on March 18, 2010. Additional comprehensive floristic surveys are ongoing as of the preparation of this report, occurring during appropriate periods of the flowering and fruiting season throughout the entire project area. All botanical surveys within the project area are being performed using the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (California Department of Fish and Game, 2009). The general habitat assessment surveys were conducted by two wildlife biologists walking and driving the proposed project work areas, recording general habitat conditions, and noting habitat features associated with special-status species that could occur in the project area.

Environmental Setting

The portion of the Solar–Midway transmission line located in Kern County (MP 9 to MP 34) is covered under PG&E's San Joaquin Valley Operations and Maintenance Multi-species Habitat Conservation Plan (HCP; PG&E, 2007). The purpose of a HCP program is to streamline permitting through the federal and State wildlife resource agencies while ensuring protection for special-status species. Congress amended section 10 of the Endangered Species Act (ESA) in 1982 to authorize "incidental take" through the development and implementation of HCPs. The HCP integrates an applicant's proposed project or activity with the needs of the species. It describes, among other things, the anticipated effect of a

proposed take on the affected species and how that take will be minimized and mitigated. Such information must be submitted with any incidental take permit application.

Both State and federally listed species are covered, as are certain unlisted, but sensitive species that may become listed in the future. Implementation of the San Joaquin Valley Operations and Maintenance Multi-species HCP enables PG&E to continue to conduct current and future O&M activities in the San Joaquin Valley while minimizing, avoiding, and compensating for direct, indirect, and cumulative adverse effects on threatened and endangered species that could result from such utility activities. Reconductoring activities fall within the HCP's definition of Operation and Maintenance work. The HCP is unique because, unlike standard development-oriented HCPs that address permanent land conversion and loss of habitat, it primarily addresses small-scale temporary effects that are dispersed over a large geographic area. The HCP includes general Avoidance and Minimization Measures (AMMs) that are implemented for all O&M projects, species specific AMMs (which are implemented on a case by case basis), and compensation measures. The general and species-specific AMMs are listed in Table Ap.4A-6 in Section 2.5.

In some cases, the HCP AMMs focus on avoidance of the impact. Complete avoidance may not always possible for this particular project, in which case additional APMs) are applied. APMs for the proposed project are listed in Table Ap.4A-6.

PG&E's HCP also includes compensation for species effects through a variety of mechanisms. These mechanisms may be combined in various configurations, including purchase of compensation lands, purchase of mitigation credits from existing mitigation banks, placement of conservation easements on PG&E lands, and purchase of conservation easements, with an emphasis on the first three mechanisms. Compensation lands demonstrate habitat characteristics similar to those disturbed by O&M activities. Depending on the species and habitat requiring compensation, compensation may involve occupied or suitable habitat (e.g., direct effects on a specific plant population would require compensation to include occupied habitat, whereas the temporary disturbance of San Joaquin kit fox habitat would require compensation to include suitable San Joaquin kit fox habitat). The use of proposed compensation land would be subject to USFWS and DFG approval and would be protected and maintained in perpetuity. A discussion of species specific compensation efforts that PG&E has implemented, or would be implementing in the future, is provided in this section.

The HCP covers 23 wildlife and 42 plant species, 9 and 6 of which, respectively, have the potential to occur in the vicinity of the Solar-Midway reconductoring and switching station work. Biological survey work, including mapping of wetlands and jurisdictional waters, wildlife habitat assessments, and rare plants surveys, for the transmission ROW from MP 0 to MP 9 in San Luis Obispo County has resulted in preliminary determinations of impacts to biological resources.

Vegetation Communities and Habitats

Four vegetation communities occur in the project region: annual grassland, oak woodland, saltbush scrub, and California Juniper Woodland.

Annual Grassland

Vegetation from MP 0 to MP 9 and MP 17 to MP 30 consists primarily of non-native annual grassland species. This vegetation community type often occurs as an understory component within other vegetation communities, such as saltbush scrub. Annual grassland species within the project area include ripgut brome, barley, filaree species, fiddleneck species, pepper-grass, Sierra tidytips, pygmy weed, and goldfield species. Additionally, common native plant species such as blue dicks (*Dichelo-*

stemma 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*) are found in the project area. Round-leaved filaree (*California macrophylla*), a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere), is known to occur in at least one portion of the project area.

Oak Woodland

Oak woodland occurs within a limited portion of the project area in the Temblor Range. Blue oak woodland is the dominant vegetation type from MP 9 to MP 17 (USFWS & CDFG, 2006). The project area within the Temblor Range is dominated by Tucker's oak (*Quercus john-tuckeri*). Tucker's oak is an evergreen shrub that reaches an average height of 6 meters. Stands typically occur on steep slopes and ridges, with the canopy within stands ranging from open and sparse to continuous and dense. Composition and density within stands are influenced by fire frequency and intensity.

California Juniper Woodland

California juniper (Juniperus californica) woodland occurs in a limited portion of the study area within the Temblor Range. California juniper is an evergreen shrub that reaches an average height of 4 meters. Canopy within stands is open to intermittent, often consisting of a few scattered individuals. Natural stand replacement is via seed; California juniper does not sprout after moderate to intense fire events.

Saltbush Scrub

Saltbush scrub stands occur throughout the project area, but are primarily concentrated and best represented within the lower, eastern portion of the project area, east of the Temblor Range. Saltbush scrub within the project area is dominated by allscale (Atriplex polycarpa), an intricately branched woody perennial shrub that reaches an average height of 1 to 2 meters. Shrub canopy within stands varies from open and sparse to continuous and dense. Allscale exhibits a high tolerance for drought and some tolerance for saline conditions. Natural stand replacement occurs primarily as result of flooding events in lowland areas. Natural stand replacement in upland areas is typically via fire events. Kern mallow (Eremalche kernensis), a species listed by the federal government as endangered and a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere), is known to occur in saltbush scrub habitat within portions of the project area east of the Temblor Range.

Special-Status Wildlife

Based on a review of the CNDDB and environmental documents prepared for other projects in the region, 41 special-status wildlife species were identified as having the potential to occur in the region. Protocol wildlife surveys have not been conducted for the reconductoring project, although incidental occurrences or sign were recorded. The rational for not evaluating certain species is given below.

- The project area, and 250 feet surrounding the project area, lack suitable aquatic habitat for longhorn fairy shrimp, vernal pool fairy shrimp, western spadefoot, and western pond turtle.
- The project area lacks suitable habitat for Kern primrose sphinx moth.
- The project area is outside of the geographic range of the California tiger salamander, western patch nosed snake.
- The project area lacks suitable nesting habitat for tricolored blackbird, yellowed-head blackbird, bald eagle, peregrine falcon, northern harrier, lesser sandhill crane, greater sandhill crane, and purple

martin. Oregon vesper sparrows do not nest within project area and would only occur during the non-nesting season.

- The project area lacks suitable roosting habitat for pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat.

Those species with potential or are known to occur in the project area are discussed below.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard (*Gambelia sila*) is listed as endangered under ESA and CESA, and it is a fully protected species under California Fish and Game Code (FGC) 5050. Blunt-nosed leopard lizards are endemic to the San Joaquin Valley and the Carrizo Plain (U.S. Fish and Wildlife Service, 1998).

Blunt-nosed leopard lizards are found in sparsely vegetated plains, alkali flats, grasslands, low foothills, canyon floors, and large washes. They inhabit areas with sandy soils and scattered vegetation and are usually absent from thickly vegetated habitats. On the floor of the San Joaquin Valley, they are usually found in nonnative grassland, valley sink scrub habitats, valley needlegrass grassland, alkali playa, and valley saltbush scrub. Blunt-nosed leopard lizards use small rodent burrows for shelter, predator avoidance, and behavioral thermoregulation. These burrows may be either abandoned ground squirrel tunnels or occupied or abandoned kangaroo rat tunnels. Each lizard may use several burrows, avoiding those with predators or other leopard lizards. Blunt-nosed leopard lizards are large, opportunistic predatory lizards, feeding primarily on insects, including grasshoppers, crickets, and moths. They also feed on other small lizards, even of their own species (U.S. Fish and Wildlife Service, 1998).

Several CNDDB (2010) records for blunt-nosed leopard lizards occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in several of the proposed work areas located in annual grassland and saltbush scrub habitats.

San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) is listed as threatened under ESA and as endangered under CESA. The current known range of San Joaquin kit fox extends from the southwest corner of San Joaquin County south into Kern and San Luis Obispo Counties (U.S. Fish and Wildlife Service, 1998).

San Joaquin kit foxes appear to have adapted to living in marginal areas of the agricultural Central Valley, such as grazed, non-irrigated grasslands; peripheral lands adjacent to tilled and fallow fields; irrigated row crops, orchards, and vineyards; and petroleum fields and urban areas (U.S. Fish and Wildlife Service, 1998). San Joaquin kit foxes usually prefer areas with loose-textured soils suitable for den excavation, but they are found on virtually every soil type. Dens are usually scarce in areas with shallow soils because of the proximity to bedrock, impenetrable hardpan layers, and high water tables. Where soils make digging difficult, kit foxes frequently use and modify burrows built by other animals, particularly those of California ground squirrels and American badgers. Structures such as culverts, abandoned pipelines, and well casings may also be used as den sites (U.S. Fish and Wildlife Service, 1998).

Several CNDDB (2010) recordings of San Joaquin kit fox occur within 10 miles of the proposed project area, and a San Joaquin kit fox scat was observed at the proposed site for the Caliente Switching Station, near Tension/Pull Sites 073 and 097. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats.

Giant Kangaroo Rat

The giant kangaroo rat (*Dipodomys ingens*) is a listed as endangered under ESA and CESA. The current distribution of giant kangaroo rats includes the Panoche Region in western Fresno County and eastern San Benito County; the Kettleman Hills in western Kings County; the Lokern, Elk Hills, and other uplands around McKittrick, Taft, and Maricopa in western Kern County; the Carrizo Plain Natural Area in eastern San Luis Obispo County; and Cuyama Valley in Santa Barbara and San Luis Obispo Counties (U.S. Fish and Wildlife Service, 1998).

Giant kangaroo rats occur in annual grassland habitats in areas with slopes generally less that 10° and friable, sandy-loam soils. Giant kangaroo rats develop burrow systems with one to five entrances. Two types of burrows are dug: a burrow with a vertical shaft, circular opening, and no dirt apron, and a wide burrow with a horizontal entrance and a well-worn path leading from the mouth (U.S. Fish and Wildlife Service, 1998).

Several CNDDB (2010) recordings of giant kangaroo rats occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats.

Coast Horned Lizard and San Joaquin Whipsnake

The California horned lizard (*Phrynosoma coronatum*) and San Joaquin whipsnake (*Masticophis flagellum ruddocki*) are a California species of special concern. California horned lizard is endemic to California, occurring in localized areas along the South Coast Ranges and isolated sections of natural habitat remaining on the San Joaquin Valley floor (Jennings and Hayes, 1994). San Joaquin whipsnakes occur along the Coast Ranges from Alameda and San Joaquin Counties south to Kern County.

Grassland and saltbush scrub habitats in the project area provide suitable habitat for coast horned lizards and San Joaquin whipsnake; however, there are no CNDDB recording of either animal within 10 miles of the project area (California Natural Diversity Database, 2010). Neither the coast horned lizard nor the San Joaquin whipsnake was observed during the 2010 field surveys.

California Condor

The California condor (*Gymnogyps californianus*) is listed as endangered under ESA and CESA and is a fully protected species under FGC 3511. In California, California condors historically occurred along a wishbone-shaped area encompassing 10 counties in the southern and central parts of the state—San Benito, Monterey, San Luis Obispo, Santa Barbara, Kern, Ventura, Tulare, Fresno, Kings, and Los Angeles Counties (U.S. Fish and Wildlife Service, 1996). The wild population was extirpated by mid-1987 (with the trapping of the last individuals for captive breeding). Since 1992, releases of captives have occurred in parts of California, including Big Sur in the Ventana Wilderness Sanctuary, the Sespe Condor Sanctuary, and the Los Padres National Forest in Santa Barbara, Ventura, and Kern Counties (California Department of Fish and Game, 2009). Condors feed exclusively on the carcasses of medium-sized to large mammals. Domestic cattle, sheep, and horses, along with mule deer and California ground squirrel, are the predominant food sources for California condors today (U.S. Fish and Wildlife Service, 1996).

Golden Eagle

Golden eagles (*Aquila chrysaetos*) are a California species of special concern and fully protected under FGC 3511, the Migratory Bird Treaty Act (MBTA), and the Bald Eagle and Golden Eagle Protection Act.

Golden eagles typically inhabit open grassland areas in foothills surrounding the Central Valley. Golden eagle nests are commonly built on cliff ledges and in large trees in open areas. They typically forage in open grasslands, where they prey on California ground squirrels and black-tailed jackrabbits (Kochert et al., 2002).

No golden eagles were reported by the CNDDB (2010) within 10 miles of the project area. One golden eagle was observed soaring above Tension/Pull Site 013 during the 2010 field surveys. Large trees and towers occurring in or near the project area provide suitable nesting habitat for this species, and grasslands and agricultural areas provide suitable foraging habitat.

White-Tailed Kite

The white-tailed kite is a fully protected species under FGC 3511, and its nests are protected under the MBTA. Since the 1980s, many white-tailed kite populations have been declining, apparently because of loss of habitat and increased disturbance of nests (Dunk, 1995).

The breeding season generally extends from early February through early August. White-tailed kites usually nest in large native trees, although nonnative trees also are occasionally used. Nest trees are generally at the edge of wooded habitat next to open fields. Large trees in areas that have been developed may also be used, although the trees need to be close to open fields for foraging (Dunk, 1995).

No white-tailed kites were reported by the CNDDB (2010) within 10 miles of the project area, and no white-tailed kites were observed in or in the vicinity of the project area during 2010 field surveys. Large trees in the vicinity of the project area provide suitable nesting habitat, and the grassland and agricultural field in the project area provide suitable foraging habitat.

Swainson's Hawk

Swainson's hawks (*Buteo swainsoni*) are listed as threatened under CESA, and their nests are protected under the MBTA. Swainson's hawks inhabit grasslands, sage-steppe plains, and agricultural regions of western North America during the breeding season, and winter in grassland and agricultural regions from central Mexico to southern South America (England et al., 1997). In California, the nesting distribution includes the Sacramento and San Joaquin Valleys, the Great Basin sage-steppe communities and associated agricultural valleys in extreme northeastern California, and limited areas of the Mojave Desert region (California Department of Fish and Game, 2005). Swainson's hawks usually nest in large native trees such as valley oak (*Quercus lobata*), Fremont cottonwood, and willows (*Salix* spp.), although, nonnative trees such as eucalyptus (*Eucalyptus* spp.) are occasionally used. The breeding season is typically March to August (England et al., 1997).

No Swainson's hawks were reported by the CNDDB (2010) within 10 miles of the project area, and no Swainson's hawks were observed in or in the vicinity of the project area during 2010 field surveys. Large trees in or near the vicinity of the project area provide suitable nesting habitat, and the grassland and agricultural field in the project area provide suitable foraging habitat.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugea*) is a California species of special concern, and its nests are protected under the MBTA. Western burrowing owls were formerly a common permanent resident throughout much of California, but population declines were noticeable by the 1940s and have continued to the present, especially along the central and southern coasts. The draining of wetlands in

the Central Valley and conversion of desert scrub to agriculture in the Imperial Valley likely contributed to the increase in numbers and distribution throughout the valleys (Shuford and Gardali, 2008)).

Western burrowing owls prefer open, dry, short grassland habitats with few trees. They typically occupy burrows abandoned by ground squirrels or other burrowing mammals. Burrowing owls can persist on habitats that have been highly modified by human activity and will burrow in abandoned pipes, culverts, and debris piles (Shuford and Gardali, 2008). The breeding season usually extends from late February through August. This species is more diurnal than most owls and can often be observed during the day standing outside the entrance to its burrow (California Department of Fish and Game, 1995).

CNDDB (2010) records indicated several burrowing owl records within 10 miles of the project area. One burrowing owl was observed at the eastern end of the Caliente Switching Station survey area. Suitable western burrowing owl nesting and foraging habitat occurs in the grassland, saltbush scrub, and disturbed habitats of the project area where ground squirrel burrows and other artificial burrows are present.

Long-eared Owl

The long-eared owl (*Asio otus*) is a California species of special concern, and its nests are protected under the MBTA. They prefer grasslands and open forests and nest in trees and shrubs (Marks et al., 1994). Long-eared owls exclusively hunt for prey in open habitats. Like most owls, long-eared owls hunt at night and prey on a variety of small rodents (Marks et al., 1994).

There are no CNDDB (2010) records for long-eared owls within 10 miles of the project area and none were observed during 2010 surveys. California Department of Fish and Game biologist David Hacker has reported observing long-eared owls in the Temblor Range (Krenn pers. comm.) Long-eared owls could nest in the denser trees and shrubs located in the Temblor Range and forage in grassland habitat in the Temblor Range.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern, and its nests are protected under the MBTA. In California, loggerhead shrike occurs in open habitats with scattered shrubs, trees, posts, fences, utility lines, and other perches. Habitats include valley foothill forests, pinyon-juniper, desert riparian, and Joshua tree (Duke, 2010a). Loggerhead shrike is adaptable to urban environments as long as preferred habitat characteristics and abundant prey supplies are present (Yosef, 1996).

The loggerhead shrike is a predatory songbird and feeds on a wide variety of prey, including insects, small mammals and birds, reptiles, amphibians, and occasionally carrion (Yosef, 1996). Nesting habitat includes densely foliaged shrubs and trees near open habitats (Duke, 2010a).

There are no CNDDB (2010) records for loggerhead shrikes within 10 miles of the project area. Several loggerhead shrikes were observed within the project area during the 2010 surveys. Loggerhead shrikes could nest in trees and shrubs located throughout the project area and forage in suitable habitat throughout the project area.

Le Conte's Thrasher

The Le Conte's thrasher (*Toxostoma lecontei*) is a California species of special concern, and its nests are protected under the MBTA. Le Conte's thrashers are an uncommon resident of the desert southwest and northwestern Mexico. In California, the species is a permanent resident in the San Joaquin Valley,

Mojave Desert, and Colorado Desert (Sheppard, 1996).Typical habitat consists of sparsely vegetated desert with a high proportion of saltbush or shadscale and/or cylindrical cholla cactus species (Sheppard, 1996).

CNDDB (2010) records indicated several Le Conte's thrasher records within 10 miles of the project area, although, no Le Conte's thrashers were observed during the 2010 field surveys. Suitable nesting and foraging habitat occur in the saltbush scrub habitats within the project area.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is a California species of special concern, and its nests are protected under the MBTA. In California, grasshopper sparrows are summer residents and breed in the foothills and lowlands west of the Sierra Nevada from Mendocino and Trinity Counties south to San Diego County. Grasshopper sparrow occurs in dry grasslands, especially those with a variety of grasses and forbs. The species prefers moderately open grasslands with patchy bare ground (Vickery, 1996).

Grasshopper sparrow feeds exclusively on the ground, and exposed bare ground is critical for foraging. A large portion of its diet is grasshoppers (Vickery, 1996). Nests are built of grasses and forbs in a slight depression in the ground and are often concealed with overhanging grasses (Duke, 2010b).

No grasshopper sparrows were reported by the CNDDB (2010) within 10 miles of the project area, and no grasshopper sparrows were observed during the 2010 field surveys. The annual grasslands in the study area provide suitable nesting habitat.

San Joaquin Antelope Squirrel

The San Joaquin antelope squirrel (*Ammospermophilus nelsoni*) is listed as threatened under CESA. San Joaquin antelope squirrels inhabit dry grasslands with sandy loam soils, widely spaced alkali scrub vegetation, and dry washes. Today, only the Carrizo and Elkhorn Plains and western Kern County around Elk Hills support significant populations of San Joaquin antelope squirrels. Smaller populations also inhabit marginal habitat in the foothills at the western edge of the San Joaquin Valley (U.S. Fish and Wildlife Service, 1998). The species breeds only once a year, coinciding with the presence of green vegetation (U.S. Fish and Wildlife Service, 1998).

Several CNDDB (2010) records for San Joaquin antelope squirrels occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats. One San Joaquin antelope squirrel was observed at Tension/Pull Site 097.

Tipton Kangaroo Rat

The Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) is listed as endangered under ESA and CESA. Currently, Tipton kangaroo rats are limited to scattered, isolated clusters in Pixley, Tulare County, and Kern County (U.S. Fish and Wildlife Service, 1998).

Tipton kangaroo rat occupies arid-land communities. Alluvial fans and floodplain soils ranging from fine sands to clay-sized particles with high salinity are characteristics of suitable habitat. The species occurs in higher densities in areas with sparse-to-moderate shrub cover. Burrow systems are most often located in open areas and are commonly found in slightly elevated mounds, road berms, canal embankments, railroad beds, and bases of shrubs and fences where windblown soils accumulate above the level of surrounding terrain (U.S. Fish and Wildlife Service, 1998).

Several CNDDB (2010) records for Tipton kangaroo rats occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in the proposed work area in the annual grassland habitat that occurs between the southern end of the Midway Substation and SR-58.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) is listed as threatened under the ESA. Its range extends throughout the Central Valley and associated foothills, from the 3,000-foot contour in the Sierra Nevada foothills, across the valley floor, to the Central Valley watershed in the foothills of the Coast Ranges (U.S. Fish and Wildlife Service 2006). VELB's life cycle is entirely dependent on its host plants—blue elderberry and red elderberry (*Sambucus racemosa*). VELB eggs and larva spend up to two years living in the stem of the plant. Adults emerge after pupating in the spring (March to June) when the host plants are flowering. VELB adults live from a few days to a few weeks, mating and feeding on elderberry nectar, flowers, and leaves (Collinge et al. 2001).

Elderberry shrubs (*Sambucus racemosa*) suitable for VELB were found to be present along the access road to Tension/Pull site 65 during biological surveys in June 2010 (ICF, 2010).

Short-Nosed Kangaroo Rat

The short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*) is a California species of special concern. The short-nosed kangaroo rat is one of three subspecies of the San Joaquin kangaroo rat. Historically, short-nosed kangaroo rats occur along the western, southern, and extreme southeastern sides of the San Joaquin Valley above the valley floor. The species' current range approximates its historic range, but the number of localities has diminished as a result of loss and fragmentation of habitat due to agricultural and urban conversion (Bolster, 1998a).

Short-nosed kangaroo rats occur in grassland and saltbush scrub habitats with friable soils on flat or gently rolling terrain. In the Soda Lake area of the Carrizo Plain, short-nosed kangaroo rats occur in alkali soils. Burrows most often occur in slightly elevated areas, including road berms, canal embankments, railroad beds, and at the base of shrubs and fences, where the likelihood of seasonal flooding is less (Bolster, 1998a).

Several CNDDB (2010) records for short-nosed kangaroo rats occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats.

Tulare Grasshopper Mouse

The Tulare grasshopper mouse (*Onchomys torridus tularensis*) is a California species of special concern. The Tulare grasshopper mouse's range includes western Kern County, the Carrizo Plain, Cuyama Valley, and the Panoche region in Fresno and San Benito Counties (U.S. Fish and Wildlife Service, 1998). Grasshopper mice feed almost exclusively on arthropods, especially grasshoppers, crickets, and scorpions. Predators include raptors, snakes, and predatory mammals. This species is considered beneficial to farmers because it eats potentially harmful insects (Bolster, 1998b).

Several CNDDB (2010) records for Tulare grasshopper mouse occur within 10 miles of the proposed project area. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats.

American Badger

The American badger (*Taxidea taxus*) is a California species of special concern. Badgers are found throughout most of California, except for the extreme northwest area of the state. Badgers are most abundant in open, drier habitats with friable soils. Associated habitats include annual grasslands. Open blue oak and valley oak savannah may also be used (White and Ahlborn, 2010a).

Badgers are highly specialized for digging. Their dens function as sites for diurnal inactivity, foraging, and food storage. Badgers are mainly nocturnal, although all age classes, especially the young, can be active during daylight hours. Badgers do not hibernate, but rather react to colder weather by reducing their aboveground activity (White and Ahlborn, 2010a).

Several CNDDB (2010) records for American badger occur within 10 miles of the proposed project area, and one badger was observed in a burrow at the Tension/Pull Site 013. Suitable habitat for the species occurs in several of the proposed work areas that occur in annual grassland and saltbush scrub habitats.

Tule Elk

Tule elk (*Cervus elaphus nannodes*) have no special-status designation, but are an uncommon game species that are managed by the CDFG. Tule elk are endemic to California and were once common in the Central Valley. By the end of the 19th century, tule elk had been nearly hunted to extinction, with just a small herd of less than 30 individuals occurring near Bakersfield (URS and H.T. Harvey, 2009). Tule elk prefer open, semiarid habitats that are dominated by grasses and shrubs on flat to gently-sloping topography. Calving occurs in May and June in areas that provide dense cover near water sources (White and Ahlborn, 2010b).

One herd of approximately 30 individuals was observed near Tension/Pull Site 013 and a herd of five individuals was observed on hill side above Tension/Pull Site 072. Suitable habitat for tule elk occurs throughout the Temblor Range and California Valley.

Pronghorn

Pronghorn (*Antilicapra americana*) have no special-status designation, but are an uncommon game species that are managed by the CDFG. Pronghorn are a common resident on the Modoc Plateau in northeastern California and CDFG has relocated pronghorn to portions of Kern, San Luis Obispo, and San Benito Counties (Harris and Duke, 2010). Pronghorn inhabit sagebrush, bitterbrush, grassland, pinyon-juniper, and alkali desert scrub habitats (Harris and Duke, 2010). Pronghorn calve in areas where vegetation is generally greater than 2 feet in height (Stafford pers. Comm., 2009) Pronghorn generally give birth to twins in the spring (Harris and Duke, 2010).

No pronghorn were observed during 2010 surveys. Pronghorn are known to occur in California Valley and may occur in the vicinity of the western portion of the project.

Other Protected Species

Migratory Birds and Raptors

Several active red-tailed hawk nests were observed in either 230 kV or adjoining towers. Additionally, several unoccupied nests were observed on towers and in nearby trees. An active horned lark nest was observed in the proposed work area for the Caliente Switching Station. Although these species and other bird species that could nest in or near the project area are not considered special-status wildlife species, their occupied nests and eggs are protected by FGC 3503 and/or 3503.5 and the MBTA.

Special-Status Plants

Based on a review of the CNDDB (2010) and environmental documents prepared for other projects in the region, 23 special-status plant species were identified as having the potential to occur in the region. The species known to occur in the study area or with a high potential to occur in the study area are discussed below.

Kern Mallow. Kern mallow is an annual herbaceous plant known to occur within portions of Kern, San Luis Obispo, and Tulare Counties. It is listed by the federal government as endangered and is a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere). The reported blooming period is April through June. It is known to occur in saltbush scrub habitat within portions of the project area east of the Temblor Range. Specific locations where Kern mallow is known to occur within the project area include MP 73/321, MP 73/322, and MP 69/303.

Round-Leaved Filaree. Round-leaved filaree is an annual, or sometimes biennial, herbaceous plant known from scattered occurrences in the Central Valley, southern North Coast Ranges, San Francisco Bay Area, South Coast Ranges, Channel Islands, Transverse Ranges, and Peninsular Ranges. The reported blooming period is March through May. Round-leaved filaree is a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere). It is known to occur in at least one portion of the project area: MP 60/266. One individual plant was observed during initial assessment-level botanical surveys in February 2010; however, other individuals or populations are expected to be found in the project area.

Hoover's Eriastrum. Hoover's eriastrum (*Eriastrum hooveri*) is an annual herbaceous plant known to occur from the western side of the San Joaquin Valley from San Benito County to Kern and Los Angeles Counties. The reported blooming period is March through July. Hoover's eriastrum is a CNPS List 4.2 species (a plant of limited distribution). It was listed by the federal government as threatened on July 19, 1990, and subsequently delisted on October 7, 2003. Portions of the project area provide suitable habitat for Hoover's eriastrum. In addition, there is a known location listed in the CNDDB less than 3 miles from the project area. As a result, Hoover's eriastrum has a high potential to occur within the project area.

Temblor Buckwheat. Temblor buckwheat (*Eriogonum temblorense*) is an annual herbaceous plant known to occur in Fresno, Kern, Monterey, and San Luis Obispo Counties. The reported blooming period is May through September. Temblor buckwheat is a CNPS List 1B.2 species (rare, threatened, or endangered in California and elsewhere). Portions of the project area may provide suitable habitat for this species. In addition, there is a known location listed in the CNDDB approximately 3 miles from the project area. As a result, the species has a high potential to occur within the project area.

Pale-Yellow Layia. Pale-yellow layia (*Layia heterotricha*) is an annual herbaceous plant known from the interior foothills of the South Coast Ranges, Transverse Ranges, and Tehachapi Mountains in Fresno, Kings, Kern, Monterey, Santa Barbara, San Luis Obispo, Ventura, and (possibly) San Benito Counties. The reported blooming period is March through June. Pale-yellow layia is a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere). Portions of the project area may provide suitable habitat for this species. In addition, there is a known location listed in the CNDDB less than 1 mile from the project area. As a result, pale-yellow layia has a high potential to occur within the project area.

Showy Golden Madia. Showy golden madia (*Madia radiata*) is an annual herbaceous plant known from scattered populations in the interior foothills of the South Coast Ranges, including Contra Costa, Fresno, Kings, Kern, Monterey, Santa Barbara, San Benito, Santa Clara, San Joaquin, San Luis Obispo, and

Stanislaus Counties. The reported blooming period is March through May. Showy golden madia is a CNPS List 1B.1 species (rare, threatened, or endangered in California and elsewhere). Portions of the project area may provide suitable habitat for this species. In addition, there is a known location listed in the CNDDB approximately 0.5 miles from the project area. As a result, showy golden madia has a high potential to occur within the project area.

Golden Violet. Golden violet (*Viola aurea*) is a perennial herbaceous plant known from the east side of the Sierra Nevada and the Mojave Desert, from Lassen to San Diego Counties. The reported blooming period is April through June. Golden violet is a CNPS List 2.2 species (rare, threatened, or endangered in California; common elsewhere). Portions of the project area may provide suitable habitat for this species. In addition, there is a known location listed in the CNDDB approximately 0.5 miles from the project area. As a result, golden violet has a high potential to occur within the project area.

Wetlands and Other Waters of the United States

Field surveys to map potential waters of the United States were conducted in March and April 2010. Although no wetlands appear to be present, several ephemeral and intermittent streams are present in the study area. A wetland delineation conducted according to USACE protocol is underway as of the preparation of this report. A wetland delineation report will provide a summary of the location, type, and extent of waters of the United States in the study area.

Areas of Critical Environmental Concern

The transmission line passes through the BLM-managed Lokern Area of Critical Environmental Concern (ACEC) from MP 21.5 to MP 30. The Lokern ACEC contains 3,110 acres of federal land. This large, undeveloped area provides habitat for the State-listed San Joaquin antelope squirrel and the State- and federally-listed San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, and Tipton kangaroo rat. The Lokern area also contains virtually all populations of the federally-listed Kern mallow. A second federally-listed plant, Hoover's woolly-star and numerous sensitive animal species (short-nosed kangaroo rat, San Joaquin pocket mouse, long-billed curlew, mountain plover and ferruginous hawk) also occur in the area. The area is characterized by open grasslands, patches of saltbush scrub, and a dense growth of alkali sink scrub (BLM, 1997). The Lokern area has been identified by the FWS and the CDFG as an important location for the conservation and recovery of endangered species.

Environmental Impacts

All impacts from the upgrade activities are expected to be temporary with the exception of the construction of the Solar and Caliente Switching Stations, which would require permanent footprints of up to 9 acres each and around Tower #072. Temporary impacts include driving vehicles off road, hand-removal of vegetation, and use of helicopters. The discussion below analyzes both temporary and permanent impacts.

Impact BR-1: Construction activities would result in temporary and permanent losses of native vegetation

The switching station and transmission line areas are dominated by California annual grassland and a suite of other native and non-native plant communities. Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities, including ground-disturbing activities to support construction of the switching stations and microwave tower and reflector. Additionally, permanent impacts (i.e., permanent loss of habitat) would occur at

the Caliente Switching Station, the Solar Switching Station, and around Tower #072. Surveys for sensitive biological resources at the Solar Switching Station have not yet been completed as publication of this document. Implementation of the switching stations and reconductoring elements of the project would result in up to 18 acres of permanent and approximately 56.8 acres of temporary impacts to vegetative communities and landforms. Additionally, approximately 27.2 acres of disturbance would occur due to widening and upgrading existing access roads. Indirect impacts to native vegetation communities could include alterations in existing topography and hydrology regimes, sedimentation and erosion, soil compaction, the accumulation of fugitive dust, disruptions to native seed banks from ground disturbance, and the colonization of non-native, invasive plant species. These actions may result in reduced habitat quality for native plants. In addition, the removal of vegetation cover and the disruption of soil crusts create possibilities for erosion, dust, and weed invasion that can affect habitat in adjacent areas.

Typically, the loss of non-sensitive plant communities including California annual grassland, agriculture, and disturbed/developed vegetation communities and land covers would not be considered a significant impact. These communities are not sensitive, are locally and regionally abundant, and are typically dominated by exotics. However, on the Carrizo Plain the loss of native and non-native plant communities, including annual grassland, has the potential to result in the loss of habitat occupied by a variety of special-status species. Because of the importance of these plant communities, construction activities that result in the loss of these communities would be considered significant absent mitigation. To minimize impacts to vegetation communities, the Applicant would implement APMs that would require an environmental awareness program for all construction and on-site personnel and require the general avoidance of biological resources impacts. Specific Avoidance and Mitigation Measures from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan would also be implemented. These same APMs and AMMs will be implemented during the construction of the switching stations.

PG&E has purchased 83.9 acres of habitat at the Semitropic Preserve, which enabled the expansion of the Preserve, and 10.6 acres of habitat occupied by giant kangaroo rat, which has become a Center for Lands Management Preserve, as compensatory mitigation to off-set temporary O&M impacts under its HCP. No compensatory mitigation has been purchased for the permanent loss of up to 18 acres due to the construction and operation of the Caliente and Solar Switching Stations, a significant impact. As such, APM BIO-22 (Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan) would be required. With implementation of this measure, the impacts from project construction would be less than significant.

Impact BR-2: The project would result in the loss of foraging habitat for wildlife

The Carrizo plain eco-region consists of over 195,297 acres of natural habitat (SC Wildlands, 2009). This region supports a broad diversity of both common and sensitive wildlife that utilize the existing habitat in the project area for foraging and other life history requirements including breeding, movement, and refugia. Some of these species are permanent residents such as the San Joaquin kit fox, giant kangaroo rat, American badger, burrowing owl, and golden eagle. Other species, including mountain plover and ferruginous hawk, are winter residents that forage on the project site. Direct impacts to foraging habitat would occur from construction and operation of the reconductoring and the permanent conversion of open space as a result of the placement of the two switching stations.

Indirect impacts to foraging habitat could include alterations to existing topographical and hydrological conditions, increased erosion and sediment transport, and the establishment of noxious weed colonies.

Operational impacts include increased human presence and the spread of noxious weeds due to use of new or improved access roads.

Although the reconductoring and switch stations occur within an area supporting large open space, not all of these areas support the same types of habitat and may have different land use practices (i.e., grazing agriculture, etc.). Therefore, while the overall loss of foraging habitat compared to available habitat in the region is low, project-related impacts to foraging habitat for wildlife are considered significant absent mitigation. To minimize impacts to foraging habitat, the Applicant would implement APMs that would require an environmental awareness program for all construction and on-site personnel, and APMs that would include general avoiding of biological resources impacts. Avoidance and Mitigation Measures (AMM) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan would also be implemented. As the APMs would be required for the entire project, including the switching stations, implementation of the same APMs and AMMs for the construction of the switching stations would ensure the impacts of the switching stations would be less than significant.

Additionally, PG&E has purchased 83.9 acres of habitat at the Semitropic Preserve, which enabled the expansion of the Preserve, and 10.6 acres of habitat occupied by giant kangaroo rat, which has become a Center for Lands Management Preserve, as compensatory mitigation to off-set temporary O&M impacts under its HCP. However, no compensatory mitigation has been purchased for the permanent loss of up to 18 acres of foraging habitat due to the construction and operation of the two switching stations, a significant impact absent mitigation. As such, APM BIO-22 (Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan) would be required. With implementation of this measure, the impacts from project construction would be less than significant.

Impact BR-3: Project would result in disturbance to or loss of blunt-nosed leopard lizards and temporary disturbance of their habitat

Several of the proposed tension/pull sites, landing zones, and areas for crossing guards would be located within suitable habitat for blunt-nosed leopard lizards (BNLL). These areas would be temporarily disturbed by construction noise and habitat disturbance, although there would be no net loss of suitable habitat. Although these activities would only temporarily affect suitable habitat, these activities could disturb or result in injury or mortality by running over lizards or collapsing occupied burrows. This impact is potentially significant because it could result in the injury or loss of a federally- and State listed species and a fully protected species. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan listed in Table Ap.4A-6, the following species-specific APMs would also minimize impacts to the species:

- APM BIO-1/AMM-24: Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan.
- APM BIO-2: Avoid and/or minimize potential impacts to blunt-nosed leopard lizards by establishing work areas in locations that will have the least negative impacts.
- APM BIO-3: Fence work areas, cover burrows with plywood mats, and conduct protocol surveys if burrows cannot be avoided.
- APM BIO-4: Conduct work in suitable blunt-nosed leopard lizard habitat during the active season.

The work areas for tension/pull site and landing zone, which were originally proposed at Tower 127, would have been located in an area that would potentially impact BNLL because: (1) lizards are known to occur on the site based on previous observations, (2) large number of burrows occurring within the proposed work areas provide likely habitat, and (3) high density of the vegetation would make it difficult to avoid impacting suitable blunt-nosed leopard lizard burrows. As a result, PG&E moved the tension/pull site and landing zone to between Tower 118 and Tower 119. Although this area also provides suitable habitat for BNLL, there are significantly fewer burrows and the vegetation is much less dense.

Potential habitat for the BNLL occurs near the switching stations and BNLL have been documented south of the region, within the Carrizo Plain National Monument. Direct impacts to BNLL are not authorized by the CDFG and are not expected to occur during construction of the switching stations; however, if the BNLL is present and undetected, direct impacts could include being hit by vehicles on access roads, mechanical crushing during site preparation and grading, fugitive dust, disturbance from noise or vibrations from heavy equipment, and general disturbance due to increased human activity. Because this species is commonly associated with small mammal burrows, which provide potential refugia, direct impacts could also include unintentional entombment if burrows are collapsed.

In addition to implementation of APMs BIO-1, BIO-2, BIO-3, and BIO-4, PG&E stated that it has purchased 83.9 acres of habitat occupied by BNLL at the Semitropic Preserve, which enabled the expansion of the Preserve, as compensatory mitigation to off-set temporary O&M impacts under its HCP. Since the activities of the proposed upgrades would be covered under the HCP and the same APMs would apply to the work within San Luis Obispo County, impacts would be less than significant and no additional compensatory mitigation would be required for the reconductoring of the transmission line.

The habitat purchased by PG&E did not take into account the direct loss of up to 18 acres of BNLL habitat due to the construction of two switching stations. As stated above, impacts to BNLL are not expected to occur from the construction of the switching stations; however, if present even in very low densities, impacts on this species would be considered significant without mitigation. To reduce effects of the construction of the switching stations on the species, APM BIO-23 (Focused Pre-construction surveys for blunt-nosed leopard lizard and implementation of avoidance measures) and BIO-24 (Compensation for impacts to occupied blunt-nosed leopard lizard) would be required. Implementation of these APMs would ensure potential impacts to BNLL would be less than significant.

Impact BR-4: Project would result in loss of San Joaquin whipsnakes and coast horned lizards

Several of the proposed tension/pull sites, landing zones, and areas for crossing guards would be located within suitable habitat for whipsnakes and coast horned lizards. Although construction would only temporarily affect suitable habitat, whipsnakes or horned lizards could experience injury or mortality from vehicle traffic by being run over. The number of whipsnake or horned lizards impacted by construction related activity would be relatively small and impacts to their habitat would be temporary; impacts would be less than significant.

The proposed switching stations would be located within potentially suitable habitat for whipsnakes and coast horned lizards as they have been documented in the region. The switching stations would potentially result in the permanent loss of up to 18 acres of suitable habitat for these species. Direct impacts include being hit by vehicles on access roads; mechanical crushing during grading or from vehicle travel, entombment; fugitive dust; and general disturbance due to increased human activity. Indirect impacts to these species include compaction of soils and the introduction of exotic plant species. Operational impacts include risk of mortality by vehicles and disturbance from routine

maintenance. As with other small species, the introduction of perch sites increases potential predation risks from aerial predators. Temporary and permanent habitat loss and the loss of individual animals would be considered significant absent mitigation.

In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan listed in Table Ap.4A-6, APM BIO-5 (Conduct work in suitable habitat during periods when the species are most active) would also minimize potential impacts to San Joaquin whipsnakes and coast horned lizards by requiring work to be conducted during warm weather when the species is most active and requiring workers to drive slowly on access roads and overland while in suitable habitat to allow these species to move out of the way of vehicles. To further reduce the effects of the switching station stations on San Joaquin whipsnakes and coast horned lizard the Applicant would implement APM BIO-25 (Focused pre-construction surveys for San Joaquin whipsnakes and coast horned lizard and implementation of avoid-ance measures). The implementation of these APMs would ensure impacts of the proposed project would be less than significant.

Impact BR-4a: Project would result in disturbance to or loss of valley elderberry longhorn beetle

Habitat for the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) was observed along an access road to pull/tension site 65. Construction and O&M-related activity could result in the disturbance, injury, or death of valley elderberry longhorn beetle (VELB), if the ten elderberry shrubs present along the access road support VELB. There are currently no VELB CNDDB records within 10 miles of the project area (California Natural Diversity Database 2010). If VELB were determined to be present in these 10 bushes, implementation of APM BIO-18 and AMM-11 listed in Table Ap.4A-6 would reduce potential impacts to VELB to less than significant. APM BIO-18 and AMM-11 require surveys for elderberry plants within a minimum of 20 feet from the worksite take place prior to O&M activities. If impacts (pruning/trimming, removal, ground disturbance or damage) are unavoidable or occur, then additional measures identified in the VELB conservation plan and compliance brochure will be implemented. The APM and AMM would be required for construction activities as well.

The Valley Elderberry Longhorn Beetle Environmental Compliance brochure states:

"If ground disturbance is planned within 20 feet of an elderberry shrub or if the shrub must be pruned or otherwise disturbed, then the impact must be documented and submitted on a VELB Habitat Impact Report form. In some cases, an elderberry shrub must be removed in order to complete the work necessary. Trimming is preferred to removal; however, authorization for shrub removal can be requested from the PG&E VELB Program Manager on a limited, case-by-case basis. The request must be approved before removal takes place."

PG&E general biology APMs, HCP APMs, and AMMS would be implemented during reconductoring. With implementation of the aforementioned APMs, impacts would be less than significant.

Impact BR-5: Project would result in disturbance to or loss of active non-special-status and special-status bird nests

Several active red-tailed hawk nests were observed within towers where construction activities would occur or adjacent to these construction areas and an active horned lark nest was observed within the proposed Caliente Switching Station (PG&E, 2010). Additionally, numerous non-active nests were observed throughout the proposed corridor. Construction activities associated with the proposed upgrades, especially the use of helicopters, would have the potential to disturb an active nest. Disturbance of an active nest would potentially cause nest abandonment, resulting in the loss of

reproductive potential or death of young in the nest. All active bird nests are protected by the Migratory Bird Treaty Act of 1918 (MBTA) and Fish and Game Code 3503. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) listed in Table Ap.4A-6, the following APMs would also specifically minimize impacts to the bird nests:

- APM BIO-6: Remove existing nests on towers, trim trees, and remove shrubs during the non-breeding season.
- APM BIO-7: Conduct preconstruction surveys for active special-status and non-special-status raptors and migratory birds.
- APM BIO-8: Implement measures to avoid active nests.

The APMs would include removal of nests during the non-breeding season, conducting preconstruction surveys for nesting birds for all construction activities that occur within or near suitable breeding habitat, and/or establishing a no-disturbance buffer around nest sites to avoid disturbance or destruction of the nest site until after the breeding season or until a wildlife biologist determines that the young have fledged. The no-disturbance buffer distances would be established in consultation with CDFG. With implementation of APMs, AMMs and protection of active bird nests by the MBTA and Fish and Game Code 3503, impacts would be less than significant and no additional mitigation would be required for the reconductoring of the transmission line.

Impact BR-6: Project would result in disturbance to or loss of active western burrowing owl burrows

An active western burrowing owl nest was observed in the work area for the Caliente Switching Station and potential nesting habitat occurs at all of the proposed work areas that contain California ground squirrel burrows or other artificial burrows (PG&E, 2010). Construction activities associated with the proposed upgrades would potentially result in significant impacts on active western burrowing owl burrows. If burrowing owls are using burrows within 250 feet of the work areas, construction activities would potentially result in removal of an occupied breeding or wintering burrow site and loss of adults, young, or eggs. This impact would be considered potentially significant because construction could result in a reduction in the local population of burrowing owls. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan listed in Table Ap.4A-6, the following APMs would also specifically minimize impacts to the western burrowing owl burrows:

- APM BIO-9: Conduct preconstruction surveys for active western burrowing owl burrows.
- APM BIO-10/AMM-18: Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active burrows are observed during the preconstruction surveys in both Kern and San Luis Obispo Counties.

Under APM BIO-9, PG&E would retain a qualified biologist to conduct preconstruction surveys for active burrows no more than 30 days prior to the start of construction according to the CDFG guidelines. If western burrowing owls are present at the site, according to APM BIO-10/AMM-18, a qualified biologist would work with O&M staff to determine whether an exclusion zone of 160 feet during the non-nesting season and 250 feet during the nesting season could be established or otherwise a site-specific plan would be developed. If the owls show signs of disturbance or upon prior approval from CDFG, PG&E may conduct a passive relocation effort. Most activities of the proposed upgrades would be covered under the HCP and no other mitigation would be required for the reconductoring of the transmission line. However, because impacts to western burrowing owl would potentially occur at the switching stations

as well, implementation of the HCP APMs and AMMs would ensure that impacts to western burrowing owl during the construction of the Solar and Caliente Switching Stations would be less than significant.

Impact BR-7: Project would result in disturbance or loss of active Swainson's hawk or white-tailed kite nests

There is potential for Swainson's hawks and white-tailed kites to nest in trees within 0.25 miles of the work areas located on the San Joaquin Valley floor (PG&E, 2010). Swainson's hawk is less likely to be found nesting near the Solar and Caliente Switching Stations because Swainson's' hawk although once a resident of the Carrizo Plain now is more commonly observed as a foraging migrant. However, white tailed kite is known from the Carrizo Plain and could forage and potentially nest in or adjacent to the switching stations. Construction activities, especially the use of helicopters near an active nest, would potentially result in direct impacts on nesting Swainson's hawks or white-tailed kites. These activities would have the potential to cause nesting Swainson's hawks or white-tailed kites to prematurely abandon an active nest, resulting in the death of chicks or failure of eggs. Premature abandonment of an active nest that results in the death of chicks or failure of eggs would be considered a significant impact because it could result in death of a species listed as threatened under California Endangered Species Act or a fully protected species. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley O&M HCP listed in Table Ap.4A-6, the following APMs would specifically minimize impacts to active Swainson's hawk or white-tailed kite nests:

- APM BIO-11/AMM-22: Implement preconstruction measure outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan
- APM BIO-12/AMM-19: Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active Swainson's hawk or white-tailed kite nests are observed during the preconstruction surveys

Under APM BIO-11/AMM-22, PG&E would retain a qualified biologist to determine whether active Swainson's hawk or white-tailed kite nests are located within 0.25 miles of the proposed work area and prescribe measures to avoid nest abandonment and other adverse effects to these species as appropriate and in consultation with CDFG. If a Swainson's hawk or white-tailed kite nest is known to be within 0.25 miles of a planned worksite, a qualified biologist would evaluate the effects of the planned O&M activity and a buffer and limited operation period (LOP) during the nesting season would be implemented as necessary. Most activities of the proposed upgrades would be covered under the HCP and no additional mitigation would be required for the reconductoring of the transmission line. However, because impacts to Swainson's hawk or white-tailed kite nests could occur at the switching stations, implementation of HCP APMs and AMMs during the construction of the Solar and Caliente Switching Stations would ensure that this impact would be less than significant. These same APMs would apply to the work within San Luis Obispo County, and with implementation of the aforementioned APMs, impacts would be less than significant.

Impact BR-8: Project would result in disturbance to or loss of San Joaquin antelope squirrels, giant kangaroo rats, Tipton kangaroo rats, or Tulare grasshopper mice and temporary disturbance of their habitat

Several of the proposed tension/pull sites, landing zones, and areas for crossing guards would be located within suitable habitat for San Joaquin antelope ground squirrels, giant kangaroo rats, Tipton kangaroo rats, and Tulare grasshopper mice (PG&E, 2010). These areas would be temporarily disturbed by construction noise and habitat disturbance, although there would be no net loss of suitable habitat due

to the reconductoring. Although these activities would only temporarily affect suitable habitat, these activities would potentially disturb or result in injury or mortality by running over these species or collapsing occupied burrows. This impact would be potentially significant because it could result in the injury or loss of a federally- and State-listed species, and a species of special concern.

The proposed switching stations would be located within potentially suitable habitat for San Joaquin antelope squirrels, giant kangaroo rats, Tipton kangaroo rats, and Tulare grasshopper mice, as they have been documented in large numbers at the CVSR Project site and were present in the Topaz Solar Project site (Althouse and Meade, 2010). The switching stations would potentially result in the permanent loss of up to 18 acres of habitat for these species. Direct impacts to the species associated with construction of the switching stations would include mortality from trampling or crushing and disturbance to above ground seed storage or granaries. Project construction would also disrupt paths and trails, and compact loose soils used by giant kangaroo rats for sand bathing. Indirect impacts to the species listed above include compaction of soils, the introduction of exotic plant species, alterations to the existing hydrological conditions, alterations in the existing solar regime from shading, and alteration to species composition. Operational impacts include risk of mortality by vehicles and disturbance from routine maintenance. As with other small species the introduction of perch sites increases potential predation risks from aerial predators. Temporary and permanent habitat loss and the loss of individual animals would be considered significant absent mitigation.

In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley O&M HCP listed in Table Ap.4A-6, the following species-specific APMs would also minimize impacts to San Joaquin antelope squirrels, giant kangaroo rats, Tipton kangaroo rats, or Tulare grasshopper mice:

- APM BIO-13: Avoid and/or minimize potential impacts to San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse by establishing work areas in locations that will have the least negative impacts.
- APM BIO-14/AMM-20: Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when working in suitable San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse habitat in Kern and San Luis Obispo Counties.

Impacts to these species would occur at the switching stations as well and the HCP APMs and AMMs would be implemented during the construction of the Solar and Caliente Switching Stations to ensure that impacts would be less than significant.

In addition to implementation of APMs BIO-13 and BIO-14, PG&E stated that it has purchased 83.9 acres of habitat occupied by San Joaquin antelope squirrels and Tipton kangaroo rat at the Semitropic Preserve. This purchase enabled the expansion of the Preserve as compensatory mitigation to offset temporary O&M impacts to suitable habitat for San Joaquin antelope squirrel and Tipton kangaroo rat. Additionally, PG&E has purchased 10.6 acres of habitat occupied by giant kangaroo rat, which has become a Center for Lands Management Preserve, as compensatory mitigation to offset temporary O&M impacts to suitable habitat for giant kangaroo rat. Since the activities of the proposed upgrades in Kern County are covered under the HCP, no additional compensatory mitigation is proposed for impacts occurring in Kern County. Since the activities of the proposed upgrades would be covered under San Joaquin Valley O&M HCP and the same APMs would apply to the work within San Luis Obispo County, impacts would be less than significant and no additional mitigation would be required for the reconductoring.

No compensatory mitigation has been purchased for the permanent loss of up to 18 acres of foraging habitat due to the construction and operation of the two switching stations. As such, APM BIO-22 (Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan) would be required. With implementation of this measure, the impacts from project construction would be less than significant.

Impact BR-9: Project would result in loss of American badgers

An American badger was observed in a burrow at tension/pull site #013 and most of the proposed work areas would be located within suitable habitat (PG&E, 2010). Although most construction activities would only temporarily affect suitable habitat, these activities would potentially result in injury or mortality by running over American badgers or collapsing occupied burrows. This impact would not be significant because the number of American badgers that could be affected is relatively small and impacts to their habitat would be temporary for the reconductoring of the transmission line. The construction of the Solar and Caliente Switching Stations, however, would remove up to 18 acres of potential badger habitat permanently.

To minimize the impacts to American badgers, APM BIO-15 (Implement avoidance and minimization measures to reduce impacts to American badgers) would be implemented in addition to general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30). APM BIO-15 requires avoidance of suitable burrows to the greatest extent possible, limits vehicle speeds, and presents measures, such as excavation of burrows and blockage, to avoid significant impacts to the American badger if dens are present. With implementation of APMs, impacts to the American badger would be less than significant for the reconductoring of the transmission line. With implementation of the PG&E general biology APMs, HCP APMs, and AMMs impacts would be less than significant.

Impact BR-10: Project would result in disturbance to or loss of San Joaquin kit foxes and temporary disturbance of their habitat

A burrow with recent San Joaquin kit fox scat was observed at the work area for the Caliente Switching Station and recent San Joaquin kit fox scat was observe near the work area for the tension/pull site at Structure #072 (PG&E, 2010). Most of the proposed work areas would occur within suitable habitat and suitable burrows were observed at several of the proposed work areas. Though most construction activities would temporarily affect suitable habitat, these activities would potentially result in injury or mortality by running over San Joaquin kit fox or collapsing occupied burrows. This impact would be potentially significant because it could result in the injury or loss of a federally and State-listed species. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley O&M HCP listed in Table Ap.4A-6, APM BIO-16/AMM-21 (Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in suitable San Joaquin kit fox habitat in Kern and San Luis Obispo Counties) would ensure impacts to the San Joaquin kit fox would be less than significant.

In addition to the APM BIO-16/AMM-21, PG&E stated that it has purchased 83.9 acres of suitable San Joaquin kit fox habitat at the Semitropic Preserve, which enabled the expansion of the Preserve, as compensatory mitigation to off-set temporary O&M impacts under San Joaquin Valley O&M HCP. No compensatory mitigation has been purchased for the permanent loss of up to 18 acres of foraging habitat due to the construction and operation of the two switching stations, a significant impact. As such, APM BIO-22 (Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan) would be required.

With implementation of this measure, the impacts from project construction would be less than significant.

Impact BR-11: Project would result in disturbance to tule elk or pronghorn antelope calving grounds

Tule elk (*Cervus elaphus nannodes*) and pronghorn antelope (*Antilocapra americana*) are two ungulates that are known to occur in the Carrizo Plain. Tule elk are also known to occur throughout the Temblor Range. Both tule elk and pronghorn antelope are game species that are managed by CDFG. Construction activities that occur near calving grounds during the calving season would cause potentially significant impacts to these species, particularly due to helicopter construction noise. Noise or human presence could frighten the mother elk or pronghorn and separate them from their calves, which would result in increased risk of mortality to the young. APM BIO-17 would require PG&E to consult with CDFG to determine if calving areas occur near the project. If calving grounds do occur near the project, then construction activities would be rescheduled to occur outside of the calving season. With implementation of APM BIO-17, general biological APMs (BO-1 to BO-10), and AMMs (AMM-1 to AMM-30) listed in Table Ap.4A-6, potential impacts to tule elk or pronghorn antelope calving grounds would be less than significant.

Impact BR-12: The project could result in the loss of candidate or special-status plant species

Surveys for special-status plants are not complete as of publication of this EIR; however, one species, Kern mallow, is known to occur at or near several of the work areas and others may occur (PG&E, 2010). Habitat for early-blooming special-status plants is also present in several of the additional work areas. Additionally, special-status plants may be present at the proposed Solar and Caliente Switching Stations due to the large presence of special-status plant species at the nearby CVSR project site. Surveys for special-status plants in the additional work areas have not been completed during the appropriate season to determine presence or absence of the plants. The survey on June 3, 2010 was conducted outside the identification period for numerous species identified as potentially occurring in the region. While the overall potential for most species appears to be low based on the results of the surveys conducted to date for the project, the presence or absence of other species can not be confirmed at this time.

Direct impacts to special-status plant species include the direct removal of plants during the course of construction. Clearing and grading associated with the switching stations or the grading of access roads could also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions favorable to invasion of weedy exotic species. These exotic species could prevent the establishment of desirable vegetation and could adversely affect wildlife.

This impact would be potentially significant because it could result in the disturbance or loss of a federally-listed species and possibly other special-status plant species. In addition to implementation of general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30) from the Final PG&E San Joaquin Valley O&M HCP listed in Table Ap.4A-6, the following species-specific APMs would also minimize impacts to special-status plants:

- APM BIO-18/AMM-12/AMM-13/AMM-14: Implement avoidance measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in occupied habitat for special status plants.
- APM BIO-19: Minimize impacts to special status plants to the extent possible.

In order to minimize impacts to known occurrences of special status plants that cannot be fully avoided under APM BIO-19, PG&E would use existing access roads and disturbed areas as much as possible, and would establish work zones in the least densely occupied areas of the population(s). Grading within the applicable work zones would be prohibited and shrub removal, if required, would be conducted by hand and would be limited to the minimum amount of removal necessary to complete project activities.

The activities of the proposed PG&E upgrades are covered under the San Joaquin Valley O&M HCP, which includes compensatory mitigation for covered species, and no additional compensatory mitigation is proposed for Kern mallow and the other species covered under the HCP. With implementation of the general biological APMs (BO-1 to BO-10), and AMMs (AMM-1 to AMM-30) listed in Table Ap.4A-6, APM BIO-22 (Compensation for permanent impacts to giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan) the impacts from switching station construction would be less than significant.

Impact BR-13: The project could result in the establishment and spread of noxious weeds and invasive and non-native plants

While the project area supports a dense flora of non-native species, the proposed upgrades and construction of the switching stations have the potential to increase the spread of noxious or invasive weeds. New introductions occur when seeds are inadvertently introduced to a site through mulch, hay bales, or wattles used for erosion control, or when seeds are transported or dispersed to the site on equipment and vehicles. Ground-disturbing activities are some of the principal vectors for the introduction or spread of invasive species. Construction of staging areas, access roads, and other ground-disturbing activities may introduce noxious weeds into previously uninfested areas. Noxious weeds are known to negatively affect the abundance of native species and result in modifications to habitats, which ultimately may cause an area to become unsuitable for common and special-status species.

APM BIO-20 (Implement management practices to control the introduction and spread of invasive plants) would require that PG&E identify the location of noxious weed species of concern within areas that would be disturbed as part of the project and design appropriate management practices and BMPs to reduce the likelihood of spreading already established weeds into new areas, or increasing their abundance, and the likelihood of introducing new weed species to the project area. Actions to prevent noxious weed establishment would be described within the SWPPP prepared for the project and would be consistent with PG&E's draft Invasive Plant Management Strategy. With implementation of APM BIO-20, general biological APMs (BO-1 to BO-10), and AMMs (AMM-1 to AMM-30) listed in Table Ap.4A-6, potential impacts from noxious weeds and non-native plants would be less than significant.

Impact BR-14: Project would result in impacts to Waters of the United States

Potential waters of the United States, consisting of seasonal and intermittent streams, such as Salt Creek and Temblor Creek, are located in the project area and may be impacted as part of the proposed upgrades. Although the overall area of impact would be small, several project components and activities would require some disturbance of waters of the United States.

Implementation of the APM BIO-21 (Implement general protection measures for waters of the United States) would include measures to minimize or avoid impacts to waters of the United States, such as establishment of exclusion zones, minimizing the amount of area disturbed, delineation of wetland areas within proximity to work areas, restricting the location of fueling areas, completing road construction adjacent or within waters of the United States during the dry season, and installing

temporary bridges to span waters of the United States during wet season. With implementation of APM BIO-21, general biological APMs (BO-1 to BO-10), and AMMs (AMM-1 to AMM-30) listed in Table Ap.4A-6, potential impacts to waters of the United States would be less than significant.

Impact BR-15: Project would result in increased risk of electrocution or bird collision due to the raising of towers

During the reconductoring project on the Solar-Midway 230 kV transmission line, PG&E proposes to raise approximately half of the towers approximately 20 feet. The towers that would be raised would remain in the same location, and the alignment of the transmission line would not change. The new conductor would be the same thickness as the existing conductor, but it would operate at a higher operating temperature, which would cause the new conductor to sag lower than the existing conductor. One of the concerns with modifying existing transmission lines is the increased risk of electrocutions or bird collisions as a result of the modifications. This section discusses the potential increased risk to California condors, other raptors, passerine birds, and waterfowl as a result of modifying the towers.

PG&E, in consultation with avian biologists, has developed an Avian Protection Plan (APP) to reduce the risks to migratory and threatened and endangered bird species from its electrical lines. Key components of the APP, which PG&E has committed to implementing, include:

- Training of PG&E employees on federal and state bird protection laws, bird-safe construction practices, appropriate corrective actions, and migratory bird nest protocols.
- Procedures for reporting discovery of bird electrocutions and collisions and implementation of corrective actions.
- Avian-safe construction design standards.
- Procedures to identify and proactively retrofit utility poles to reduce avian electrocutions and collisions.
- Procedures describing the management of migratory bird nests to minimize disturbance to birds.
- The development of a work verification process that ensures that facilities are designed and constructed to protect birds.
- Identification of partnering potential with avian conservation programs to improve habitat for key bird species within the service territory.
- Promotion of protection of bird species and their habitat in cooperation with federal and state resource agencies, non-profit organizations, and other agencies.

Electrocution

Electrocution of birds is usually attributed to distribution electrical lines. Electrocutions do not usually occur on transmission lines, because the line spacing is far enough apart that even large birds cannot complete the circuit for electrocution at full wing span. Current design guidelines require conductor spacing that all but eliminates electrocutions due to wing contact with two phases. Therefore the risk of electrocution as a result of the project would be less than significant and no mitigation is required.

Collision

The significance of bird collisions increases when they affect bird population's ability to sustain or increase numbers, especially when the populations are threatened or endangered species. Birds can exist near power lines in many situations without significant risk of collisions. The problem with power

line collisions occur in specific, local situations where certain factors exist, including where a power line or other aerial structure transects a daily flight path used by a concentration of birds and where migrants are traveling at reduced altitudes and encounter tall structures in their path. Collision rates generally increase in low light conditions, during inclement weather, such as rain or snow, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger. Collisions are more probable near wetlands, valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths (APLIC, 1994).

California Condor. The Solar-Midway 230 kV transmission line, which was constructed in the early 1960s, runs from the California Valley, east across the Temblor Range, and into the western edge of the San Joaquin Valley. The transmission line crosses through the historic range of the California condor, a species listed as endangered under the federal Endangered Species Act and under the California Endangered Species Act. After continuous population decline, the last of the wild California condors were removed from the wild in the late 1980s and brought into captivity. A captive breeding program was initiated in hope of re-releasing condors into the wild. The captive breeding program has been a success and captive-raised condors have been released in the southern and central portions of the California, as well as Arizona and Baja California, Mexico. The nearest release location of condors to the Solar-Midway 230 kV Reconductoring project area is the Bitter Creek National Wildlife Refuge, approximately 40 miles south of the western end of the transmission line. The nearest critical habitat for California condors is the East Unit of the Hi Mountain-Beartrap Condor Area, approximately 20 miles southwest of the western end of the transmission line.

The Carrizo Plain was part of the historic range of the California condor. Captive-released condors were observed in the Carrizo Plain after they began to be released back into the wild. However, there are no recent condor records from the Carrizo Plain (PG&E, 2010). The Temblor Range does provide conditions for movement by condors, and domestic cattle, tule elk, and pronghorn occurring in the area provide suitable carrion.

There have been known condor deaths as a result of collisions with power lines between 1993 and 2007, predominately in Big Sur and the Los Padres National Forest and Angeles National Forest. There have not been any reports of injury or death of California condors resulting from collisions with the Carrizo-Midway 230 kV transmission line or any other nearby transmission lines.

Raising some of the towers approximately 20 feet during the reconductoring project would not significantly increase the rate of collision with condors. The project would not occur within any designated critical habitat for California condor or in areas that condors frequently use. Additionally, the Solar-Midway 230 kV transmission line is an existing transmission line that was constructed in the early 1960's and has been a part of the landscape for almost 50 years. Therefore, impacts to the California condor associated with operation of the transmission upgrades would be less than significant and no mitigation is recommended.

Other Raptors. The Solar-Midway 230 kV transmission line crosses within a Raptor Concentration Zone (RCZ) that is located in the southern end of PG&E's service territory. PG&E, in consultation with avian biologists, developed a map of RCZs throughout its service territory to identify those areas with greater potential risks to raptors. RCZs represent those geographical areas where raptors are generally found in abundance and that provide abundant forage and nesting structures.

Raptor species that are known to occur or potentially could occur within the area of the Solar-Midway 230 kV transmission line include the following: golden eagles (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawks (*Buteo swainsoni*), osprey (*Pandion haliaetus*), ferruginous hawk (*Buteo*

regalis), prairie falcon (*Falco mexicanus*), and American kestrel (*Falco sparverius*). While they may fly at the height of electrical wires while foraging, raptors collide with electrical lines infrequently because they are highly maneuverable and the generally do not fly in large flocks (APLIC, 1994).

Raising some of the towers approximately 20 feet during the reconductoring project would not significantly increase the rate of collision with raptors. Though the transmission line is located in areas that are frequented by many species of raptors, the Solar-Midway 230 kV transmission line is an existing transmission line that was constructed in the early 1960's and has been a part of the landscape for almost 50 years. The alignment of the transmission line would not be altered during the reconductoring project and the location of towers would not be changed as a result of the project. Therefore, raptor impacts associated with operation of the transmission upgrades would be less than significant and no mitigation is recommended.

Impact BR-16: Construction activities would result in disturbance to wildlife and may result in wildlife mortality

The reconductoring site and switching stations support a suite of common and sensitive wildlife species. Direct impacts to wildlife associated with construction of the project could include mortality from trampling or crushing; increased noise levels due to heavy equipment use; light impacts from construction during low-light periods; increased vehicular and human presence along existing access roads; displacement due to habitat modifications, including vegetation removal, alterations of existing soil conditions; fugitive dust; and increased erosion and sediment transport.

Direct mortality of small mammals, reptiles, and other less mobile species would likely occur during construction of the reconductoring and switching stations. Construction could also result in the loss of eggs and nestlings of bird species with small, well-hidden nest. This would occur primarily during habitat clearing, earth removal, grading at the switching stations, digging, and equipment movement. More mobile species such as birds and larger mammals would likely disperse into nearby habitat areas during construction. Increased lighting during low-light periods, particularly near dawn and dusk, could cause some species to leave the area and could disrupt foraging, breeding, or other activities. Other species, including many insects, are drawn to lights. Species, such as bats, that prey on insects may be attracted to lighted construction areas, resulting in the increased potential for disturbance and mortality.

Noise from clearing, grading, and construction activities, including helicopter use, could affect wildlife in adjacent habitats by interfering with breeding or foraging activities and movement patterns, causing animals to temporarily avoid areas adjacent to the construction zone. Nocturnal wildlife would be affected less by construction than diurnal species since construction would occur primarily during daylight hours. Construction may also occur during dusk and dawn when many species are highly active. More mobile species such as birds and larger mammals would likely disperse into adjacent habitat areas during the land clearing and grading phases of switching station and road construction. However, smaller animals would be less able to disperse. Construction activities would also likely affect how animals use the area as a movement corridor. Post construction the switching stations would limit wildlife movement due to the permanent fencing. Noise could also result in temporary threshold shifts in hearing sensitivity. Threshold shifts could last for an extended period of time, and loss of hearing could result in increased mortality for species that rely on their sense of hearing to detect predators or warning calls. Noise and vibrations could also cause animals to leave their burrows, where they would be better protected from predation or project-related injury or mortality.

Construction of new access roads would be limited, although existing access roads would be maintained and widened as required for construction activities. Where roads are planned or widened the construc-

tion would alter the physical characteristics of the soil underneath the road. For example, road construction increases compaction up to 200 times relative to undisturbed sites (Riley, 1984). Organisms that are not killed directly by the construction of the road could be displaced by the altered soil conditions (Haskell, 2000). Construction traffic along access roads, particularly in areas used by nesting birds could adversely affect wildlife by disrupting breeding, foraging, and movement. These disturbances could result in nest, roost, or territory abandonment and subsequent reproductive failure if these disturbances were to occur during the breeding season.

Indirect effects on wildlife as a result of the switching stations and reconductoring include the introduction of non-native, invasive plant species, alterations to existing hydrological conditions, and noise.

Operational impacts to wildlife would include mortality from vehicle strikes, disturbance from vegetation management activities, potential disruption of nest sites, noise from switching station operations and lighting, human disturbance, and the spread of noxious weeds from maintenance personnel.

Construction-related impacts on common wildlife are typically not considered significant under CEQA. To reduce the effects of the construction on common wildlife, the Applicant would implement general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30). With implementation of APMs, impacts to the wildlife would be less than significant.

Impact BR-17: Corona noise could result in disturbance to wildlife

Corona is a phenomenon associated with all energized transmission lines. Under certain conditions, the localized electric field near an energized conductor can be sufficiently concentrated to produce a tiny electric discharge that can ionize air close to the conductors (Electric Power Research Institute (EPRI), 1982). This partial discharge of electrical energy is called corona discharge, or corona. Several factors, including conductor voltage, shape, and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's electrical surface gradient and its corona performance. Corona is the physical manifestation of energy loss, and can transform discharge energy into very small amounts of sound, radio noise, heat, and chemical reactions of the air components.

Because power loss is uneconomical and noise is undesirable, corona on transmission lines has been studied by engineers since the early part of this century. Many excellent references exist on the subject of transmission line corona (e.g., EPRI, 1982). Consequently, corona is well understood by engineers and steps to minimize it are one of the major factors in transmission line design for extra high voltage transmission lines (345 to 765 kilovolts (kV)). Corona is usually not a design issue for power lines rated at 230 kV and lower. The conductor size selected for the project's transmission line is of sufficient diameter to lower the localized electrical stress on the air at the conductor surface and would further reduce already low conductor surface gradients so that little or no corona activity would exist under most operating conditions.

Because corona and induced current effects associated with the project are less than significant, mitigation measures are not required.

Impact BR-18: The project would result in transmission line strikes by special-status bat species

Focused bat surveys were not conducted; however, two pallid bats (*Antrozous pallidus*), California Species of Special Concern, were observed flying over the CVSR project site during spotlight surveys in June 2009. Roosting areas for bats are not expected to be present at the switching stations; however, a variety of bats are expected to use the switching stations and reconductoring region for foraging habitat. Additionally, Townsend's big-eared bat, a California Species of Special Concern, while not

observed are known to occur in the area and have been documented at the Carrizo Plain National Monument.

Although many studies have quantified bird strikes with transmission lines, analogous information on bats is very limited (Manville, 2005). Collisions with distribution and transmission lines will likely occur to some degree; however, collision risk is not thought to pose a significant risk to bats in the project area. The most likely collision risk for bats is associated with vehicle or equipment as bats forage near roads or work areas.

Given that most bat species use echolocation to discriminate objects as small as 0.4 to 0.004 inches in size (Vaughan and Vaughan, 1986), and the size of guard lines and transmission lines are typically equal to or greater than 0.5 inches in diameter, the frequency of transmission line strikes is expected to be extremely low. The number of fatal strikes is expected to be insufficient to substantially reduce the population of this species.

Project impacts resulting in collision with the distribution or transmission line by special-status bat species are expected to be adverse, but less than significant.

Impact BR-19: The project would result in loss of sensitive bats

A variety of bat species are known from the Carrizo Plain natural area. Some of these include Townsend's big-eared bat and pallid bats. These species are California Species of Special Concern. The decline of bat populations is often due to roost site disturbance, loss of foraging habitat, and loss of roost sites. While many bat species are associated with the large open expanse of water at Soda Lake, other species utilize large areas for foraging. For example, the pallid bat is capable of flying more than 18 miles, although most foraging occurs within about two miles of the diurnal roost (Hermanson and O'Shea, 1983). Although no roosting sites are located at the switching station sites, the adjacent foothills, old granaries, abandoned structures, including the old grain silos and ranch house in the CVSR site, all provide suitable roost spots for bats (Althouse and Meade, 2009). While not all of these structures would be expected to provide the conditions appropriate for maternity colonies or hibernaculum, they may nonetheless support bat use.

Activities that have been documented to impact bats include livestock grazing, vegetation treatments, and water reclamation that could lead to loss of a water source or riparian habitat. Due to their sensitivity to human disturbance, roost protection is vitally important for bats. Roost protection measures may include seasonal use restrictions or physical closures as necessary.

Bats that forage near the ground, such as the pallid bat, will be subject to crushing or disturbance by vehicles driving at dusk, dawn, or during the night. The construction and use of access roads could also disturb bats. Construction-related activities, which would generate noise, traffic, dust, and diesel fumes, could result in the direct loss of roosting habitat and subsequent mortality to adult bats or pups if any bats were present along the reconductoring transmission line or in the switching stations area. Indirect effects could include increased traffic, dust, and human presence in the project area leading to bats abandoning their roosts or maternal colonies.

The construction and operation of the project would not result in a barrier for, or restrict the range of, special-status bat species. However, direct impacts to these species would be considered significant absent mitigation. To reduce effects of the reconductoring and switching station on bats, the Applicant would implement general biological APMs (BO-1 to BO-10) and AMMs (AMM-1 to AMM-30). With implementation of APMs, impacts to the bats would be less than significant.

3.7 Cultural and Paleontological Resources

Environmental Setting

Cultural Resources

The study area for the reconductoring project lies within two geographic regions, the Central Coast and the Central Valley, each with a distinct regional prehistory. The following discussion presents an abbreviated review of the sequences developed for the culturally- and materially-diverse coastal and San Joaquin Valley regions.

Central Coast Region

The following review of archaeological research in San Luis Obispo and Kern Counties is organized according to a series of temporal periods. This level of organization emphasizes changes in adaptation over time. The chronological sequence is derived from the work of Jones et al. (1994), Jones and Klar (2007), and King (1990), and is commonly used throughout the central coast region.

Millingstone Period (10.000-5500 cal BP). With the exception of a few isolated finds, there is little evidence of Paleo-Indian occupation in the San Luis Obispo region (Mills et al., 2005). Although radiocarbon dates predating 9,000 cal BP have been reported at a number of sites (including those at Pismo Beach, Edna Valley, Morro Bay, and Nipomo Mesa), most associated artifacts are typical of Millingstone Period assemblages, probably indicating that this adaptation extends back to ca. 10,000 cal BP.

Millingstone Period assemblages are characterized by a relative abundance of handstones and millingstones, as well as Thick Rectangular (L-series) *Olivella* beads (Glassow, 1996), and a lack of hunting gear (i.e., projectile points). Recovered tools and fauna indicate that seed and shellfish collection and processing were important early Holocene economic pursuits, with large terrestrial game and marine mammals contributing rather minimally to the diet (Hildebrandt et al., 2009).

Early Period (5500-2600 cal BP). Introduction of mortar-pestle technology and an increase in the occurrence of side-notched projectile points mark the Early Period on the central California coast. This adaptive shift in the Santa Barbara area has been attributed to population replacement; the intrusion of new people into the area from such regions as western Alaska, eastern California, or the Channel Islands; and technological shifts by local peoples (County, 2010). Evidence for Early Period occupation in the San Luis Obispo region includes acorn use and resource storage (County, 2010), apparently allowing for the establishment of sedentary villages in a variety of estuary settings along the coast. With populations becoming more circumscribed, the importance of inter-group trade became enhanced, as reflected in the importation of obsidian into the local area.

Middle Period (2600-1000 cal BP). Diagnostic artifacts marking the Middle Period consist of contracting-stemmed and possibly concave base projectile points and various *Olivella* bead types, as well as *Haliotis* disk ornaments, perforated disks, ring with incised edges, and Plain and Flat-ended rings (Jones, 1995). Bone tools and ornaments are relatively abundant and include needles, pins, awls, strigils, whistles, spatulas, gorge hooks, and antler tines. In addition, mortars and pestles occur more frequently than handstones and millingstones. It has been posited that few adaptive changes occurred during the Middle Period in the San Luis Obispo area. Instead, many of the subsistence-settlement trends set in motion during the Early Period continued forward into the Middle Period, including an increased use of

mortars and pestles (and presumably acorns), a more intensified harvest of small schooling fish and sea otters, and a decreased dependence on shellfish (County, 2010).

Middle/Late Transition (1000-700 cal BP). The Middle/Late Transition is represented along the central California coast by contracting-stemmed and double side-notched projectile points, curved shell fish-hooks, and a variety of *Olivella* shell bead types. Archaeological sites dating to this interval are quite rare. Unlike the Santa Barbara Channel were settlement was high, evidence of archaeological materials along the San Luis Obispo coast actually declines during the Middle/Late Transition (County, 2010). The decline may reflect a more dispersed settlement patterns as exchange networks for Casa Diablo obsidian appear to have collapsed. According to Jones (1995) and Jones et al. (1999), many of these changes were probably related to the medieval warm, dry period (County, 2010) which created severe environmental degradation in the central coast region, reducing human population densities and undermining the entire socioeconomic system

Late Period (700 cal BP to Historic-Period). Late Period artifact forms continuing from the previous phase include hopper mortars, handstones, millingstones, circular shell fishhooks, and *Olivella* bead types. New forms include arrow points (Desert Side-notched and Canaliño [Cottonwood]), chipped stone drills, and E1 and E2 *Olivella* beads, clamshell disk beads, *Haliotis* disk beads, and small serpentine disk beads. Many researchers have thought that Late Period economies maintained a terrestrial orientation, focusing on the storage and consumption of acorns, as well as a variety of other interior plant and animal foods, particularly black-tailed deer (see Jones, 1995). Within the last decade, however, excavations along the Big Sur coast (County, 2010) have shown the presence of small seasonal encampments on the shore, focusing on small schooling fish and a generally more intensive use of marine environments (County, 2010).

Central Valley Region – The prehistory of the lower San Joaquin Valley has been summarized by a variety of researchers (e.g., Hartzell, 1992; Jackson et al., 1998; Milliken and Mikesell, 1997; Siefkin, n.d.). Although each sequence is slightly different, the following series of intervals provides a good framework for the region and contrasts significantly from that of the coast, showing much greater affinities with the western Great Basin and Sierra Nevada regions.

Paleo-Indian Period (12,000-10,000 BP). Fluted projectile points are well-represented in the southern San Joaquin Valley, particularly on Dudley Ridge along the southwest shore of Tulare Lake (County, 2010). Although the mineralized bones of several now-extinct animal species (e.g., bison, mammoth) have been found in the same area, direct associations between the bones and prehistoric artifacts have never been established through formal excavation. In fact, many of the fluted points have been found in surface contexts also producing late Holocene materials, making it difficult to isolate the full range of artifacts dating to this ancient period.

Western Pluvial Lakes Tradition (10,000-7000 BP). The western Pluvial Lake Tradition is recognized throughout the Great Basin, but only in certain parts of California, including the San Joaquin Valley (County, 2010). Typical sites of this tradition are found along the ancient shorelines of now dry pluvial lakes, and include large, contracting-stemmed points (e.g., Lake Mohave series), square-stemmed points of the Silver Lake series, flake tools, drills, hammerstones, and crescents; milling gear is not considered a major component of the assemblage. Similar to Paleo-Indian assemblages, most materials corresponding to this early interval have been recovered from surface contexts. One important exception is KER-116, a large buried component located at the edge of Buena Vista Lake and radiocarbon-dated to between 8600 and 7200 BP (County, 2010). The small assemblage included crescent fragments, scrapers, a projectile fragment, and a faunal collection indicative of a diversified subsistence economy based on both lacustrine and terrestrial resources.

Middle Holocene (7000-4000 BP). Archaeological indicators of the middle Holocene are well-known along the shores of Tulare Lake, largely represented by hundreds of Pinto-series points in the hands of private collectors. Similar to the earlier temporal intervals, however, no well-dated components have yet been discovered. At Buena Vista Lake, Pinto-series materials are quite rare, as are securely dated components corresponding to this interval. One possible exception is Fredrickson and Grossman's (1977) discovery of a component at KER-116 stratigraphically dated to between 7000 and 2000 BP. The assemblage, which included handstones, millingstones, and extended burials, was thought to have affinities to Millingstone Period materials on the coast and was assigned to the Buena Vista Complex. Later analysis of projectile points and obsidian hydration data, however, led Hartzell (1992) to conclude that the component actually dated between 4000 and 2000 BP, creating a 7000-4000 BP hiatus in the record that she attributed to the Middle Holocene desiccation of Buena Vista Lake.

Early Period (4000-2500 BP). As noted above, Hartzell (1992) assigns materials from KER-116, as well as those from a variety of sites excavated by Wedel (1941), to this interval. These include Pinto- and Elko-series projectile points, extended burials, handstones, millingstones, and flake scrapers. She also notes an increase in the diversity of faunal remains (particularly those from wetland environments) and attributes these developments to late Holocene improvements in the condition of Buena Vista Lake**.**

Middle Period (2500-1200 BP). Archaeological evidence expands significantly throughout the southern San Joaquin region during the Middle Period. At Buena Vista Lake, data from a variety of sites document the presence of mortars and pestles, steatite and baked-clay net weights, stone-lined hearths, flexed burials, and circular-to-oval house structures similar to those documented ethnographically among the Yokuts. Exotic materials like obsidian and marine shell beads increase in frequency, as does the use of lacustrine resources, the latter probably supported by the cool-wet climatic conditions that characterized the interval (County, 2010). As in many other parts of California, these data indicate that a higher degree of sedentism emerged during the Middle Period in the southern San Joaquin Valley.

Late Period (Post-1200 BP). After 1000 BP, Hartzell (1992) argues that there was a decline in the occupational intensity at Buena Vista Lake, largely corresponding to the Medieval Drought—so called because it occurred ca. 1100-600 BP, corresponding to the Medieval Period in Europe. Evidence for large-scale habitation sites (i.e., house structures, robust artifact assemblages, cemetery areas) disappears, replaced by small sites representing short-term, sporadic occupations. Even after the return of more favorable climatic conditions after 600 BP, archaeological data indicate that a more "forager-like" adaptation took hold, where relatively mobile groups occupied a variety of terrestrial and lacustrine environments on a short-term, seasonal basis.

Ethnography

The proposed project is located in the territories of the Southern Valley Yokuts, the Interior Chumash, and the Salinan. Approximately 25 miles of the project are located within the Southern Valley Yokuts territory in Kern County. The 10-mile segment of the project in San Luis Obispo County is located within the territory of the Interior Chumash and the Salinan on the northwestern portion of the Carrizo Plain and the eastern foothills of Temblor Range.

The Carrizo Plain is well known for the spectacular polychrome pictographs at sites about 10 miles south of the western portion of the reconductoring project. These complex and elaborate paintings feature abstract designs executed principally in red, black, white, and yellow, and represent the zenith of the Chumash rock painting style (Lichtenstein et al., 2010).

Southern Valley Yokuts

The proposed project is located in the territory of the Chuxoxi and Tulamni Yokuts groups, two divisions of the ethnolinguistic group that ethnographers designate as Southern Valley Yokuts or Tulare Lake Yokuts. Southern Valley Yokuts territory encompassed the upper (southern) end of the San Joaquin Valley, from the lower Kings River to the Tehachapi Mountains. Included in this area were Tulare, Buena Vista, and Kern lakes and their connecting sloughs and the lower portions of the Kings, Kaweah, Tule, and Kern Rivers. The Tulare Lake and Buena Vista Lake basins offered a rich and varied array of resources to the several Yokuts tribes occupying its environs. These tribes, referred to collectively as the Lake People, include the Apichi, Nutunutu, Tache, Halaumne, Chunut, Wowol, Tuolumne, Tuhoumne, and Yowlumne (Lichtenstein, et al., 2010).

The Yokuts depended on a mixed subsistence economy, emphasizing fishing; game hunting and fowling; and collecting shellfish, roots, and seeds. The concentrated supply of foods that existed in Yokuts territory allowed them to remain relatively sedentary. The names and approximate locations of almost 50 Southern Yokuts villages are known. (Gayton, 1948; Kroeber, 1925; Latta, 1949; Wallace, 1978.)

The ethnographic and historic record concerning the Southern Valley Yokuts is noticeably minimal regarding their use of the eastern South Coast Ranges. The testimony of living members of the Santa Rosa Rancheria of Tachi Yokuts indicates use of the South Coast Ranges for major villages, resource procurement, and trade with Costanoans. Some researchers (CSUFF Laboratory of Anthropology, 2003; Pritchard, 1970) have suggested that the foothills may have provided respite from adverse seasonal conditions in the San Joaquin Valley. Tachi Yokuts gathered or obtained milkweed, mica or gypsum crystals, sandstone, deer grass, small rushes, elderberries, gooseberries (*Ribes speciosum*), and California golden poppy (*Eschscholtzia* sp.). Southern Valley Yokuts also traded different kinds of steatite and acted as middlemen in the trans-Sierran obsidian and pigment trade with Salinan and Chumash, which would have occasioned forays into the South Coast Ranges (Latta, 1949).

The Interior Chumas

Little is known ethnographically about the Interior Chumash, one of the largest cultures among the Native American tribes in California. The establishment of missions in southern California scattered and decimated the members of what was once called the Chumash Nation. Few ethnographic data about the Chumash groups are available, but explorer's journals, mission records, and archaeology have provided some information.

The Chumash territory extended from Santa Maria in the south to Salinas in the north and the San Joaquin-Kern system in the east. Some small fragment of the Chumash culture extended their territory easterly, near the southerly drainage of the San Joaquin-Kern river system (Kroeber, 1925). The Chumash share their northern boundary with the Salinan (Jones et al., 2007). Three subgroups compose the Interior Chumash: the Cuyama, the Emidgdiano, and the Castac. The project lies within Cuyama territory, which extended between the coast and the Temblor Range. Grant (1978) noted that very little is known about the tribes of this region because ethnographic information is almost nonexistent, few systematic archaeological investigations have been carried out in the region, and the territory is far from the mission lands, so no vital statistics were recorded. The meager information suggests that the Cuyama occupied about a dozen small settlements, most of which were in the well-watered Cuyama Valley, south of the reconductoring region on the opposite side of the Caliente Range. Since the current project area has little surface water and is otherwise limited in its resources, it was less attractive for long-term settlement. However, the herds of antelope and tule elk plus a spring seed crop would have made the area attractive for short-term resource procurement forays.

Salinan

The westernmost portion of the project also falls within the southern territory of the Salinan Indians. The Salinan have been conventionally subdivided into two main bodies: the Antoniaño or Northern, who occupied the northwest half of Salinan territory, and the Migueleño or Southern, who occupied the southeastern half. All known village locations for which names are recorded occur along the Estrella, San Antonio, Salinas, and Nacimiento rivers, along Cholame Creek to the east, and on the coast. The rapid demise of native culture after contact with European civilization left many gaps in the knowledge of aboriginal lifestyles. This is particularly true for the Temblor Range and Carrizo Plains region. Despite the work of ethnographers in Salinan territory, much of the documentation remains as raw notes, little of which has been published.

History

The project area lies within the Carrizo Plain, Temblor Range, and San Joaquin Valley, San Luis Obispo and Kern Counties. Overall, the project area is characterized by mountainous terrain with portions of agricultural development west of the Temblor Range and agricultural, industrial (including oil exploitation), and residential development east of the Temblor Range. The following historic context contains summaries of San Luis Obispo and Kern county history.

San Luis Obispo County

The remoteness and dry climate of the Carrizo Plain have been the primary factors shaping its history. In 1772, Mission San Luis Obispo de Tolosa was established as the fifth in what became a chain of 21 Spanish missions along the California coast (Lichtenstein et al., 2010).

Following the Treaty of Guadalupe-Hidalgo in 1848, which ended the Mexican-American War and ceded Alta California to the United States, California became the thirty-first state in the Union in 1850. Five years later, the Government Land Office began its survey of the Carrizo Plain with the purpose of opening the area to settlement. Before the land was made available to the public in 1856, a substantial portion of the region was withdrawn from sale and placed in the hands of the Atlantic and Pacific Railroad (Lichtenstein et al., 2010). Most of the remaining land was quickly swept up by Bay Area land speculators and large cattle interests.

In 1885, California released the railroad indemnity lands on the Carrizo Plain, making them available for public sale (Lichtenstein et al., 2010). The availability of land attracted a small number of settlers who took up 160-acre homesteads along the low hills on the northeast margin of the plain under the auspices of the Immigration Association of California. The homesteaders grew grain and raised livestock, but the isolation of the region, the lack of a consistent water source, and their relatively small land holdings weighed heavily against their efforts for long-term success. With no towns or urban development of any kind on the plains, the nearest accessible market center was San Luis Obispo.

In the early twentieth century, a fundamental change occurred in the agricultural economy of the Carrizo Plain that substantially altered land use, settlement patterns, and the natural landscape. While cattle raising remained a part of the economy, particularly in the southern Carrizo Plain, dry-land wheat farming became the dominant form of agriculture in the northern plain from the 1900s through the 1960s.

In the 1960s, the federal government introduced agricultural programs that established a national wheat acreage allotment, limiting the amount of wheat a single farmer could produce. The profitability of wheat farming in the plain had always depended on large-scale production, so the government-

imposed limits had a drastic effect on Carrizo Plain wheat farmers. Moreover, the soil, temperature extremes, limited rainfall, and lack of irrigation resources in the Carrizo Plain did not afford them the option of turning readily to other crops. While barley and alfalfa continue to be grown, much of the land has been allowed to revert to grazing (Lichtenstein et al., 2010). By the 1970s the amount of land left fallow in the plain had risen significantly, and although wheat farming continues on a small scale, the distinctive dry-farming economy and land-use patterns that it fostered are disappearing.

Kern County

The first Spanish explorer into present day Kern County is believed to be the acting Governor of California and Commander Don Pedro Fages, who entered the region in 1772 in effort to locate army deserters. In the early 1800s, missionaries such as Padre Juan Martin (1806) entered the area through the Carrizo Plain, though none established permanent residency. Kern County was officially organized in 1866 from portions of Mariposa and Tulare Counties and called "Buena Vista" until it was later renamed after Edward M. Kern, a topographer who went on two expeditions in the region.

During the 1840s, several Mexican land grants within present-day Kern County were established throughout the valley and formed the founding settlements, which later became towns (Beck and Haas, 1988). Kern became a major agricultural area during the mid-1800s. The increase of agriculture in the region brought on the need for irrigation development and when the state legislature passed the Swamp Land Act of 1857, approximately 400,000 acres of swamp land was reclaimed, much of which was in the Kern County area. Reclamation allowed for larger-scale farming in the region, which included cotton and hay crops.

Railroad development expanded rapidly throughout the state during the 1870s; small towns that developed along the railroad alignment led to further land development in Kern County by increasing residency (Burmeister, 1963). By the 1880s, Kern County became known for oil production. In 1864, the Buena Vista Petroleum Company was organized and incorporated. Within a few years, the company opened an oil refinery, which continued operation until 1867 when freight charges proved prohibitive. In 1899, oil was discovered in the Bakersfield area, bringing the county recognition as a prominent oil producer. During that same year, the first commercial oil well was drilled near the Kern River. Soon, the towns of Oil City, Oil Center, and Oildale were founded. Also during the late nineteenth century, the Kern River was first used for hydroelectricity. In 1910, the Lakeview Gusher Number One oil well blew, producing an unprecedented 18,000 barrels of oil in the first 24 hours, thus becoming the highest producing oil well in the history of the world. Today Kern County contributes approximately one-fourth of the state's oil production (Hoover et al., 1990).

The first decades of the twenty-first century in Kern County were marked by continual oil discovery, transportation, and electric development, which led to continued residential growth. Agriculture continued to be a prominent industry in the county. By the 1930s, orchards, fruit, and vegetables were among the most produced crops, along with field crops and grains. Production temporarily decreased during the World War II period, but increased again post war. By 1960, the county produced a wider variety of crops including field and seed crops, vegetables and fruit, livestock, poultry, and nursery products. (Kern County 1930, 1946, 1960.)

Local Archaeological Findings

ICF archaeologists surveyed the work areas, access roads, towers, and tension/pulls sites along the transmission line upgrades ROW from May 25 to May 27, 2010. The survey was accomplished by walking transects spaced 15 meters (m) apart where vegetation and contour relief permitted. In some areas of

difficult terrain or thick vegetation and low visibility, transects were spaced 15–20 m apart in order to conduct a more intuitive survey and check rodent disturbances, hills and cut bank profiles, and patches of bare land. One prehistoric isolated find was recorded during survey. Surveys were not conducted at the microwave reflector site.

A cultural resources inventory identified 12 previously recorded cultural resources, as well as two new historic archaeological sites, two prehistoric archaeological sites, one historic isolate, and three prehistoric isolates along the reconductoring segment.

Additionally, the cultural resources survey conducted within the six potential Caliente Switching Station sites from June 28 through July 1, 2010 by LSA found two additional sites (LSA, 2010). Resource LSA-PWR0901A-S4, historic scatter and rock piles, appears to be the same site as CM-1H. After publication of the Draft EIR, archaeologists from Ecology & Environment identified an additional prehistoric site in the area of Caliente Switching Station Site M3, and have performed initial shovel pit testing to define its boundaries.

The characteristics of each resource are summarized in Table Ap.4A-13.

Table Ap.4A-13. Cultural Resources Along the Reconductoring Route

Site Number	Description	Location Relative to Project Area	NRHP/CRHR Status
N/A	Morro Bay–Midway Transmission Line Corridor	Within project area	Recommended ineligible for CRHR
P-15-1493	Prehistoric site	In transmission line alignment	Unknown
P-15-4014 (CA-KER-4013	Prehistoric midden site with human remains	Distribution Line Crossing Tower 159, access road	Unevaluated
P-15-9736 (CA-KER-9736)	Light density, prehistoric artifact scatter	In transmission line alignment	Unevaluated
P-15-9737	Historic archaeological site; San Joaquin Light and Power Company	Adjacent	Unevaluated
P-15-10840	Isolate (chert flake)	Adjacent to access road	Ineligible for NRHP/CRHR
P-15-10841	Isolate (chert flake)	Adjacent to access road	Ineligible for NRHP/CRHR
I-5	Historic well, water trough and tank, and earthen reservoir	Adjacent to access road to Caliente Switching Station	Determined ineligible for CRHR; potential local planning consideration (6L)
I-6	Isolate; historic drawn spreader	Adjacent to access road to Caliente Switching Station	Determined ineligible for CRHR; potential local planning consideration (6L)
None	Carrisa Highway	Adjacent	Recommended ineligible for CRHR
None	Filos Property; historic ranch	Adjacent	Recommended ineligible for CRHR
None	Carrizo Plain Substation	Adjacent	Recommended ineligible for CRHR
CM-1H (LSA-PWR0901A-S4)	Historic refuse scatter	Near access road to Caliente Switching Station	Assumed eligible for NRHP/CRHR
CM-2	Prehistoric bedrock milling station	TPS-73	Assumed eligible for NRHP/CRHR
CM-3	Prehistoric bedrock milling station	LZ-48	Assumed eligible for NRHP/CRHR

Table Ap.4A-13. Cultural Resources Along the Reconductoring Route

Site Number	Description	Location Relative to Project Area	NRHP/CRHR Status
CM-4H	Possible prospect pit, historic refuse	Access road to TPS-48	Assumed eligible for NRHP/CRHR
CM-ISO-1H	Horseshoe	Access road through Caliente Switching Station	Ineligible for NRHP/CRHR
CM-ISO-2	CCS core	In transmission line alignment	Ineligible for NRHP/CRHR
CM-ISO-3	CCS flake	Out of project area	Ineligible for NRHP/CRHR
CM-ISO-4	CCS flake	Access road to TPS-43	Ineligible for NRHP/CRHR
CM-ISO—5	Obsidian flake	Access road to TPS—43	Ineligible for NRHP/CRHR
LSA-PWR0901A-S3	Historic watering/feeding/sanitation area for livestock	North of Caliente Switching Station Option 2	Assumed ineligible for NRHP/CRHR
BRM 1	Bedrock mortars	Within and near Caliente Switching Station Option 3	Assumed eligible for NRHP/CRHR
CM-5H	Glass and ceramic scatter	Vicinity TPS 139	Assumed eligible for NRHP/CRHR
CM-ISO-6	Prehistoric handstone	Vicinity tower 158	Ineligible for NRHP/CRHR

Paleontological Resources

In the project area, sedimentary rocks and unconsolidated deposits range in age from Paleocene (Lodo Formation, dating to about 58 to nearly 50 million years ago [Mya]) to Recent (i.e., Holocene), although substantial gaps in time interrupt the geologic record. Rocks in the area that date from the Paleocene until the late Miocene (Temblor and Monterey Formations, about 22 to 10 Mya) were primarily deposited under marine conditions. The Pliocene to Pleistocene Paso Robles Formation appears to document the final retreat of the sea as it includes fossil pinnipeds (seals and sea lions) and marine invertebrates to the west of the project vicinity as well as fossil horse remains (Carrizo Energy, with URS, 2007). Still younger Pleistocene to Recent deposits in the project vicinity all appear to have been deposited on land, mostly as alluvial fans.

The main fossiliferous units in the project area are the Miocene Monterey, Santa Margarita, and Caliente Formations, the Plio-Pleistocene Paso Robles Formation, and the overlying Quaternary alluvium (Lichtenstein et al., 2010).

The Monterey Shale Formation is mostly composed of fossils. Of the named organisms, only the fish remains are considered paleontologically significant, as they are vertebrate animals and do not occur in abundance. The depth of the sea and the distance from sources of terrestrially derived sediment fostered the thick accumulation of concentrated remains of microscopic marine organisms that, in turn, promoted the natural generation of much of the petroleum now tapped in the region (Peters et al., 2007). The Monterey Formation occurs at the surface in the project vicinity along most of the western flank and crest of the Temblor Range, east of the proposed sites of the Caliente Switching Station (CVSR Project).

Both marine and non-marine fossils have been collected from localities in the Paso Robles Formation (Addicott and Galehouse, 1973). Although confirmed vertebrate fossil localities are rare; the Paso Robles Formation has yielded vertebrate fossils at several localities in the region, including one nearby site (LACM 5659) that produced mastodon, bison, and camel remains (Lichtenstein et al., 2010). A locality

reported to be in the Paso Robles Formation near the project vicinity probably occurs in younger, overlying quaternary (Pliestocene) alluvium.

The Quaternary alluvium has produced fossil plant molds and fish scales that probably were eroded from older units rather than preserved in the alluvium (Lichtenstein et al., 2010). In addition to this formation, the University of California Museum of Paleontology (UCMP) database records the presence of vertebrate fossils from the uppermost Quaternary alluvium found at several localities within San Luis Obispo County. A vertebrate fossil locality in the Carrizo Plain, recorded as LACM Locality 5659, was found a short distance south of the west end of the project vicinity (McLeod, 2009). Twelve Pleistocene vertebrate fossil localities are recorded in Kern County (UCMP, 2010), but at least seven of these are in the asphalt deposits near McKittrick and are probably assignable to the Tulare Formation. The others have appeared in deposits assignable to the younger Quaternary units, but do not occur near the project vicinity.

Environmental Impacts

Impact C-1: Construction of the project could cause an adverse change to known cultural resources

Construction-related staging, traffic, and grading for the proposed project have the potential to damage sites of archaeological or cultural significance through crushing, trampling, or displacing materials. Damage to archaeological sites near work areas and access roads would occur without appropriate protective measures, resulting in sufficient damage to those sites to diminish site integrity and scientific information potential. Such damage would be a significant impact, according to 14 CCR 15064.5(b)(1) because the site's information potential would be compromised. The effect under Section 106 would be adverse unless avoided. Implementation of APM CR-4 would include the installment of silt fencing along existing access roads and would prohibit grading along fenced road segments. Silt fencing was selected for two reasons: (1) silt fencing does not attract undue attention to archaeological sites, and therefore, does not facilitate illicit collection of archaeological materials; and (2) construction contractors are accustomed to avoid running into or otherwise damaging silt fences. APM CR-4 would ensure that the impact to cultural resources from construction-related activities would be less than significant.

The proposed project entails the replacement and modification of an as-yet-undetermined number of transmission line towers. Construction work occurring near or on transmission line towers may result in significant impacts. The installation of distribution line crossing structures, Tower 159, and modifications to Tower 143, would involve vehicle traffic, the potential for grading, and the potential of excavation within the boundaries of archaeological sites. Sites within the vicinity of Towers 159 and 143, P-15-4014 and P-15-1493, are assumed to be eligible for listing in the NRHP and the CRHR and without appropriate protective measures, construction activities would likely result in the removal or damage of archaeological materials from these sites. The movement of construction equipment across the site would result in the damage and displacement of surface and near-surface archaeological constituents. This impact would be significant under CEQA and an adverse effect under Section 106 because it would diminish the information potential of these archaeological sites. Implementation of APM CR-5 (Obtain a clearance on the foreign transmission line crossing near Tower 159) would eliminate the need to build a crossing structure on site P-15-4014, ensuring the impact to the archaeological site would be less than significant. APM CR-6 (Protect transmission line crossing with a truck-mounted bucket) would eliminate the need for excavation into P-15-4014, and require a qualified archeologist to create a safe path for vehicle travel from the nearest road to the transmission line crossing. APM CR-7 (Build a low-impact crossing structure on P-15-4014) requires a low-impact, scaffold-style crossing structure on the surface of P-15-4014. APMs CR-5, -6, and -7 would each, separately, reduce impacts from construction work at

Towers 159 and 143 to less than significant levels. Each APM is sufficient to reduce the severity of the impact and need not be applied in concert with the others. Implementation APM CR-5 would result in the lowest impact on P-15-4014, and therefore, is the preferred choice. APM CR-5 may not be feasible for PG&E, however, in that a clearance on a foreign transmission line would result in temporary power supply reductions to a foreign energy service area. APMs CR-6 and -7 are provided as more feasible options.

Should PG&E determine that Tower 143 requires replacement; construction traffic, the removal of the tower, and installation of a new tower could damage surface and subsurface archaeological deposits at P-15-1493, reducing site integrity and information potential. This impact would be considered significant under CEQA and would be an adverse effect under Section 106. If feasible, APM CR-8 (Avoidance through project design) would be implemented to avoid replacing or modifying Tower 143 in any manner. As a secondary choice, APM CR-9 (Evaluate P-15-1493's significance and prepare and implement a site specific archaeological treatment plan) would ensure that, if replacement is necessary, the potential impact to P-15-1493 would be less than significant.

An archaeological survey of Switching Station alternative 3 identified the presence of prehistoric artifacts. One of these is within the planned area of disturbance at the site, and PG&E has stated that they will design around it. If it is not feasible to avoid the resource, data recovery activities will be undertaken. APM CR-7 (Avoidance through project design) and APM CR-2 (Unanticipated discoveries management) will ensure that impacts to this resource are less than significant.

Impact C-2: Construction of the project would cause an adverse change to unknown significant surface or buried prehistoric and historical archaeological sites or buried Native American human remains

Unknown significant surface or buried prehistoric and historical archaeological sites or buried human remains could be discovered during construction. Grading and earthwork would be minimal and would be limited to re-establishing existing access roads, pull and tension sites, construction laydown areas, and foundations for as many as 17 replacement towers. At the two switching stations and related microwave tower and reflector the land would be graded and the switching station areas would be surfaced with a combination of concrete pads, compacted road base for internal access roads and compacted earth. Table Ap.4A-14 lists project elements sensitive to the presence of buried archaeological sites.

Table Ap.4A-14. Project Elements Sensitive to Buried Sites

Project Element	Sensitivity	Impact Mechanism
Access road improvements	Varies; moderate to very high	Grading
Towers 3, 6, and 10	Moderately high	Excavation associated with tower removal and replacement
Towers 73-75, 80	High	Excavation associated with tower removal and replacement
Towers 99, 100, 109, 142–165	High to very high	Excavation associated with tower removal and replacement
Transmission line crossings 99, 159-160	High	Installation of crossing-structure poles
Distribution line crossings 145-146, 154-155, 158, 159-160	High (159-160 is very high)	Installation of crossing-structure poles
Road crossing work areas 109, 139, 162	High	Installation of crossing-structure poles
Belridge line crossing	High	Installation of crossing-structure poles

Particular sections of the project area have not been surveyed for the presence of cultural resources because of access limitations (standing crops). In addition, portions of the project area have not been defined in a sufficient level of detail to permit surveying (i.e., towers slated for replacement and modification). During construction of the project, construction crews may identify the need for staging and other work areas on property that has not been surveyed for the presence of cultural resources. Should construction activities occur in unexamined areas, NRHP- or CRHR-eligible cultural resources could be damaged. This would be a significant impact under CEQA and an adverse effect under Section 106. APMs CR-1 (Pre-construction worker education program), CR-2, CR-3, and CR-10 would reduce potential impacts to unknown archaeological or human remains sites.

APM CR-1 would require worker education programs for all personnel who may encounter and alter historical resources or unique archaeological properties. APM CR-2 (Unanticipated discoveries management) would ensure proper management of unanticipated discoveries of cultural resources. Discovery of cultural resources would be unlikely, as most work would occur on previously disturbed sites; however, in the unlikely event that Native American remains are discovered during construction, a significant impact would result if remains were treated improperly. APM CR-3 (Follow State Health and Safety Code Section 7050.5 if human remains are identified) would ensure that Native American remains discovered during construction would receive proper treatment. Implementation of APM CR-10 (Survey unexamined areas for the presence of cultural resources) would ensure that areas of new or redefined projects elements would be surveyed for sites of cultural significance prior to construction. With these APMs and mitigation measures applied, impacts to unknown archaeological sites and buried Native American remains would be less than significant.

Impact C-3: Construction of the project would potentially destroy or disturb significant paleontological resources

The only clearing and grading anticipated with the reconductoring of the transmission line would include the reestablishment of existing unpaved access roads. Construction of the Solar Switching Station and Caliente Switching Station and microwave tower would include grading of up to 9 acres each. The estimated depth of excavation is unknown. A potentially significant impact could occur if the project affects sensitive, previously undisturbed sediment or sedimentary rock. In areas underlain by geologic units assessed to have high paleontological sensitivity, project-related activities (such as replacement of transmission towers and establishment, improvement, or restoration of access roads) could result in significant impacts on these resources. Replacement of existing conductors and construction of temporary protective structures at road crossings, or any activities underlain by geologic units designated as low sensitivity, are not expected to cause significant impacts on paleontological resources

It is unlikely that shallow grading and excavations into the younger alluvium would encounter paleontological resources. Deeper excavations or grading may encounter finer-grained sediments or older Quaternary alluvium, which would have a higher potential for paleontological resources.

Deeper excavation may also encounter underlying Paso Robles Formation (Pleistocene and Pliocene age). If encountered, the possibility of impacting significant paleontological resources would be moderate to high, because several vertebrate fossil localities are present west of the region.

Because of the depth of the excavation and the moderate to high probability of encountering resources, the excavation could be considered a significant impact without mitigation. APMs PAL-1 (Paleontological Monitoring and Treatment Plan), PAL-2 (Paleontology Construction Monitoring), PAL-3 (Paleontological Data Recovery) and PAL-4 (Construction Personnel Training) are designed to ensure that impacts to paleontological resources during construction would be less than significant.

These measures would require the implementation of stop-work procedures and the development of a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontological resource specialist).

3.8 Geology, Mineral Resources, and Soils

Environmental Setting

The San Andreas Fault is the most striking geologic feature in the vicinity of the reconductoring project and crosses the existing transmission corridor nearly 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 alternatives are located just to the east and the west of the Alquist-Priolo Earthquake Zone, with alternative 1 and alternative 3 representing the closest and farthest site locations from the boundary of the zone, respectively. The San Andreas Fault is zoned an active fault[3] in the project area and was the source of the Fort Tejon Earthquake on January 9, 1857. Surface rupture was reported along an approximately 220-mile segment of the fault from San Bernardino to Parkfield with offsets of up to 30 feet reported in the Carrizo Plain. The estimated moment magnitude of the earthquake was M7.9 at the epicenter near Cholame, about 30 miles north of the CVSR site (Arrowsmith, 1995). Recent studies of geomorphic features (Zielke et al., 2010) and detailed analysis of incised channels combined with new age dating (Grant Ludwig et al., 2010) indicate that the 1857 Fort Tejon Earthquake resulted in about 18.7 feet (5.3 meters) of fault slip and that this slip amount may be the upper limit of slip for the south central San Andreas Fault segment (Scharer, 2010).

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. The history of earthquakes along the San Andreas Fault has caused a 300 to 1,500-foot-wide zone of deformation across the northeastern boundary of the CVSR site (Dibblee, 1973b; Engeo, 2008).

Engeo (2008) calculates the site peak ground acceleration from large earthquakes on the San Andreas Fault range from 0.5g to 0.85g for earthquake recurrence intervals of 350 to 1,000 years. Peak ground acceleration as high as 1.1g would occur in the transmission ROW for an earthquake recurrence interval of 2,500 years.

In addition, the transmission line crosses an area of landslide potential from MP 12 to MP 13, according to the Kern County General Plan Map (Map Code 8.3/2.2). Finally, a portion of the existing ROW is located on and adjacent to areas designated as Mineral and Petroleum areas (Map Code 8.4) in the Kern County General Plan (MP 16 to MP 19.5).

The Lokern ACEC (MP 21.5 to MP 30) is considered to have high potential for the occurrence of oil and gas; however, the ACEC lies in a northwest trending synclinal area, which is not considered highly prospective for oil and gas. Some deep wells have been drilled to find Miocene or older oil reservoirs directly to the southwest, but they have not resulted in oil production. Interest in the area continues as demonstrated by several large scale geophysical exploration projects (BLM, 1997).

[3] An active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Holocene time (about the last 10,000 years).

Environmental Impacts

Impact G-1: Project would expose people or structures to potential substantial adverse effects as a result of problematic soils (e.g., corrosive or expansive soils, liquefaction, slope instability, landslides, or collapsible soil)

Switching Stations. Expansion potential for the soils at both the switching stations is moderate (NRCS, 2010). Expansive soils could cause differential and cyclical foundation movements that could cause damage and/or distress to equipment and structures, including concrete equipment slabs at the switching station. In addition, potential impacts associated with loose sands or other compressible or collapsible soils include excessive settlement, low foundation-bearing capacity, and limitation of year-round access to the transmission line and/or switching station facilities. Implementation of PG&E's design standards would prevent damage of this type at the switching station.

Reconductoring. The transmission line crosses an area of landslide potential from MP 12 to MP 13, according to the Kern County General Plan Map (Map Code 8.3/2.2). Heavy construction along this portion of the ROW could result in a safety hazard to personnel if a landslide were to occur as a result. APM GM-1 (Soft or loose soils during construction minimization) would ensure that soft or loose soils are stabilized during construction. If a landslide were to occur as a result of construction activities at MP 12 to MP 13, a significant hazard to construction personnel would result. APM GM-2 (Protect against slope instability) would ensure that unstable slopes are stabilized, and would reduce this impact to a less-than-significant level.

Impact G-2: Project would expose people or structures to potential substantial adverse effects as a result of seismically induced ground failure and/or groundshaking

Switching Stations. Strong to severe groundshaking may occur along the transmission corridor in the vicinity of MP 8 and the Caliente Switching Station during the life of the project. Local strong to severe groundshaking with vertical and horizontal ground accelerations that could exceed standard design stresses could result in damage or collapse of project structures. Seismically induced slope failures, such as landslides, could occur in the event of a large earthquake in areas with moderate to steep slopes. Moderate to steep slopes adjacent to the San Andreas Fault may be susceptible to seismically induced ground failure in the form of landsliding or ground cracking, resulting in damage to or collapse of project structures. Damage of structures could result in power outages, wildland fires, and injury or death to nearby people, which are all considered potentially significant impacts. Although it is impossible to fully negate the potential for severe to very strong ground shaking to cause damage to project structures in the event of a significant earthquake on the adjacent San Andreas fault, implementation of APM GM-3 (Reduce effects of groundshaking) would reduce the potential for catastrophic failures by allowing for appropriate structural design of facilities. With implementation of this measure, impacts would be less than significant.

Reconductoring. APM GM-3 is recommended for portions of the transmission line where strong to severe ground shaking is anticipated to support the final structural design of these facilities and reduce the potential impact to less than significant.

Impact G-3: Project would expose people or structures to potential substantial adverse effects as a result of surface fault rupture at crossings of active and potentially active faults

Although there are no residences or recreational trails located within 200 feet of the edge of the ROW or switching stations and there are no structures proposed for human occupancy, project facilities would be subject to hazards of surface fault rupture at crossings of the active San Andreas Fault.

Switching Stations. The Solar Switching Station would be located outside of the mapped Alquist-Priolo Earthquake Zone and impacts would be less than significant. Portions of the transmission line would be located within the Alquist-Priolo Earthquake Zone Site option 1 for the Caliente Switching Station is located about 200 to 400 feet east of the nearest mapped fault trace. Sites 2 through 6 are located at least 1,000 feet from the nearest San Andreas Fault trace. There is also a second Alquist-Priolo Zone mapped/located about 2 miles east of the new switching station location. The replacement transmission line towers and the Caliente Switching Station should be set back from fault traces to collapse in the event of surface rupture. Implementation of APM GM-4 (Avoid placement of project structures within active fault zones) would require a fault study to verify that no fault traces would pass through the Caliente Switching Station site and would ensure this impact would be less than significant.

Reconductoring. The reconductoring work would occur primarily on existing structures. However, for looping into the switching stations and for other design considerations, new poles or towers would be required. In particular, work associated with the Caliente Switching Station and replaced transmission line structures. Implementation of APM G-4 would require a fault study to verify that no fault traces would pass through tower locations and would ensure that this impact would be less than significant.

Impact G-4: Project would interfere with access to known mineral resources or damage a unique geologic feature

Switching Stations. U.S. Geological Service (USGS) Mineral Resource Data System (MRDS) for the project area was reviewed. The CVSR project site includes an inactive gypsum mine. Given that this onsite mine has not been active for many years, it is indicative that the grade/quality of the product (and proximity to market) can no longer sustain cost-effective extraction. A nearby gypsum mine has followed a very similar path, where commercial production has not been evident for many years. Given the relatively small footprint of the switching stations and that no specific resources have been identified at the proposed sites, no adverse impact related to access to mineral resources would occur and no mitigation is required.

Reconductoring. A portion of the existing ROW is located on and adjacent to areas designated as Mineral and Petroleum areas (Map Code 8.4) in the Kern County General Plan. According to the Land Use, Open Space, and Conservation Element of the Kern County General Plan, uses of Mineral and Petroleum areas shall be limited to activities directly associated with resource extraction. Approved land uses on Mineral and Petroleum designated lands include natural gas and geothermal resource extraction, power transmission facilities, and equipment storage stations. Because all work would be located in an existing transmission ROW, the construction work would not interfere with access to known mineral resources.

The reconductoring project would not be located in the vicinity of any known unique geologic features. As ground disturbance would be minimal and limited primarily to previously disturbed areas within an existing ROW, there would be no potential for the project to damage any unique geologic features.

The reconductoring project would not interfere with access to known mineral resources or damage any unique geologic features.

Impact G-5: Project would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems

Wastewater used during the reconductoring and switching station work would be disposed of onsite or trucked to a sanitary sewer facility. Impacts related to soils adequately supporting septic tanks would not occur.

3.9 Hazards and Hazardous Materials

Environmental Setting

Sensitive Receptors. There are two structures (potentially occupied residences) within 1,000 feet of the existing transmission line at MP 0.6 and MP 1.2 in the Carrizo Plain and an additional 21 structures (potentially occupied residences) within 2,000 feet of the existing transmission line between MP 25 and MP 32.5 in the San Joaquin Valley. The existing transmission line is within 1,500 feet of numerous residences and one school in the community of Buttonwillow between MP 32.5 and MP 34.

Wildfire Risk. The switching station sites and the section of the Morro Bay–Midway 230 kV transmission line to be reconductored passes through areas of low and moderate fire hazard severity, as defined by the California Department of Forestry and Fire Protection (Cal Fire). The area of the westernmost portion of the existing transmission line and switching station sites in San Luis Obispo County is served by the Carrizo Plain Fire Station (Station 42) under the jurisdiction of Cal Fire, which provides fire protection services under contract with the County. This station is staffed 24 hours per day, three days per week; volunteer responders are on call the remaining four days. The eastern portion of the existing transmission line in Kern County is served by the Kern County Fire Department's Station 25 in Buttonwillow and Station 24 in McKittrick.

Existing Contamination. There are several documented contaminated sites located within 0.5 miles of the transmission ROW. The Clean Harbors Buttonwillow hazardous waste treatment and disposal facility is located approximately 0.25 miles north of the transmission line at MP 26. In addition, a documented release of gasoline into groundwater occurred at the Buttonwillow Fire Station located approximately 0.5 miles north of the transmission line at MP 34. A leaking underground petroleum gasoline tank (UST) at the fire station was detected and stopped in 1989 (RWQCB, 2010). The case is currently open with remediation underway under the oversight of the Kern County Local Oversight Program and the Central Valley Regional Water Quality Control Board (RWQCB). A second leaking UST was detected in 1997 at the Alvidres Unocal, adjacent to the Buttonwillow Fire Station (Geotracker, 2010). Tests for soil and groundwater contamination are undergoing and no remediation has begun (Geotracker, 2010). Three other leaking UST sites are located within 0.5 miles 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 miles of the transmission line at MP 18.5.

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 accumulation of organic waste acts as an attractor for flies, fleas, cockroaches, rodents, and other mammals, which can be carriers of various human diseases. In addition, any depressed areas, ponds, or drainage channels would provide areas for the breeding of mosquitoes, which can be carriers of the West Nile Virus, a potentially fatal disease in humans.

The reconductoring project is located in an area that may harbor the fungus that causes the disease Valley Fever. Coccidioidomycosis, commonly known as Valley Fever, is a lung disease common in the

southwestern United States and northwestern Mexico. Valley Fever is caused by the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. These fungal spores become airborne when soil is disturbed by winds, construction, farming, and other activities. In susceptible people and animals, infection occurs when a spore is inhaled. People working in certain occupations such as construction, agriculture, and archaeology have an increased risk of exposure and disease because these jobs result in the disturbance of soils where fungal spores are found. Many domestic and native animals are susceptible to the disease, including dogs, horses, cattle, coyotes, rodents, bats, and snakes. Valley Fever infection is highest in California from June to November. Most Valley Fever cases are very mild. It is estimated that 60 percent or more of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention.

Electromagnetic Fields. EMFs are associated with electromagnetic radiation. Electric and magnetic fields 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 (NIEHS, 1999; WHO, 1984, 1987, 2001, 2007).

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of electric and magnetic fields from utility facilities and power lines. A working group of interested parties, called the California EMF Consensus Group, was created by the CPUC to advise it on this issue. The Consensus Group's fact-finding process was open to the public, and its report incorporated concerns expressed by the public. Its recommendations were filed with the CPUC in March 1992. Based on the work of the Consensus Group, written testimony, and evidentiary hearings, the CPUC issued its decision (D.93-11-013) on November 2, 1993 to address public concern about possible EMF health effects from electric utility facilities. The CPUC concluded that it is not appropriate to adopt any specific numerical standard in association with EMF until there is a firm scientific basis for adopting any particular value.

Most recently the CPUC issued Decision D.06-01-042, on January 26, 2006, affirming the low-cost/no-cost policy to mitigate EMF exposure from new utility transmission and substation projects. This decision also adopted rules and policies to improve utility design guidelines for reducing EMF. The CPUC stated “at this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences.”

This continues to be the stance of the CPUC with regard to establishing standards for EMF exposure. Currently, the State has not adopted any specific limits or regulation on EMF levels related to electric power facilities. For these reasons, EMF is not considered in this analysis as a CEQA issue and no impact significance is presented. This information is presented to allow understanding of the issue by the public and decision-makers.

Environmental Impacts

Impact HZ-1: Create a hazard to people or the environment through the routine transport, use, or disposal of hazardous materials or as a result of an accidental release of hazardous materials

Hazardous or flammable materials used during construction would typically consist of small volumes of petroleum hydrocarbons and their derivatives (e.g., fuels, oils, lubricants, and solvents) required for the operation of construction equipment. These materials would be those routinely associated with the operation and maintenance of heavy construction equipment or other support vehicles, and would include gasoline, diesel fuel, and hydraulic fluids.

Minor spills or releases of hazardous materials could occur due to improper handling and/or storage practices during construction activities. Potential impacts related to minor spills would be largely avoided by training construction personnel in the handling and storage of hazardous materials in compliance with OSHA standards. The project as proposed would comply with OHSA and Cal/OSHA laws and guidelines to ensure personnel health and safety. In addition, APM HM-1/WQ-1 would ensure that an environmental training and monitoring program is developed and implemented for all personnel, APM HM-2 would establish a hazardous substance control and emergency response plan, and HM-3 would establish a site-specific health and safety plan. Implementation of these applicant proposed measures would ensure this impact would be less than significant and that the risk of spills and releases of hazardous materials is minimal and that accidental spills are properly cleaned up.

Switching Stations. It is anticipated that PG&E would periodically use herbicides to manage vegetation growth around switching stations. The switching stations would create new components to manage as compared to the existing transmission line. The application of herbicides for vegetation management would potentially pose a significant risk to human health or ecological receptors if applied incorrectly. APM HM-7 (Use licensed herbicide applicator) would ensure appropriate application of herbicides by qualified personnel, thus reducing this impact to a less than significant level.

Reconductoring. Construction equipment would mostly be refueled at landing zones or construction yards along the transmission line. Equipment may be refueled along the transmission line if necessary. The reconductoring work would result in the accumulation of minor amounts of hazardous waste on site. In addition, used motor oil, oil filters, and oily rags would typically be generated at PG&E's offsite maintenance facility. APM HM-2 would ensure that hazardous materials and hazardous waste would be collected in project-specific containers at the site and transported to a PG&E consolidation site and would be handled, stored, and disposed of in accordance with all applicable regulations by qualified personnel. In addition, any treated wood poles generated during construction would be considered hazardous waste and would be transported to a licensed Class 1 or composite-lined portion of a solid waste landfill in accordance with APM HM-2. Finally, APM HM-4 would ensure that on-site storage of hazardous materials is managed in accordance with all applicable regulations and that material safety data sheets are maintained and kept available on site, as applicable.

The old conductor would be disposed of in an appropriate landfill facility.

It is anticipated that PG&E would periodically use herbicides to manage vegetation growth around project structures and switching stations. The reconductoring work would extend the life of the transmission line and therefore extend the timeframe of vegetation management activities. The application of herbicides for vegetation management would potentially pose a significant risk to human health or ecological receptors if applied incorrectly. APM HM-7 (Use licensed herbicide applicator)

would ensure appropriate application of herbicides by qualified personnel, thus reducing this impact to a less than significant level.

Through implementation of APMs, impacts related to the transport, use, storage, or accidental release of hazardous materials would be less than significant.

Impact HZ-2: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

Switching Stations. There are no schools located within one-quarter mile of the proposed switching station sites.

Reconductoring. Buttonwillow Union Elementary school is located within one-quarter mile of the existing transmission line and could be impacted by hazardous materials onsite; however, only minor amounts of hazardous materials would be used on site, and only minor amounts of hazardous waste would be generated onsite. As discussed above under Impact HZ-1, APM HM-1/WQ-1 would ensure that an environmental training and monitoring program is developed and implemented for all personnel, APM HM-2 would establish a hazardous substance control and emergency response plan, and APM HM-3 would establish a site-specific health and safety plan. Implementation of these APMs would ensure that the risk of spills and releases of hazardous materials is minimal, and that accidental spills are properly cleaned up. In addition, APM HM-7 would ensure appropriate application of herbicides by qualified personnel, thus reducing potential impacts of the use of hazardous materials in the vicinity of a school to a less than significant level.

Impact HZ-3: Create a hazard to people or the environment as a result of being located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5

The Cortese List includes hazardous waste facilities, contaminated drinking water wells, sites listed as having underground storage tank leaks that have discharged into surface water or groundwater, and other sites that have had a known migration of hazardous materials or waste.

Switching Stations. There are no know locations on or near the switching station sites that are listed as hazardous materials sites.

Reconductoring. A database search along the reconductoring ROW revealed one site on the Cortese List (EDR, 2009a). A documented release of gasoline into groundwater occurred at the Buttonwillow Fire Station and one leaking UST adjacent to the fire station are located approximately 0.5 miles north of the transmission line at MP 34. Depth to groundwater at this site is approximately 27 feet below ground surface (Geotracker, 2010). Additionally, the Clean Harbors Buttonwillow hazardous waste treatment is a known site with releases of hazardous materials located north of the transmission line and presents a major threat to water quality. Depth to groundwater at the site has fluctuated between 80 and 280 feet below ground surface (Geotracker, 2010). Because depth to groundwater at both sites is below the anticipated level of grading, unanticipated contamination along the portions of the reconductoring ROW is unlikely.

Impact HZ-4: Create an aeronautical or motor vehicle hazard or result in a significant aerial obstruction within two miles of an airport or airstrip

Switching Stations. The switching station sites do not occur within two miles of an airport or airstrip.

Reconductoring. The existing transmission line does not occur within two miles of an airport or airstrip. The Elk Hills Airport is located approximately 3 miles south, and the Belridge Airstrip is located

approximately 4 miles north of the existing transmission line. The reconductoring work would include raising the heights of every other tower by approximately 20 feet, which would be a minor change relative to the existing structures and would not create a hazard for pilots taking off or landing at these airports.

Impact HZ-5: Expose people or structures to a risk of loss, injury, or death involving wildland fires

Project construction would involve the use of heavy equipment, welding, and other activities, including personnel smoking, which could cause a wildfire ignition at a work site, potentially resulting in a hazard to personnel or scattered structures in the vicinity of the project.

Switching Stations. Unlike operation of the existing transmission line, the construction of the two switching stations would introduce new electrical components into the area. Wildfire could result from accidental ignitions during construction, operations, or maintenance of the facilities. The switching stations would be designed, inspected, and maintained in accordance with CPUC's General Order 95, which sets forth standards for overhead electric lines, including minimum distances for conductor spacing and ground clearance, standards for calculating maximum sag, vegetation clearance requirements, and maintenance and inspection rules. Solar Switching Station would be in agricultural land and pose a low risk of wildfire during construction. In contrast, the Caliente Switching Station alternatives are in uncultivated grassland. APM HM-8 (Cease work during Red Flag Warnings) would ensure that non-emergency construction and maintenance activities cease during extreme fire weather conditions for the work area. Implementation of this mitigation measure would reduce the severity of this impact to a less than significant level.

APM HM-6 requires PG&E to provide a Fire Prevention and Response Plan to CPUC and local fire officials in advance of reconductoring work, Implement of APM HZ-6 for switching stations sites ensures that this impact is less than significant.

Reconductoring. The reconductoring project could potentially cause a wildfire hazard by igniting a wildfire during construction, operations, or maintenance, or by interfering with firefighting operations.

In addition, electrical fires from equipment during the operations phase of the reconductored line could ignite nearby vegetation. Fires can be started by transmission lines in the following ways:

- Vegetation contact with conductors
- Floating or wind-blown debris contact with conductors or insulators
- Conductor-to-conductor contact
- Dust or dirt on insulators
- Bullet, airplane, and helicopter contact with conductors or support structures
- Other third-party contact, such as Mylar balloons, kites, and wildlife
- System component failures
- Accidents during maintenance activities.

The risk of wildfire ignition during operation exists with the presence of the existing transmission line, and would not be increased relative to baseline conditions. The reconductoring would extend the operational life of the transmission line, which would extend the duration of the risk of a transmission line-related electrical fire that could result in a wildfire. The transmission line would be designed, inspected, and maintained in accordance with CPUC's General Order 95, which sets forth standards for overhead electric lines, including minimum distances for conductor spacing and ground clearance,

standards for calculating maximum sag, vegetation clearance requirements, and maintenance and inspection rules.

In addition, APM HM-6 would ensure that a fire prevention and response plan is submitted to the CPUC and local fire protection authorities for notification at least 30 days prior to construction. The plan would cover fire protection and prevention methods to be implemented during construction, including procedures to prevent electrical fires, fires from hazardous materials use, and fires from personnel smoking. Personnel would be required to park away from dry vegetation, to equip vehicles with fire extinguishers, to refrain from smoking, and to carry water, shovels, and fire extinguishers in times of high fire hazard. Fire risk from construction, operations, and maintenance activities would be low with conformance with General Order 95 and APM HM-6 and the moderate fire hazard severity of the landscape through which the line passes. Nonetheless, during extreme fire weather—high winds, high temperature, and low relative humidity— any ignition in a vegetation-dominated landscape could grow out of control and pose a risk to life and property in the surrounding area, resulting in a significant impact. APM HM-8 would ensure that non-emergency construction and maintenance activities cease during extreme fire weather conditions for the work area. Implementation of this mitigation measure would reduce the severity of this impact to a less than significant level.

Construction vehicles could interfere with emergency response vehicles in the project area if heavy truck traffic were to occur on arterial highways. Construction traffic for the proposed project would be minor and would be spread out over 34 miles during the 20 months of construction. Implementation of traffic safety practices in accordance with traffic laws would ensure that construction vehicles would not interfere with emergency response in the project area.

Impact HZ-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan

Construction vehicles could interfere with emergency response vehicles in the project area if heavy truck traffic were to occur on arterial highways. Construction traffic would be minor and would be spread out over 34 miles during the 20 months of construction. Implementation of traffic safety practices in accordance with traffic laws would ensure that construction vehicles would not interfere with emergency response in the project area. This would result in a less than significant impact.

Impact HZ-7: Create a hazard to the public or the environment by mobilizing existing contamination or generating disease vectors

The potential exists for contamination to occur in the transmission ROW, at the switching station sites, and along existing access roads as a result of unknown or unreported spills or leaks, or from illegal dumping. Contamination from petroleum products (gasoline, oil, and diesel) is one of the most common types of unknown contamination and is generally detectable by visual and olfactory observation. Waste from illegal dumping in rural areas can sometimes include hazardous waste, such as waste from clandestine drug manufacturing. In addition, the potential exists for agricultural chemical residue to be encountered in agricultural areas during project grading or excavation.

Switching Stations and Reconductoring. Limited grading is expected to be required to reestablish existing access roads and to construct the switching station sites. Excavation would be limited to installing new tower foundations and switching station components, as necessary. APM HM-5 would ensure that soils suspected of being contaminated are removed, tested, and if contaminated above hazardous levels, contained and disposed of at a licensed waste facility.

Reconductoring and switching station construction work would occur in an area favorable to the growth of the Valley Fever vector, the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. Construction activities would disturb the soil and cause the fungal spores to become airborne, potentially putting construction personnel and wildlife at risk of contracting Valley Fever. However, most Valley Fever cases are very mild, and more than half of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention. In addition, APM AIR-5 for minimizing fugitive dust would also minimize the likelihood of Valley Fever.

Implementation of APMs HM-5 and AIR-5 would result in a less than significant impact from mobilizing existing contamination and generating disease vectors.

3.10 Land Use and Recreation

Environmental Setting

The northern boundary of the Carrizo Plain National Monument (CPNM) is located approximately seven miles south of the existing transmission line and is considered a recreational and wildlife resource of local, regional, and Statewide importance (BLM, 2007). In addition, Buttonwillow Park is located approximately 0.5 miles north of the existing transmission line. No other developed recreational facilities are located in the vicinity of the transmission line.

The Solar Switching Station would be located north of the existing PG&E transmission line corridor within the Topaz Project boundary, approximately one mile north of Highway 58. The site has been previously disturbed by dry-land farming and has a zoning designation of Agriculture (AG).

There are two structures (potentially occupied residences) within 1,000 feet of the existing transmission line at MP 0.6 and MP 1.2 in the Carrizo Plain, and there are an additional 21 structures (potentially occupied residences) within 2,000 feet of the existing transmission line between MP 25 and MP 32.5 in the San Joaquin Valley. The nearest potential residence is located within 100 feet of the ROW at MP 0.6.

The Solar Switching Station would be located north of the existing PG&E transmission line corridor within the Topaz Project boundary, approximately one mile north of Highway 58. The nearest residence to the switching station (APN 072-301-003) would be over 3,500 feet southwest of the proposed site. In addition, two occupied residences would be between 4,500 and 5,250 feet northeast of the Solar Switching Station (APNs 072-051-026 and 072-061-030, respectively) and in close proximity to the reconductoring activities in the existing ROW as well.

The Caliente Switching Station site alternatives would be located just south of the transmission corridor at MP 7.3 and approximately 2 miles north of Highway 58. The sites are currently on undeveloped grazing land with a zoning designation of Agriculture (AG). The nearest residence would be more than 2 miles away (APN 072-111-033).

Environmental Impacts

Impact LU-1: Construction would temporarily disrupt, displace or divide land uses

Switching Stations. The switching stations would be constructed adjacent to the existing transmission corridor. Construction of the Solar Switching Station would take place in the middle of the Topaz project and would not disrupt, displace, or divide land uses. The Caliente Switching Station would be constructed approximately 2 miles from Highway 58 and from the CVSR project site. However, as a

single site, it would not temporarily disrupt, displace, or divide land uses. Adjacent land required during construction may be affected. APM LU-1 (Agriculture impacts avoidance) is applicable to the reconductoring work, ensuring that PG&E would work with farmers and ranchers to minimize disruption. The construction of the Caliente Switching Station may temporarily adversely affect the use of adjacent land for grazing and is also subject to APM LU-1. Implementation of this measure would ensure that this impact to land use would be less than significant.

Reconductoring. Reconductoring work would occur in an existing ROW using existing access roads. Several pull and tension sites would be located in active cropland and would temporarily disturb crop production at these locations. Because the terms of the landowner ROW agreement include provisions for PG&E to perform transmission upgrade work, temporary construction activities would be considered an existing land use in a multi-use ROW. In addition, APM LU-1 ensures that PG&E would work with farmers and ranchers to conduct work between harvest and planting periods, whenever possible, or provide compensation to landowners for crop losses. Therefore, temporary disruption of crop production for pull and tension sites would be considered a less than significant land use impact.

Impact LU-2: Operation and maintenance of the project would permanently disrupt, displace or divide land uses

Switching Stations. The Solar Switching Station would be accessed by existing paved and dirt roads off of Bitterwater Road and Highway 58. In addition, the Topaz EIR includes analysis of the proposed gravel access roads within the Topaz project site, which would also be used to access the Solar Switching Station. The Caliente Switching Station site alternatives would be accessed via existing access roads or by new unpaved access roads extending from existing access roads. The switching station would be constructed adjacent to the existing transmission corridor. Construction of the roads would result in a permanent disruption of the land, but would not displace or divide existing land uses. Therefore, the impact would be considered less than significant.

Reconductoring. The proposed reconductoring work would occur in an existing ROW using existing access roads, and would not permanently disrupt, displace, or divide land uses. Therefore, the impact would be considered less than significant.

Impact LU-3: Construction, operation and maintenance would conflict with a federal, State or local land use plan, goal, standard or policy adopted for the purpose of avoiding or mitigating an environmental effect

Switching Stations. None of the switching stations sites has applicable to it a federal, State or local land use plan, goal, standard, or policy adopted for the purpose of avoiding or mitigating an environmental effect.

Reconductoring. The existing transmission line passes through the BLM-managed Lokern ACEC from MP 22.5 to MP 30. The Lokern ACEC contains 3,110 acres of federal land and has been identified by the USFWS and CDFG as an area important for the conservation and recovery of endangered species (BLM, 1996). BLM's management objective of the Lokern ACEC is to manage the ACEC in cooperation with local landowners and other State, federal, and local governments as a natural ecosystem for the benefit of threatened and endangered species and their habitats, while recognizing the rights and needs of authorized users of public lands (BLM, 1996). PG&E is an authorized user of the ROW through the ACEC, and all reconductoring work would comply with the PG&E HCP. Reconductoring work would therefore not jeopardize the management objectives of the Lokern ACEC and would result in a less-than-significant impact on land use plans.

Impact R-1: Construction activities would temporarily reduce, disrupt or preclude access and visitation to established recreational areas

The Carrizo Plains National Monument (CPNM) is located approximately seven miles south of the existing transmission corridor and Buttonwillow Park is located approximately 0.5 miles north of the existing transmission line. Highway 58 is considered a recreational bicycle route within San Luis Obispo County. Class III bike lanes are present from U.S. 101 to Pozo Road. Class III bike lanes provide a right-of-way designated by signs or permanent markings, are shared with pedestrians or motorists, and may or may not provide striped shoulders or a wide curb lane (Caltrans, 2003; SLOCOG, 2005). Access to these recreational facilities would not be affected by construction activities on the line or the switching stations. No other recreational facilities exist in proximity to the transmission line or switching stations. There would be no impact on access to recreational activities as a result of the reconductoring project.

Impact R-2: Operation and maintenance would permanently reduce, disrupt or preclude access and visitation to established recreational areas

As discussed above, the three recreational facilities in the vicinity of the transmission line and switching stations. These facilities would not be impacted by project-related activities since maintenance activities would be carried out by teams of two to four personnel and would be infrequent. There would be no impact on access to recreational activities as a result of operation and maintenance of the reconductored transmission line or the new switching stations.

Impact R-3: Construction or operation and maintenance activities would increase the use of established recreational facilities such that substantial physical deterioration would occur or be accelerated

Any substantial increase in personnel use of campgrounds at the CPNM, particularly during the winter and spring, could exceed the CPNM's maintenance and patrolling resources, which could result in a substantial physical deterioration of the CPNM's recreational facilities and amenities.

Switching Stations. The Caliente Switching Station would be constructed during Phase 1 of the CVSR project allowing the proposed CVSR to begin operation as soon as the first tracker systems are deployed and can generate solar power. The Solar Switching Station site would be cleared and graded during the start of the construction period for the Topaz project, and construction of the switching station would begin after site preparation activities were completed. The switching stations would be completed during the first year of installation, allowing the proposed solar projects to begin operation as soon as the solar modules are deployed and can generate solar power.

Reconductoring. Reconductoring work, including tower replacement and modification construction would be completed primarily by PG&E employees. Some work is likely to be contracted, including helicopter and crane operations, foundation construction, specialty transport, grading, and earth work. The construction activities related to this project are expected to take approximately 20 months to complete.

The maximum estimated number of personnel required for construction labor is approximately 50 individuals. These individuals would either reside in the surrounding area or be housed temporarily in the vicinity of the transmission line. It is anticipated that the majority of temporary housing for personnel would be located in Bakersfield, Kern County. Therefore, temporary workers would not be expected to increase the use of camp sites in the Carrizo Plain National Monument, resulting in a less-than-significant impact.

Impact R-4: Construction or operation and maintenance activities would change the character of a recreational area or program, diminishing its recreational value

As discussed above under aesthetic resources, all changes in the visual environment related to reconductoring would occur to an existing transmission line and would be minor. The Caliente and Solar Switching Stations would be located on the north side of Highway 58 and would not be visible from the CPNM. These visual changes would not diminish the character of the CPNM, which is located seven miles away, or of Buttonwillow Park, which occurs in a landscape with a predominantly industrial character. There would therefore be no impact on the character of a recreational facility as a result of reconductoring work.

Impact R-5: Construction or operation and maintenance would result in the degradation or loss of designated wilderness lands or a wilderness study area

The transmission line and switching stations do not pass through or in the vicinity of any wilderness land or wilderness study area. The nearest wilderness study area is over 17 miles from the transmission line, and the transmission line would not be visible from the wilderness study area. There would therefore be no impacts on wilderness or wilderness study areas as a result of reconductoring work.

3.11 Noise

Environmental Setting

Transmission lines can generate a small amount of sound energy during corona activity. The audible noise tends to be faint in fair weather conditions on higher voltage lines. During wet weather conditions, water drops collect on the conductors and increase corona activity so that a crackling or humming sound may be heard near the line. This noise is caused by small electrical discharges from the water drops.

There are two structures that are potentially occupied residences within 1,000 feet of the existing transmission line at MP 0.6 and MP 1.2 in the Carrizo Plain. There are an additional 21 structures that are potentially occupied residences within 2,000 feet of the existing transmission line between MP 25 and MP 32.5 in the San Joaquin Valley. The nearest potential residence at MP 0.6 is located within 100 feet of the ROW.

The Solar Switching Station would be located north of the existing PG&E transmission line corridor within the Topaz Project boundary, approximately 1 mile north of Highway 58. The nearest residence to the switching station (APN 072-301-003) would be over 3,500 feet southwest of the proposed site. In addition, two occupied residences would be between 4,500 and 5,250 feet northeast of the Solar Switching Station (APNs 072-051-026 and 072-061-030, respectively) and in close proximity to the reconductoring activities in the existing ROW as well. The Caliente Switching Station sites alternatives would be located approximately 2 miles north of Highway 58 and the nearest residence to the switching station would be more than 2 miles away (APN 072-111-033).

Environmental Impacts

Impact NS-1: Construction noise would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances

Short-term construction noise would occur from the use of equipment for reestablishment of roads, tower replacement, tower raises, conductor installation, switching station construction, and site

restoration. The duration of construction would last for 20 months. The reconductoring work would be distributed over a 35-mile distance, minimizing the duration of construction noise-related impacts to each sensitive receptor in the vicinity of the transmission line. The switching station sites are 1 to 2 miles from the nearest receptors. The Caliente Switching Station would be cleared, graded and constructed during Phase 1 of CVSR project construction. The switching station would be completed during the first year of installation, allowing the proposed CVSR to begin operation as soon as the first tracker systems are deployed and can generate solar power. The Solar Switching Station site would be cleared and graded during the start of the construction period for the Topaz project, and construction of the switching station would begin after site preparation activities were completed. The switching stations would be completed during the first year of installation, allowing the proposed solar project to begin operation as soon as solar modules are deployed and can generate solar power.

Several APMs would reduce construction noise-related impacts. APM NO-1 would require compressors and other small stationary equipment to be shielded with portable barriers in proximity to residential areas. APM NO-2 would encourage the use of equipment with noise-control features. APM NO-3 would direct equipment exhaust stacks away from buildings. APM NO-4 would route traffic away from residential areas. APM NO-5 would ensure that residents are notified of the timeframe of construction activities. Implementation of these APMs would reduce construction noise-related impacts to less than significant levels.

Impact NS-2: Construction activity would temporarily cause groundborne vibration or groundborne noise

Construction activities would result in some 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 the construction areas.

Switching Stations. There are no potential receptors near the switching station sites. Therefore, this would be a less than significant impact at the switching station sites.

Reconductoring. Reconductoring work is not anticipated to require blasting or impact-pile driving that could cause vibration impacts at close distances; in the unlikely event that blasting or impact-pile driving occurs, it would be limited to the mountainous Temblor Range area, which supports no residences in the vicinity of the transmission line. As such, no sources of groundborne vibration or groundborne noise would be expected to affect receptors outside of the work areas, and impacts related to groundborne vibration and noise would be less than significant.

Impact NS-3: Permanent noise levels would increase due to operation of project-related stationary noise sources

Switching Stations. Two switching stations would be built as part of the reconductoring project: the Caliente Switching Station at the CVSR project site and the Solar Switching Station at the Topaz project site. No notable noise sources would be associated with the Caliente Switching Station. For comparison to the substation, the noise levels of a large transformer would be approximately 40 dB Leq at 200 feet (SunPower, 2009a). Such noise levels would not only be low but would be generated over a mile away from any residences. Therefore, a less than significant increase in the permanent noise levels of the project area would result from operating the Caliente Switching Station.

For the Solar Switching Station, noise levels associated with the switching station would be associated with the breakers, which are estimated to produce maximum continuous noise levels of 79.6 dBA Leq at

3 feet or less than 45 dB Leq at 200 feet (PG&E, 2010). The maximum impulse noise level from the breakers would be approximately 105.1 dB Lmax at 50 feet (PG&E, 2010) and would generally occur when a breaker gets thrown, which occurs infrequently. In the instance of a breaker being thrown, an instantaneous maximum noise level of 68.4 dB Lmax would occur at a distance of 3,400 feet. The County's maximum impulsive noise limits for stationary noise sources are 65 dB during daytime and 60 dB at nighttime. However, the noise level at the nearest residence, which is greater than 3,500 feet away, would be lower. In addition, breaker operation is infrequent, occurring during emergency operations, testing, or maintenance events. Because of the distance to the nearest residence, the infrequency of breaker operation, and the nature of the noise as a sing impulse even rather than a repeated or extended noise event, the impact from breaker operation would be less than significant.

Reconductoring. Using computer modeling software developed by the Bonneville Power Administration (BPA)(BPA, 1977), audible noise values can be calculated for transmission lines experiencing corona activity. This modeling indicates that, during wet weather conditions, audible noise levels of approximately 46.6 to 49.6 A-weighted decibels (dBA) would occur within the ROW for a similar transmission line loop operating at 230 kV. These calculated levels are below the U.S. Environmental Protection Agency (EPA) outdoor activity noise guideline of 55 dBA and are similar to the range of audible noise levels measured in general rain conditions (41 to 63 dBA) (EPA, 1974; Institute of Electrical and Electronics Engineers, 1974; Miller, 1978). Under fair weather conditions, the calculated audible noise levels of approximately 21.6 to 24.6 dBA within the ROW for a similar transmission line loop operating at 230 kV are below the sound level for a library (35 dBA). Audible noise decreases with increasing distance away from the ROW. This level of corona noise exists under current baseline conditions, and it is not anticipated that additional noise impacts related to the corona effect would occur for the reconductoring project. Any increase in corona noise would be very small and would be less than significant.

Impact NS-4: Routine inspection and maintenance activities would increase ambient noise levels

Switching Stations. The two switching stations would require maintenance, extending the duration of inspection and maintenance activities over time. Nonetheless, inspection and maintenance activities would be minimal and would not result in an increase in the ambient noise level in the vicinity of the switching stations. Noise impacts related to inspection and maintenance activities would therefore be less than significant.

Reconductoring. Routine inspection and maintenance of the transmission line occur under existing baseline conditions, and these activities would not increase with transmission line reconductoring. The reconductoring work would extend the useful lifetime of the transmission line, extending the duration of inspection and maintenance activities over time. Nonetheless, inspection and maintenance activities would be minimal and would not result in an increase in the ambient noise level in the vicinity of the transmission line. Noise impacts related to inspection and maintenance activities would therefore be less than significant.

3.12 Population and Housing

Environmental Setting

Reconductoring work and construction of the switching stations would be carried out primarily by PG&E employees, and the contracted workforce would be minimal, with a maximum estimated number of personnel required for construction labor at 50 individuals. These individuals would either reside in the

surrounding area, or be housed temporarily in the vicinity of the transmission line. It is anticipated that the majority of temporary housing for personnel would be located in Bakersfield, western Kern County. Bakersfield has a 7 percent housing vacancy rate with 8,173 vacant homes (US Census Bureau, 2008).

Environmental Impacts

Impact PH-1: Project labor force requirements would create a substantial demand for labor or a change in local employment

Switching Stations and Reconductoring. Reconductoring work and construction of the switching stations would be carried out primarily by PG&E employees, and the contracted workforce would be minimal. The total peak construction workforce would be approximately 50 persons. Reconductoring would therefore create a minimal demand for labor and would have a less than significant impact on local employment.

Impact PH-2: Construction workers would require housing that exceeds the supply of local housing or temporary housing facilities

Switching Stations and Reconductoring. As described above reconductoring work and construction of the switching stations would be carried out primarily by PG&E employees, and the contracted workforce would be minimal. The maximum estimated number of personnel required for construction labor is approximately 50 individuals. These individuals would either reside in the surrounding area, or be housed temporarily in the vicinity of the transmission line. It is anticipated that the majority of temporary housing for personnel would be located in Bakersfield, western Kern County. Bakersfield has 8,173 vacant homes, which is vastly greater than the small number of individuals that may require temporary housing as a result of the reconductoring work. Reconductoring would therefore have a less-than-significant impact on local housing.

Impact PH-3: Presence of the project would decrease property values

Switching Stations and Reconductoring. 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 line. Only a single property is located within 1,000 feet of the ROW or switching stations. From the vantage point of this property, aesthetic impacts would be less than significant due to the low degree (20 feet) of visual change in tower height (see Section 3.2). Impacts to property values would not occur .

3.13 Public Services, Utilities, and Service Systems

Environmental Setting

Physical impacts to public services, utilities, and service systems are usually associated with population in-migration and growth in an area, which increase the demand for a particular service, leading to the need for expanded or new facilities. Service providers serving the area of the transmission line and switching stations are located within San Luis Obispo and Kern Counties. Therefore, the study area for the public services analysis is comprised of these two counties.

Public Services

Police Protection

The existing transmission line to be reconductored is located within the San Luis Obispo County Sheriff's and the Kern County Sheriff's jurisdiction. The Sheriff's departments provide service to the unincorporated areas of San Luis Obispo County and Kern County, respectively. The switching stations would both be located in San Luis Obispo County. The San Luis Obispo Sheriff's Department is located at 1585 Kansas Avenue, San Luis Obispo, CA. There are approximately 159 sworn personnel within the Department, which provides service to the unincorporated areas of San Luis Obispo County (CESF, 2007). The Kern County Sheriff's Department is located at 1350 Norris Road, Bakersfield, CA. There are approximately 1,330 sworn and civilian employees within the Department, which provides service to unincorporated areas of Kern County (KCSO, 2010).

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. The CHP divisions covering highways within the project area are the Coastal Division at 675 California Boulevard, San Luis Obispo, CA and the Central Division at 5179 North Gates Avenue, Fresno, CA. The CHP Coastal Division has 530 uniformed officers and the Central Division has 667 uniformed officers (CESF, 2007; CHP, 2010).

Fire Protection

The California Department of Forestry and Fire Protection (Cal Fire) functions as the San Luis Obispo County Fire Department (SLCFD) under a contract with the County of San Luis Obispo. The SLFCD operates with approximately 180 full-time State employees, supplemented by up to 100 State seasonal fire fighters, 300 County paid-call and reserve fire fighters, and 120 State inmate fire fighters. Additionally, SLCFD contracts services to towns of Los Osos and Avila Beach. Cal Fire also provides service to the City of Pismo Beach, and during the non-fire season, to the town of Cayucos (Cal Fire, 2010).

The Kern County Fire Department (KCFD) provides fire protection services for unincorporated areas of Kern County and some cities. The KCFD operates with approximately 625 permanent employees, supplemented by up to 79 civilian personnel, and 100 extra help. Over 546 uniformed firefighters are stations in 46 fire stations through Kern County, including in Buttonwillow (KCFD, 2010). The nearest fire stations to the reconductoring length of the transmission line include the Buttonwillow fire station (Station 25), the McKittrick fire station (Station 24), and the Wasco Station (Station 31).

Schools

There are four unified school districts within San Luis Obispo County: Paso Robles Unified School District, Shandon Unified School District, Atascadero Unified School District, and New Cuyama School District (CESF, 2007). There are three unified elementary school districts and two high school districts within the regional setting in Kern County: Buttonwillow Union School District, Belridge Elementary School District, McKittrick School District, Kern Union High, and Taft Union High (Kern County, 2010a).

Hospitals

There are three hospitals that are located within 60 miles of the Carrizo Plain in San Luis Obispo. Twin Cities Hospital, with 84 beds, is approximately 55 miles from the project site. Twin Cities Hospital has a 24-hour emergency department and is the priority hospital for ambulance and air transport. This hospital is located at 1100 Las Tablas Road in Templeton.

French Hospital Medical Center, with 112 beds, is approximately 50 miles from the projects site. French Hospital Medical Center has an ICU department, 24-hour emergency department, and a helipad for air transport. French Hospital Medical Center is located at 1911 Johnson Avenue in San Luis Obispo.

Sierra Vista Regional Medical Center is approximately 50 miles from the Carrizo Plain and has 165 beds. Sierra Vista Regional Medical Center has a 24-hour emergency room as well as an ICU department. This hospital is located at 1010 Murray Avenue in San Luis Obispo (CESF, 2007).

A number of hospitals are located in Bakersfield, Kern County approximately 25 miles east of Buttonwillow. Bakersfield Memorial Hospital has a 24-hour emergency department. It is located at 420 34th Street.

Mercy Hospital has 272 beds and is approximately 25 miles east of the western end of the reconductoring project. Mercy Hospital has full-service acute care and a 24-hour emergency department. It is located at 2251 Truxtun Avenue.

San Joaquin Community Hospital, also in Bakersfield, has 255 beds and an emergency department. It is located at 2615 Chester Avenue.

Utilities and Service Systems

A variety of local purveyors in San Luis Obispo and Kern Counties provide and maintain utility and service system facilities associated with electricity, water, stormwater and wastewater, solid waste, and natural gas. Municipally operated lines provide sewer services in the area. Similarly, stormwater flows are conveyed by the flood control facilities within the City of Corona. Underground Service Alert (also known as USA or "Dig Alert"), a non-profit organization supported by utility firms, provides specific information on the location of underground utilities to contractors upon request, prior to construction. Table Ap.4A-15 summarizes the utilities providers serving the Project area. Table Ap.4A-16 describes the solid waste capacity of landfills serving San Luis Obispo and Kern Counties.

Table Ap.4A-15. San Luis Obispo and Kern Counties Utility Providers

Natural Gas	PG&E, Southern California Gas Company*
Electricity	PG&E, Southern California Edison
Water	County of San Luis Obispo Public Works Department (San Luis Obispo County); Buena Vista Water Storage District (Kern County); Belridge Water Storage District (Kern County)
Wastewater	County of San Luis Obispo Public Works Department (San Luis Obispo County); Buttonwillow County Water District (Kern County); North of the River Sanitary (Kern County)
Telecommunications	Pacific Bell
Solid Waste	San Luis Obispo County: Mid-State Solid Waste & Recycling, Mission Country Disposal, Paso Robles Country Waste, San Luis Garbage, San Miguel Garbage, South County Sanitary Services Kern County: American Refuse, Westside Waste Management

Source: County, 2010b; County, 2010c; WAKC, 2009; Kern County, 2010b.

*El Paso Natural Gas and Kern River Gas Transmission Line own natural gas pipelines in Kern County; however, these lines do not serve and would not be expected to serve the project.

Table Ap.4A-16. 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
Shafter-Wasco Landfill	11,635,500	7,901,339	68%	888
Taft Landfill	8,787,547	6,679,433	76%	419

Source: CalRecycle, 2010a; CalRecycle, 2010b; CalRecycle, 2010c; CalRecycle, 2010d; CalRecycle, 2010e.

Environmental Impacts

Impact PS-1: Project construction and operation would place demands on public services

Switching Stations and Reconductoring. Project construction would occur over the course of 20 months, requiring a maximum workforce of 50 workers per month. Reconductoring work and switching station construction would be carried out primarily by PG&E employees, and the contracted workforce would be minimal. At this time, the number of PG&E employees that would come from within San Luis Obispo and Kern Counties is unknown; however, it is reasonable to assume that the majority of the workforce would come from the PG&E employees within San Luis Obispo and Kern Counties. As such, few if any workers would temporarily relocate to accommodations within San Luis Obispo and Kern Counties for the duration of construction activities. A minor increase in the workforce in San Luis Obispo and Kern Counties would have minimal effect on public services and facilities in the overall region.

No additional full-time staff would be required during operations of the reconductored line or switching stations. Maintenance of the reconductored line and switching stations is not expected to change from what is currently required.

Fire Protection

Switching Stations and Reconductoring. The influx of up to 50 workers to the Carrizo Plain would increase the area population and result in new demands on public services for the duration of construction activities. The demands would be spread throughout the 34-mile region of the reconductoring work and would not be focused at one specific site, except for at the two switching station sites for a temporary period. For the majority of the reconductoring work, construction activities are not anticipated to increase the demand for fire protection services in a way that would result in the need for new or altered facilities; however, the limited capabilities of the existing fire protection services in San Luis Obispo County in the immediate vicinity of the Carrizo Plain are inadequate to respond to emergencies along the portion of the transmission line near the CVSR and Topaz solar projects. Currently, the nearest fire station located on Soda Lake Road is staffed only three days per week. Worker commute traffic and construction and operational activities along the portion of the transmission line in San Luis Obispo County would increase the potential for accidents, fire, or other medical emergencies. Additionally, the remote nature of the project site and the type of fire equipment stationed at the Soda Lake Road facility limits the ability of Cal Fire/San Luis Obispo County Fire Department or other emergency medical services to adequately respond to incidents in the area.

While transmission lines can start fires due to conductor failure, the reconductoring of an existing transmission line would not create an additional risk above the existing risk levels. Much of the recon-

ductoring route is in farmland; the remainder of the route is in dry landscape with sparse vegetation. The switching stations would maintain vegetation clearance of 100 feet around the perimeter of the fenceline in accordance with California Public Resources Code 4291. This would reduce any risk of wildfire as a result of ignitions at the switching stations to less than significant.

APM HM-6 requires the Applicant to prepare and submit a Fire Prevention and Response Plan to the CPUC and local fire protection authorities for notification that would include fire protection and prevention methods for all components of the project during construction and would reduce the risk of fire and burden to the San Luis Obispo County Fire Department. In addition, in APM BO-1, PG&E commits to minimization of fire hazards. With the incorporation of these two APMs, the impact would be considered adverse, but less than significant.

Police Protection

Switching Stations and Reconductoring. The San Luis Obispo and Kern Counties Sheriff's Departments provide police protection along the transmission line reconductoring route and surrounding area. The response time for the San Luis Obispo County Sheriff's Department to the portion of the route in San Luis Obispo County is 35 to 40 minutes. The Kern County Sheriff's Department Station is located in Buttonwillow, from less than 1 mile to up to 25 miles from the transmission line. Construction activities are not anticipated to increase the demand for police protection services in the area. The construction and operation of the reconductored line and switching stations would neither result in a need for additional police facilities nor affect response times or other service performance.

Schools

Switching Stations and Reconductoring. Construction activities would require few if any temporary workers to relocate to the study area. Additionally, it is unlikely that the workers would also relocate their children for this period. Therefore, the temporary addition of construction workers to the study area's population is not anticipated to increase school enrollment. No full time employees would be required during the operation of the line. As such, there would be no additional children relocated to the study area.

Impact PS-2: Project construction and operation would place demands on local water, wastewater, and solid waste facilities

Switching Stations and Reconductoring. As described for Impact PS-1, reconductoring and switching station work is unlikely to result in a population increase to the study area. Therefore, increased population as a result of project construction or operation would not substantially increase demands on water, wastewater, or solid waste facilities.

Water would be used for dust suppression, fire control, and other construction purpose during construction of the transmission reconductoring and switching stations. Reclaimed water would be used whenever possible. Portable toilets brought to staging areas for construction crews would be emptied into septic tanks or municipal sewage systems. Water required for consumption by construction crews would be minimal. Only minor amounts of water would be required during operation of the transmission line and switching stations for routine insulator washing maintenance, and this would only occur above baseline conditions to the extent that reconductoring increases the useful lifetime of the transmission line and the switching stations would introduce new components, slightly increasing the duration and extent of washing activities over the long term. Therefore, impacts of reconductoring the transmission line and switching station construction on water and wastewater system would be less than significant.

Solid waste generated during construction would include debris such as old insulator strings, towers requiring replacement (assumed at 10 percent), and concrete, plastics, scrap metal, and similar material. Soils from drilling, trenching, or excavation would be screened and separated for use as backfill at the site of origin to the maximum extent possible. Waste generated during construction would be hauled to nearby landfills or an approved transfer or recycling station. As stated above, once the old conductors and insulators are removed, they would be recycled or disposed of in an appropriate landfill facility. In accordance with San Luis Obispo County's construction debris demolition and recycling program, at least 50 percent of the project waste (by weight) would be recycled.

The Applicant has stated that during construction, solid waste would be removed and recycled or disposed of in appropriate facilities. Consequently, impacts associated with solid waste disposal would be less than significant.

Impact PS-3: Project construction or operation would substantially affect the amount of County property tax revenues and/or fees

Switching Stations and Reconductoring. The transmission reconductoring would occur along an existing ROW, and would require minimal new structures. The Caliente and Solar Switching Stations would be constructed adjacent to the existing ROW. The project would not require the removal of any existing business and would create a minimal impact to existing businesses due to the remote location of the transmission line and switching stations.

Petroleum extraction activities and agricultural operations occur within and adjacent to the ROW. Impacts to petroleum activities are considered less than significant because no construction impacts would result in a loss of petroleum extraction operations and would be short-term at any one location.

Reconductoring work would temporarily restrict crop production or damage crops if activities occurred during the growing season. APM LU-1 would ensure avoidance of harvest and planting periods where and whenever possible and provide compensation to landowners for crop loss and other reasonable costs after completion of construction. Because of the minimal amount of land that would be disturbed, the short duration of the impact, and because this impact would not result in significant revenue impacts, it is considered adverse but less than significant.

Employment of construction personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Contractor personnel would be drawn from local populations in San Luis Obispo and Kern Counties, creating new temporary employment in these counties. Construction personnel would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy.

3.14 Transportation and Circulation

Environmental Setting

The section of the Morro Bay–Midway 230 kV transmission line to be reconductored generally parallels Highway 58 immediately north of the proposed CVSR and proposed Topaz solar project until it reaches the Midway Substation. The Caliente and Solar Switching Stations would both be located north of Highway 58. The reconductoring project begins approximately 32 miles east of U.S. 101 and ends approximately 2.7 miles west of I-5, crossing Highway 33 (West Side Highway), and is located approximately 18 miles south of Highway 46.

Regional roadways that may be accessed by construction include U.S. 101, I-5, and Highways 41, 46, 58, and 33. Shell Creek Road and Bitterwater Road may also be used for access to the reconductoring site. Operational traffic would be minor. Roadways in this region fall under the jurisdiction of the California Department of Transportation (Caltrans) District 5, Caltrans District 6, the County of San Luis Obispo, the County of Kern, and the California Highway Patrol (CHP).

Existing roadway and traffic conditions of the roadways expected to be used by project-related construction traffic are presented below. The discussion of roadways is based on information obtained from the San Luis Obispo County Department of Public Works, the County of San Luis Obispo Transportation Plan, the Kern County General Plan, and Caltrans.

Existing Roadway Network

Highway 101

Highway 101 is a north/south freeway extending in California from Los Angeles to the Oregon border. Highway 101 is west of the reconductoring project and has four lanes in each direction with interchanges at Highways 46 and 58.

Highway 58

State Highway 58 is an east/west state highway that extends from U.S. 101 north of San Luis Obispo to Barstow. In the project region, Highway 58 is a moderately curvy two lane highway with lane widths that vary from 10 to 12 feet. The roadway has portions of unpaved shoulders that vary from good condition to being overgrown with vegetation. The portion of roadway between Soda Lake Road and Seven Mile Road has many dips. From San Luis Obispo to the Kern County line to the east, Highway 58 has shoulders of zero to two feet on rolling terrain with moderate to steep grades and sharp turns (Caltrans, 2003). From the Kern County line east to I-5, Highway 58 is a two-lane conventional highway with lane widths of 9 feet to 12 feet and shoulder widths of zero feet over mountainous terrain, except for the section in Buttonwillow where it is a 4-lane conventional highway (Caltrans, 2004).

Highway 58 is designated as a State truck route as well as a California Legal Advisory Route with an advisory for kingpin-to-rear axle (KPRA)[4] length to be less than 30 feet. This advisory means that travel on this route by trucks with a KPRA length of 30 feet or more is not advised. This advisory applies to the portion of Highway 58 located between Highway 229 (west of the reconductoring) and Highway 33. Additionally, motor homes and motor coaches (buses) over 40 feet in length are prohibited on Highway 58 between Highway 229 and Highway 33 (Caltrans, 2005).

Highway 46

Highway 46 is an east/west state highway that extends from U.S. 1 in Cambria to Highway 99 north of Bakersfield and intersects I-5. In the project area, Highway 46 is a two lane highway with a posted speed limit of 55 mph. The lane width varies from 10 to 12 feet, with paved and unpaved shoulders. Pavement condition is generally good. Passing lanes are present along portions of roadway. Turn-outs occur approximately every one to two miles.

[4] KPRA (kingpin-to-rear-axle) length is the distance between the rear axle of the trailer and the point at which the trailer connects to the back of the semi tractor.

Highway 41

Highway 41 is an east/west state highway that extends from Highway 1 in Morro Bay to State Route 140 in Mariposa County. In the project region, Highway 41 junctions with Highway 46 near San Juan Road. Highway 41 is a two lane highway with a posted speed limit of 55 mph. The lane width varies from 10 to 12 feet, with paved shoulders. Pavement condition is generally good. No passing lanes are present along this portion of roadway.

Highway 33

Highway 33 (West Side Highway) is a north/south state highway that extends from Highway 101 near the City of Ventura to State Route 5 southeast of Tracy in San Joaquin County. In the project region, West Side Highway junctions with Highway 58. West Side Highway is a two lane highway with a posted speed limit of 55 mph. The lane width varies from 11 to 12 feet and shoulders are very narrow. Pavement condition is generally good. No passing lanes are present along this portion of roadway.

Lokern Road

Lokern Road is a Kern County Road that extends from west of Lost Hills to Highway 58. Pavement condition is fair to poor.

Bitterwater Road

Bitterwater Road is a San Luis Obispo County Road that extends south from Highway 46 to Highway 58 west of the project site. The total roadway width varies from 20 to 24 feet and has portions of unpaved shoulders in fair condition. The southern portion of the roadway has a yellow center line stripe which separates travel lanes. No posted speed limit is present along the roadway, except at curves. Pavement condition is fair to poor. Seven cattle guards are present across the roadway.

Shell Creek Road

Shell Creek Road is a San Luis Obispo County Road that extends south from San Juan Road to Highway 58 west of the project site. The roadway varies from 18 to 20 feet in width, with portions of unpaved shoulders in poor condition, and has some gentle curves. The roadway is occasionally closed due to flooding. Pavement condition is generally poor. Two cattle guards are present across the southern portion of the roadway.

San Juan Road/Sweetwater Road

San Juan Road/Sweetwater Road is a San Luis Obispo County Road that extends from Highway 46 in Shandon to Highway 58 west of the project site. The roadway has some gentle curves and varies in width from 20 to 24 feet, with portions of an unpaved shoulder in poor condition. Approximately 120 feet of the northern portion of the roadway is unpaved. The roadway is occasionally closed due to flooding. Pavement condition is generally poor.

Table Ap.4A-17. Existing Roadway Segment Traffic Volumes and Level of Service (LOS)

Roadway Segment	Traffic Volume (both directions) Daily	AM	PM	Percent of Truck Traffic (daily)	LOS
Highway 58: West of Shell Creek Road	825	67	72	21.3	B
Highway 58: Shell Creek Road to Project Entry Road	780	62	68	21.3	A
Highway 58: Project Entry Road to Hwy 33	350	28	30	21.3	A
Highway 33: North of Highway 58	1,800	NA	NA	26	C
Highway 33: South of Highway 58	2,900	NA	NA	33	C
SR 46: West of Hwy 41 (West Junction)	12,000	931	1,129	17	D
SR 46: East of Hwy 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

Source: Fehr & Peers, 2010; Caltrans, 2007.

Existing traffic volumes on roadway segments in the project site vicinity are shown in Table Ap.4A-17.

Transit and Rail Service

A Southern Pacific Railroad line passes through the ROW at MP 34.9. Highway 58 and Highway 41 are used by school buses servicing the Atascadero Unified School District (USD). Currently for the 2009-2010 school year, Atascadero USD bus Routes 4, 5, and 7 travel along portions of either Highway 58 or Highway 41, although, the schedule and routes are subject to change each year (AUSD, 2010). Highway 33 is used by school buses servicing the Taft Union High School District in the vicinity of Taft, south of the reconductoring region (TUHSD, 2010).

Route 4. This bus travels along westbound Highway 58 for approximately 40 miles each weekday morning and makes several stops on Highway 58 between Soda Lake Road (4 miles west of the project site) at 6:19 AM and Shell Creek Road at 6:55 AM, arriving at Atascadero Junior High School at 7:35 AM. The bus travels the reverse route on eastbound Highway 58 in the afternoon, departing Atascadero Junior High School at 3:00 PM and arriving Soda Lake Road at 4:40 PM

Route 5. This bus travels along eastbound Highway 58 for approximately 7 miles each weekday morning from Huer Huero Road at 6:10 AM to La Panza Road at 6:20 AM. The bus travels the reverse route in the afternoon from approximately 3:48 PM to 4:00 PM

Route 7. This bus travels along westbound Highway 58 for approximately 3.5 miles each weekday morning from Parkhill Road at 7:09 AM to Santa Margarita Elementary School at 7:15 AM. In the afternoon, the bus travels approximately 1 mile on westbound Highway 58 from Parkhill Road to its last stop at 4:57 PM

Bicycle and Recreation Facilities

Highway 58 is considered a recreational bicycle route within San Luis Obispo County. Class III bike lanes are present from Highway 101 to Pozo Road. Class III bike lanes provide a right-of-way designated by

signs or permanent markings, are shared with pedestrians or motorists, and may or may not provide striped shoulders or a wide curb lane (Caltrans, 2003; SLOCOG, 2005).

There are some Class III lanes where shoulders exist along Highway 58 between Pozo Road and the proposed project site, but shoulders are nonexistent in many areas. Highway 58 is popular with recreational bicycle riders due to the rural setting and relatively low traffic volumes (Caltrans, 2003).

Highway 33 from its District 6 beginning at the San Luis Obispo County Line to its District 6 terminus at the Merced County is opened to bicycle travel (Caltrans, 2007).

Air Transportation

No airports are located within a 2-mile range of the proposed reconductoring. The nearest airports are the California Valley Airport located in California Valley along Soda Lake Road, approximately 4.3 miles south of the closest reconductoring project infrastructure, and the Elk Hills Buttonwillow Airport, located south of Buttonwillow, approximately 2.6 miles south of the closest reconductoring project infrastructure.

Construction and Operational Traffic

The reconductored line would be located north of Highway 58, beginning approximately two miles east of Bitterwater Road at the Solar Switching Station and ending at the Midway Substation approximately 2.7 miles west of I-5. Primary access to the reconductoring region from the west would be from Highway 58 and from the east would be either via I-5 to Highway 58 or from Highway 33 just south of Lokern Road. All construction pull and tension sites would be accessible from existing roads although some existing access roads may require widening.

The reconductoring project would be constructed over a total of approximately 20 months and is expected to begin in March 2011. The Caliente Switching Station would be constructed during Phase 1 of the CVSR project. The switching station would be completed during the first year of installation, allowing the proposed CVSR to begin operation as soon as the first tracker systems are deployed and can generate solar power. The Solar Switching Station site would be cleared and graded during the start of the construction period for the Topaz project, and construction of the switching station would begin after site preparation activities were completed. The switching stations would be completed during the first year of installation, allowing the proposed solar project to begin operation as soon as solar modules are deployed and can generate solar power.

Construction Worker Traffic. The reconductoring would require a maximum construction workforce of 50 workers per day. A variety of construction equipment would be required, as is shown on Table Ap.4A-3. It is expected that the construction workers would be existing PG&E crew.

A helicopter would be used for tower erection at sites located in terrain inaccessible by crane or areas with sensitive resources that would be aggravated by crane-related. Helicopters eliminate land disturbance associated with crane pads, tower site laydown areas, and the trucks and tractors used for steel delivery to structure sites. All construction work in remote work sites would be completed by hand with the assistance of portable compressors, portable hydraulic accumulators, portable concrete mixers, or buckets of ready-mix concrete that would be flown into the tower sites.

Operation Worker Traffic. No operation worker traffic would be required other than for occasional maintenance of the line and switching stations.

Environmental Impacts

The effects of the addition of project-related traffic to the regional roadway system were evaluated along selected roadway segments and intersections. The term LOS (level of service) is used to measure and describe the operational status of the local roadway network. An intersection or roadway segment's level of service can range from LOS A (indicating free-flow traffic conditions with little or no delay), to LOS F (representing oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

Impact TR-1: Project implementation would increase congestion and travel delays on regional and local roadways or exceed an established level of service standard

Switching Stations and Reconductoring. Construction of the transmission reconductoring would generate additional traffic on regional and local roadways. Construction worker commute trips and equipment and materials deliveries would increase existing traffic volumes in the project area.

Construction would require a maximum of 50 workers. Workers would travel to and from the reconductoring region most likely in personal vehicles or in PG&E vehicles. Most workers would be expected to travel to the transmission line region via eastbound and westbound Highway 58 and PG&E stated it would encourage carpooling to job staging areas to the extent feasible.

Daily approximately 6 to 8 construction-related heavy trucks (including up to 2 tractor-trailer units) and approximately 10 medium size vehicles (assuming an average of 20 workers and up to 2 workers per car) would travel to each reconductoring site. Different locations along the transmission line would be accessed via either Highway 46 to Shell Creek Road to eastbound Highway 58, Highway 33 to Lokern Road, or I-5 to westbound Highway 58. The construction crews generally pull the new conductors through one to five miles of transmission towers at a time. Project traffic would not appreciably alter existing LOS or significantly add to existing traffic on project roadways. Temporary road closures could occur along sections of the line requiring overhead crossings such as along Highway 33. Road closures are expected to be brief. Helicopter operations may require highway or roadway closures. Any necessary encroachment permits would be obtained from the affected agencies.

Significant impacts to Caltrans and County roadways are defined to occur when: (a) the addition of project traffic causes roadway operations to degrade from an acceptable level (LOS C or better) to an unacceptable level (LOS D or worse), or (b) if project-related traffic is added to a roadway operating at an unacceptable level (LOS D or worse). Most of the roadways used to access the reconductoring site are operating at LOC C or higher, as shown in Table Ap.4A-10, above. However, under existing conditions, Highway 46 from Jardine Road to Highway 33 operates at an unacceptable LOS D during the AM and PM peak hours.

Since the roadway segment currently operates at an unacceptable LOS, any addition of traffic by the project is considered significant impact according to Caltrans criteria. While the APM TF-1 would require PG&E to develop a project-specific Traffic Management Plan, it does not require minimizing or avoiding use of Highway 46 to access the reconductoring site during peak hours. As such, APM TF-2 (Prepare and implement traffic control plan) would be required to ensure that any impacts to Highway 46 be reduced to a level that is less than significant.

Impact TR-2: Construction would temporarily disrupt school bus services

Switching Stations and Reconductoring. Construction of the reconductoring would result in increased traffic on Highway 58 and Highway 41 during a portion of the construction. Although school bus routes

and schedules are subject to change each year, there are currently (2009-2010 school year) three school buses from the Atascadero USD that travel these roads in the morning and afternoon to transport students to and from schools in Santa Margarita and Atascadero (AUSD, 2010). Project traffic would result in a minor increase in traffic at any one construction site and would be temporary at each construction site. Project-related traffic would not result in substantial delays to existing roadway traffic. Buses traveling on project haul routes generally would be going in the opposite direction of project traffic flow and at times of day when little project traffic would be on the road. Also, school buses travel along relatively short segments of the project construction routes. Therefore, project-related traffic would not be expected to result in substantial delays to buses operating under the current Atascadero USD bus routes and schedules and the impact would be adverse, but less than significant.

Impact TR-3: Construction would create unsafe conditions on public roadways

Switching Stations and Reconductoring. The reconductoring project would occur primarily along transmission line access roads set back from Highway 58 and Lokern Road and would not include any design features that would result in limited site access or decreased sight lines along the roadways. Additionally, as described above under Impact TR-1 (Project implementation project would increase congestion and travel delays on regional and local roadways or exceed an established level of service standard), project-related construction traffic is not expected to result in substantial delays to existing traffic on any of the roadway segments that would be used by construction traffic. Therefore, construction traffic would not result in substantial delays to emergency service providers or others.

Near the proposed Topaz Solar Project and CVSR sites (from the Solar Switching Station and Caliente Switching Station, respectively), the proposed construction travel route would traverse Highway 58 and Shell Creek Road and would travel directly past the Carrisa Plains Elementary School during the AM peak hour when students are being dropped off at school. All students are picked up and dropped off within the drop-off and pick-up area located on school grounds. Construction traffic would not present a direct safety hazard to students at the school; however, the addition of construction-related traffic driving past the school in during morning peak hours could increase the potential for conflicts between school traffic and construction traffic. Implementation of APM TF-2 (Prepare and implement traffic control plan) would improve traffic safety in the vicinity of the Carrisa Plains Elementary School by requiring the installation of signs in the vicinity of the school to warn drivers (of construction-related vehicles and otherwise) of school-related traffic and by requiring the placement of signage along Highway 58 in general to warn drivers of construction-related traffic. Implementation of this measure would ensure impacts to traffic safety would be less than significant.

The addition of approximately 6 to 8 truck trips per day at each reconductoring location and the switching stations during project construction presents the potential for damage to public roads within the project area. With implementation of APM TF-3 (Repair roadway damage), any road damaged by project construction would be repaired to its pre-project condition to ensure that any damage to local roadways would not pose a safety hazard to motorists and impacts would be less than significant.

Impact TR-4: Project implementation would conflict with adopted policies, plans, or programs supporting alternative transportation modes

There are no pedestrian or public transit facilities in the vicinity of the reconductoring alignment or switching stations. Highway 58 is a designated Class III bicycle route and Highway 33 is open to bicycles; however, implementation of the reconductoring would not adversely affect bicycle traffic. Therefore, the reconductoring would not conflict with adopted polices, plans, or programs supporting alternative transportation.

3.15 Water Resources

Environmental Setting

The existing transmission line to be reconductored and the proposed switching stations are located within the Carrizo Plain groundwater basin from MP 1 to MP 7.5 and the San Joaquin Valley groundwater basin, Kern County sub-basin from MP 17 to MP 35. 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.

Environmental Impacts

Impact WR-1: Substantially deplete local groundwater supplies or interfere with groundwater recharge

Switching Stations and Reconductoring. Groundwater would not be used by the project. The reconductoring and switching station project's minimal water requirements would be satisfied with water tanks brought into the work area from off site. The reconductoring portion of the project would not interfere with groundwater recharge, as construction would take place almost entirely on previously disturbed areas within an existing ROW.

Creation of new impervious surfaces associated with the proposed upgrades could interfere with groundwater recharge by reducing the amount of surface area through which precipitation and surface water percolates to underlying aquifers. Up to 18 acres of new impervious surfaces would result from construction of the Solar and Caliente Switching Stations. Implementation of APM WQ-4 (Install pervious and/or high-roughness groundcover where applicable) would ensure that groundcover for the new switching stations would be comprised of a pervious and/or high-roughness material to reduce infiltration and runoff impacts to a less than significant level. With implementation of APM WQ-4, the proposed upgrades would not substantially deplete local groundwater supplies or the interference with groundwater recharge, and impacts would be less than significant.

Impact WR-2: Substantially alter the existing drainage pattern of the site in a manner that results in flooding on- or off-site

Switching Stations and Reconductoring. The reconductoring work would make use of temporary bridges to span sensitive water crossings and replacement towers would be sited outside of the 100-year floodplain. The two switching stations would not be located within a 100-year floodplain, but they would introduce a small amount of new impervious area. The transmission and switching station components would not significantly alter the existing drainage pattern of the landscape in a manner that could result in flooding.

Impact WR-3: Construction activity and excavation could degrade water quality due to erosion and sedimentation

Switching Stations and Reconductoring. Water quality would be degraded if construction activities, including grading for reestablishing access roads, were to result in erosion during the wet season. Implementation of APM WQ-1/HM-1 would ensure that an environmental training and monitoring program is developed and implemented for all personnel. APM WQ-2 would ensure preparation of a project-specific SWPPP that would specify best management practices (BMP) to minimize erosion and sedimentation. APM WQ-3 would ensure preparation of an Erosion Control and Sediment Transport

Plan (ECSTP) to further minimize erosion and sedimentation. With implementation of these APMs, impacts related to erosion and sedimentation would be less than significant.

Impact WR-4: Creation of new impervious areas could cause increased runoff resulting in flooding or increased erosion downstream

Switching Stations and Reconductoring. The creation of new impervious areas is discussed under Impact WR-1 (Substantially deplete local groundwater supplies or interfere with groundwater recharge). There would be no net gain in impervious surface areas created by the transmission line corridor reconductoring work. Tower replacements, should they occur, would require concrete foundations for footings. These very small impervious surfaces would represent replacements of the existing footings, resulting in no net gain in impervious surface areas.

As discussed under Impact WR-1, construction of the two new switching stations would introduce up to 18 acres of impervious area (up to 9 acres at each switching station). The effect of these project features on site-specific infiltration and runoff rates would vary greatly, depending upon final groundcover. As described in APM WQ-4 (Install pervious and/or high-roughness groundcover where applicable), infiltration rates following project implementation would be maximized through use of high-porous groundcover, thus minimizing runoff. Any changes in runoff that would occur in response to this new impervious area would be localized and temporary and would not have the potential to result in flooding or increased erosion downstream, thus impacts would be less than significant.

Figures for Appendix 4A

Figures for Appendix 4A are included on the CD in the EIR front cover. For printed appendices, the Appendix 4A figures follow this page.

- Figure Ap.4A-1. PG&E Solar-Midway Transmission Upgrades
- Figure Ap.4A-2a. PG&E Solar-Midway Transmission Upgrades – Sheet 1 of 6
- Figure Ap.4A-2b. PG&E Solar-Midway Transmission Upgrades – Sheet 2 of 6
- Figure Ap.4A-2c. PG&E Solar-Midway Transmission Upgrades – Sheet 3 of 6
- Figure Ap.4A-2d. PG&E Solar-Midway Transmission Upgrades – Sheet 4 of 6
- Figure Ap.4A-2e. PG&E Solar-Midway Transmission Upgrades – Sheet 5 of 6
- Figure Ap.4A-2f. PG&E Solar-Midway Transmission Upgrades – Sheet 6 of 6
- Figure Ap.A4-3. Solar Switching Station Preliminary Design
- Figure Ap.4A-4a. Caliente Switching Station
- Figure Ap.4A-4b. Caliente Switching Station Alternatives
- Figure Ap.4A-4c Switching Station Site 3 and M3 Comparison
- Figure Ap.4A-4d Conceptual Grading and Plan Drawing
- Figure Ap.4A-4e Microwave Reflector Location Options
- Figure Ap.4-5. Typical Cage-Top and Fiber Optic Extensions

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Appendix C
Farmlands Correspondence and Analysis

FARMLAND CONVERSION IMPACT RATING

As stipulated in the Farmland Protection Policy Act (FPPA), federal agencies must identify and take into account the adverse effects of their activities on the preservation of farmland. The criteria developed by the Secretary of Agriculture include a land evaluation for which the NRCS provides the score based on the relative value of the farmland, and a site assessment for which the federal agency considers criteria other than the agricultural value of the land. A summary of the Farmland Conversion Impact Rating (FCIR) of the Topaz Solar Farm project is provided below.

LAND EVALUATION

NRCS completed the land evaluation portion of the AD-1006 on January 5, 2011, and determined that 7,671 acres in Study Area A and 6,193 acres in Study Area B are considered Farmland of Local Importance. Farmland of Local Importance meets the soils criteria for Prime Farmland or Farmland of Statewide Importance, but is not irrigated. Accordingly, NRCS assigned a land evaluation score of 71 to Study Area A and a score of 65 to Study Area B. The land evaluation score represents the relative value of agricultural production of the farmland to be converted, to other farmland in the same local government jurisdiction. Alternatives A and 3B.1 are both entirely within Study Area A, therefore the score evaluated for Study Area A applies to both of these alternatives.

SITE ASSESSMENT

The site assessment portion of the FCIR is based on 12 factors, independent of the agricultural value of the land, that determine the suitability of a site for protection as farmland. In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. Each criterion is allotted a maximum score of 10, 15, or 20, depending upon its relative importance. Table C-1 lists the maximum possible scores for each criterion and summarizes the assigned scores to each study area being considered for the Topaz Solar Farm project. A summary of how each score was determined for the project site is discussed in the sections below.

Table C-1
Farmland Conversion Impact Rating Site Assessment Criteria

Criterion	Maximum Points	Assigned Points Study Area A	Assigned Points Study Area B
Area in Non-Urban Use	15	15	15
Perimeter in Non-Urban Use	10	~~9~~10	10
Percent of Site being Farmed	20	20	20
Protection Provided by State and Local Government	20	20~~0~~	20
Distance from Urban Built-up Area	15	15	15
Distance to Urban support Services	15	10	10
Size of Present Farm Unit compared to Average	10	10	10
Creation of Non-Farmable Farmland	10	0	0
Availability of Farm Support Services	5	2	2
On-Farm Investments	20	5	5
Effects of Conversion on Farm Support Services	10	1	1
Compatibility with Existing Agricultural Use	10	5~~0~~	5~~0~~
Totals	**160**	**113~~87~~**	**113~~108~~**

1. Area in non-urban use

This criterion considers the amount of land in non-urban use within a one-mile radius of the proposed Topaz Solar Farm project site. According to the site assessment guidelines, the "non-urban" land use includes agricultural land, rangeland, forest, golf courses, unpaved parks and recreational areas, mining sites, farm storage, water bodies, rural roads and roads without houses or buildings, open space, wetlands, fish productions, and pasture or hayland.

Scoring for Criterion 1

Percent Non-Urban Use within One Mile	Points
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 34 percent	4
30 to 34 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

Google Earth aerials were used to estimate the total land area within a one-mile radius of (but excluding) the project site. This area was estimated to be 14,700 acres for Study Area A and 11,300 for Study Area B. Nearly all structures and residential buildings within this area, with the exception of Carrisa Plains Elementary School, were determined to be farm-related. In addition to the school, which covers approximately 9 acres of land, the only other urban use is Highway 58, ~~which encompasses, at maximum width, approximately 23 acres within a one-mile radius of Study Area A and 18 acres within a one-mile radius of Study Area B~~ which is the primary paved road at the project site. There are houses and structures on both sides of this road but since they are noticeably spread out, there are houses and structures on only one side of the road at any given location. Therefore, per the guidance of the site assessment guidelines which states that for "roads with houses on only one side, use one half of the road for urban and one half for non-urban,"~~,~~ only one half of the total width of Highway 58 has been considered urban use, which amounts to 12 acres for Study Area A and 9 acres for Study Area B. Accordingly, more than 99 percent of land within one mile of both Study Areas A and B ~~are~~ is in non-urban use. Therefore, in consideration of the point system below, the

maximum score of 15 is assigned for both ~~site alternatives~~study areas for this criterion.

2. Perimeter in non-urban use

This criterion considers the amount of land adjacent to the project site that is in non-urban use.

Scoring for Criterion 2

Percent of Perimeter in Non-urban Use	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7
58 to 64 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or less	0

The majority of the site is located in a predominantly rural area, adjacent to agricultural lands and open spaces. The only non-urban land use bordering Study Areas A and B is Highway 58. However, as discussed under criterion 1, only one side of this road has been considered non-urban in this analysis. Google Earth aerials indicate that the side of Highway 58 that is directly adjacent to either study area is the side that is free of houses or urban structures and is therefore considered non-urban.~~Based on Google Earth aerials, the Study Area A perimeter is 25 miles with 4 miles bordering Highway 58.~~ Therefore, as nearly 100 percent of the study area perimeters is adjacent to non-urban lands, the maximum score of 10 has been awarded to both Study Areas A and B. ~~Therefore, as 84 percent of Study Area A borders on land in non-urban use, a score of 9 was assigned to this alternative. Study Area B received a score of 10 for this criterion because more than 97 percent of the 17-mile perimeter of this site is adjacent to land that is in non-urban use.~~

3. Percent of site being farmed

This factor evaluates how much of the site has been farmed or managed for agricultural purposes for more than five of the last ten years. Land that has been left to grow native vegetation without management or harvest is considered abandoned and therefore not considered farmed. More than 90 percent of both Study Areas A and B have been farmed in the form of rotational dry-farming. Accordingly, a maximum score of 20 is awarded for both Study Areas A and B to this criterion.

Scoring for Criterion 3

Percent Being Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3
23 to 25 percent	2
20 to 22 percent	1
20 percent or less	0

4. Protection Provided by State and Local Government

This factor evaluates the extent to which state and local government and private programs protect the site from conversion. State programs considered for this criterion include tax relief, "right to farm" laws, agricultural districting, land use controls such as agricultural zoning, development rights, Governor's Executive Orders, and voluntary or mandatory state programs.

Scoring for Criterion 4

Protection Provided by State or Local Government	Points
Site is protected	20
Site is not protected	0

All parcels within both Study Areas A and B are subject to state and local "Right to Farm" statutes in addition to Agricultural Zoning as designated in the San Luis Obispo County General Plan. According to the General Plan, agricultural designation allows many land uses with a land use permit, including energy generation (San Luis Obispo County 2010b). The Project Proponent has applied for and the County has granted a conditional use permit to allow a solar facility on the project site.

In addition to the state and local statutes discussed above, Study Area B includes 1,795 acres of land under Williamson Act contract, 1,212 acres of which would likely be within the Option B project development (fenced) boundary. The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is a voluntary state program that was enacted to keep agricultural land from being converted to urban land uses. ~~Study Area B includes 1,795 acres of land under Williamson Act contract, 1,212 acres of which would likely be within the Option B project development (fenced) boundary.~~ No Williamson Act lands are within Study Area A. ~~In addition, the San Luis Obispo County General Plan designates all land parcels within both Study Areas A and B for agricultural use. However, according to the General Plan, agricultural designation allows many land uses with a land use permit, including energy generation (San Luis Obispo County 2010b). The Project Proponent has applied for a CUP to allow a solar facility as a permitted use on the site.~~

According to the site assessment criteria guidelines, if the proposed site has ever been subject to any state and local government or private programs or policies, it should receive the maximum score of 20. Otherwise, a score of 0 should be awarded. Accordingly, as ~~no state or local programs or policies are in place for the Study Area A, this site has been awarded a score of 0. On the other hand, because some parcels of land within Study Area B are currently under Williamson Act,~~both study areas are subject to at least one of the statutes and programs described above, a score of 20 is awarded to each study area~~s~~ ~~B~~ for this criterion.

5. Distance from Urban Built-up Area

This criterion determines the proximity of the site to existing urban or built-up areas characterized by a minimum population of 2,500.

Scoring for Criterion 5

Distance from an Urban or Built-Up Area	Points
The site is 2 miles or more from an urban build-up area	15
The site is more than 1 miles but less than 2 miles from an urban built-up area	10
The site is less than 1 mile, but is not adjacent to an urban built-up area	5
The site is adjacent to and urban built-up area	0

The nearest urban areas to the project site with populations greater than 2,500 are Arroyo Grande, Atascadero, and Taft, which are 34 to 37 miles from the project site. Therefore, in consideration of the point system below, a score of 15 points has been awarded to both Study Areas A and B.

6. Distance to Urban Support Services

This criterion determines the extent of existing infrastructure that could facilitate non-agricultural development. Facilities that could promote nonagricultural use

include water and sewer lines, gas and power lines, roads, fire and police protection, and schools. The fewer facilities that are in place, the more difficult it is to develop the area. Therefore, a higher score is awarded for a site that is further away from such facilities. The following assessment scaling is used for this criterion:

Scoring for Criterion 6

Distance from Urban Support Services	Points
None of the services exits nearer than 3 miles from the site	15 points
Some of the services exits more than 1 miles but less than 3 miles from the site	10 points
All of the services exist with ½ mile of the site	0 points

There are no water, sewer, or gas services present at the project site. The closest police station is in San Luis Obispo, over 35 miles west of the project site. The nearest fire station is on Soda Lake Road south of project site, approximately 2.2 miles away from Study Area A and nearly 3.4 miles from Study Area B. PG&E's Morro Bay to Midway 230-kV transmission line passes through both Study Areas A and B and Carrisa Plains Elementary School is located 2,100 feet (0.4 mile) from Study Area A and 2,900 feet (0.5 mile) from Study Area B. As indicated, some of the facilities are within 1 to 3 miles of the project site, while others are beyond the 3-mile radius. Accordingly a score of 10 is awarded to this criterion for both Study Areas A and B.

7. Size of Present Farm Unit Compared to Average

This criterion determines how much protection the site should receive, according to its size in relation to the average farming unit size within the county. The following point system is designed so that larger parcels of lands would receive a higher score, as they possess more agricultural use value.

Scoring for Criterion 7

Parcel Size Compared to Average County Size	Points
Same size of larger than average (100 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

According to the USDA 2007 Census of Agriculture, the average farm size in San Luis Obispo County is 492 acres. Under Alternative A, 7,800 acres of farmland would be converted while under Alternative B, 6,300 acres of farmland would to be converted. ~~Option A encompasses up to 4,100 acres of land to be converted directly, and Option B encompasses up to 4,000 acres, both of which are larger than the county's average farm unit. Therefore~~Therefore, as the areas proposed for conversion under all alternatives are larger than the county's average farm unit~~, a~~ the maximum score of 10 ~~is~~ has assigned to this criterion for both Study Areas.

8. Creation of Non-Farmable Farmland

This criterion considers how the proposed project would affect the remaining portions of the farm. Conversions that make the rest of the property non-farmable include any development which blocks accessibility to the rest of the site such as highways, railroads, dams, or development along the front of the site restricting access to the rest of the property.

Scoring for Criterion 8

Amount of Land Not Including the Site Which Becomes Non-farmable	Points
25 percent or greater	10
23 to 24 percent	9
21 to 22 percent	8
19 to 20 percent	7
17 to 18 percent	6
15 to 16 percent	5
13 to 14 percent	4
11 to 12 percent	3
9 to 10 percent	2
6 to 8 percent	1
5 percent or less	0

Implementation of the Topaz Solar Farm project would require conversion of 7,800 acres ~~of~~under Study Area A and 6,300 acres ~~of~~under Study Area B ~~to be analyzed for conversion~~. The overall shape of these study areas dictates conversion of only a portion of some properties, which would result in leftover portions outside of the study area boundaries. Although due to reasons such as size, configuration, location of drainages, and proposed habitat easements, these leftover lands may not be suitable for grain production historically practiced in the region, they would continue to be viable for grazing practices. ~~The Topaz Solar Farm project would require only a portion of some properties within the study area boundaries. However, as the proposed project is fully compatible with agricultural land use on lands adjacent to it, the remaining portions of land not included within the fenced areas may still be used for agricultural uses, including grazing.~~ Therefore, according to the point system below, a score of 0 is assigned for this criterion for both of the alternatives being considered for the Topaz Solar Farm Project.

9. Availability of Farm Support Services

This factor is used to assess whether there are adequate support facilities, activities, and industry to maintain the existing agricultural business. The more support facilities that are available to the agricultural operation, the more feasible it is to continue farming. Grain production and grazing practices that are currently occurring on the project site point to the availability of support services for these activities, though the majority of such services are not near the project site; only~~There are~~ a few support facilities appear to be located~~and agricultural businesses adjacent~~ near ~~to~~ the proposed Topaz Project site~~ and nearby in the community of California Valley~~. Accordingly, a score of 2, indicating existence of somewhat adequate support services, is awarded to this criterion for both study areas.

Scoring for Criterion 9

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2
1 to 24 percent	1
No services	0

10. On-farm Investments

This factor assesses the quantity of agricultural facilities such as barns, storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soils and water conservation measures on the proposed site. If a significant agricultural infrastructure exists on site, the site should receive the highest amount of points towards protection from conversion or development.

Based on aerial images in Google Earth, there appear to be few scattered agricultural facilities on the proposed site. There are more agricultural facilities nearby on Bitterwater Road to the northwest of Study Area A and along the western border of Study Area B. Along the southern border of Study Area A, which borders Highway 58, there are a few more potential agricultural facilities. Based on these aerial images, approximately 25 to 29 percent of on-farm investment exists at the project site. Therefore, in accordance with the scoring system below, a score of 5 has been awarded to both study areas.

Scoring for Criterion 10

Amount of On-farm Investment	Points
As much or more than necessary to maintain production	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11. Effects of Conversion on Farm Support Services

This factor determines whether there are other agriculturally related activities, businesses, or jobs dependent upon the working of the pre-converted site in order to remain in production. The more people and farming activities relying upon this land, the more protection it should receive.

As discussed above, there are not extensive support services and facilities in or near Topaz Solar Farm project site. As a result, conversion of proposed farmlands would represent a minimal effect on other farms in the area by reducing the overall demand for support services. However, considering the large size of land to be converted, there may still be a 10 to 19 percent reduction in demand for support services in the area. Accordingly, a score of 1 point is awarded to this criterion for both Study Areas A and B.

Scoring for Criterion 11

Amount of Reduction of Support Services if Converted	Points
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

12. Compatibility with Existing Agricultural Use

This factor determines if the conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility with the new use of the land. The more incompatible the proposed conversion with agriculture, the more protection the site receives.

Unlike residential uses, which are often intolerant of the noise, dust, and smell associated with nearby farmland, the ~~proposed Topaz Solar Farm~~passive solar use is fully compatible with nearby agricultural operations. However, the construction of the Topaz Solar Farm would require substantial habitat mitigation lands around the project site that would restrict agricultural activities to grazing. Therefore, as ~~a~~ the project would result in conversion of some of the surrounding farmlands to less intensive agricultural uses (grazing), a score of ~~0~~ 5 is assigned to this criterion for the Topaz Solar Farm project site.

Scoring for Criterion 12

Compatibility with Existing Agricultural Use	Points
Proposed project is incompatible with existing agricultural use of surrounding farmland	10
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1
Proposed project is compatible with existing agricultural use of surrounding farmland	0

United States Department of Agriculture
NRCS Natural Resources Conservation Service

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(805) 434-0396
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January 5, 2011

Amy Cordle
EMPSi Environmental Management and Planning Solutions, Inc.
12154 Darnestown Road #344
Gaithersburg, MD 20878

Subject: Topaz Solar Farm: Revised Farmland Conversion Impact Rating

I have revised the Farmland Conversion Impact Rating (Form AD-1006) to account for no developed irrigation system, and Farmland of Local Importance. The form AD-1006 dated 1/5/11 supersedes all previous forms for this project.

Soils may be Prime Farmland and Farmland of Statewide Importance if they produce a crop in 7 out of ten years or are irrigated and produce a crop in 8 out of 10 years. Soils on the Carrizo Plain are usually planted 5 out of 10 years when there is no irrigation. See the following website for the National Soil Survey Handbook, Section 557.5(a)(2)(i):

http://soils.usda.gov/technical/handbook/contents/part622.html#ex1

There is Farmland of Local Importance on both Options A and B according to the Farmland Mapping and Monitoring Programs maps. Farmland of Local Importance meets the soils criteria for Prime Farmland or Farmland of Statewide Importance, but is not irrigated. See the attached maps and this website:

http://www.consrv.ca.gov/dlrp/fmmp/Pages/Index.aspx

Here is the definition Local Important Farmland according to this website:

http://www.consrv.ca.gov/dlrp/fmmp/Documents/Local_definitions_00.pdf

"Farmland of Local Importance is land of importance to the local economy, as defined by each county's local advisory committee and adopted by its Board of Supervisors. Farmland of Local Importance is either currently producing, or has the capability of production, but does not meet the criteria of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. Authority to adopt or to recommend changes to the category of Farmland of Local Importance rests with the Board of Supervisors in each county.

San Luis Obispo

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Local Important (L): areas of soils that meet all the characteristics of Prime or Statewide, with the exception of irrigation. Additional farmlands include dryland field crops of wheat, barley, oats, and safflower.

Local Potential (LP): lands having the potential for farmland, which have Prime or Statewide characteristics and are not cultivated."

In Option A there are 7671 acres of Local Important Farmland (L + LP), and 129 acres of Grazing Land (G).

In Option B there are 6193 acres of Local Important Farmland (L + LP) and 107 acres of Grazing Land (G).

Acres for Local Important Farmland appear on form AD-1006 on line IV B.

If you disagree with this determination, please write a letter to me explaining why you disagree.

Ken Oster
Area Resource Soil Scientist

United States Department of Agriculture
NRCS Natural Resources Conservation Service

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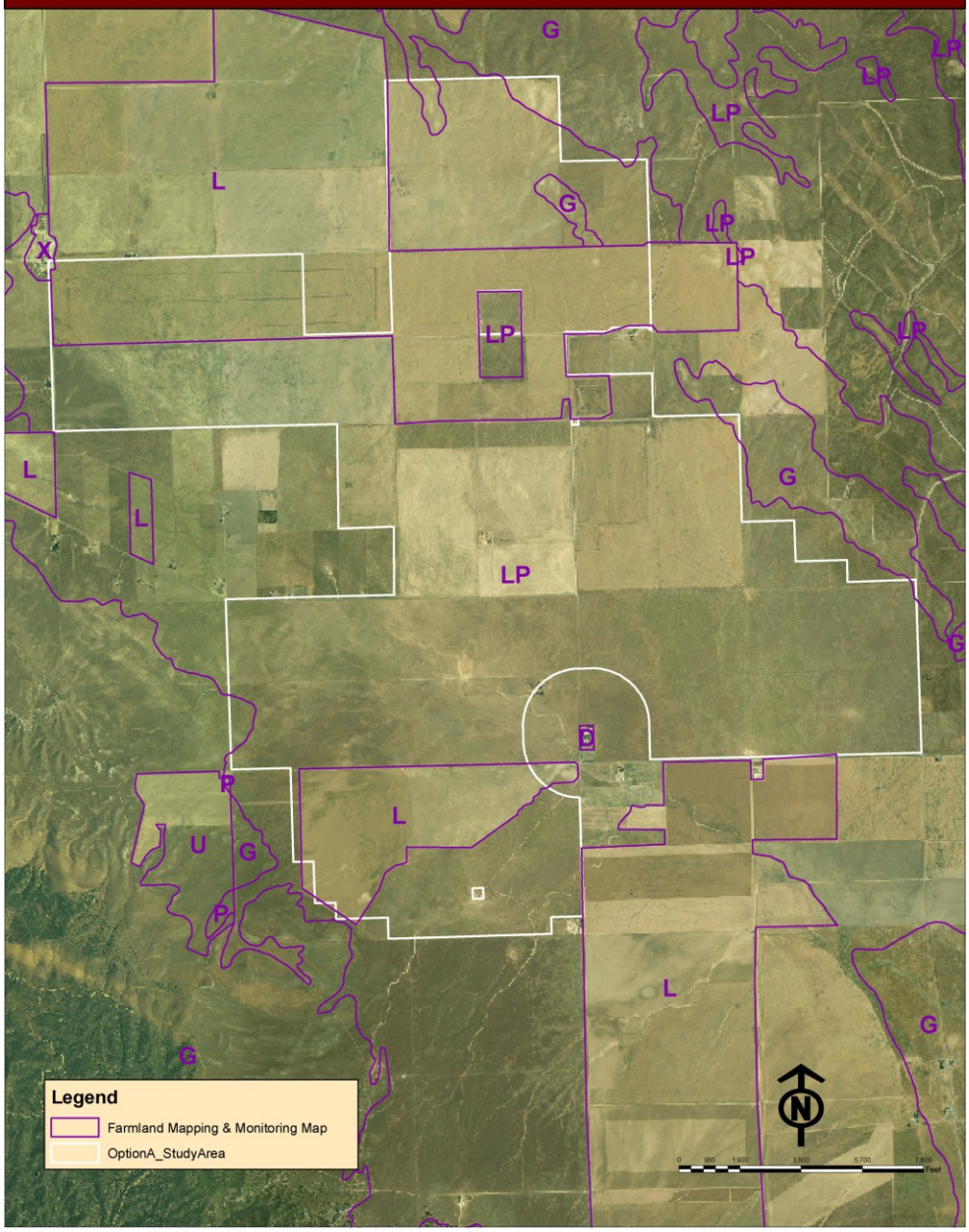
Option A
Farmland Mapping and Monitoring Map
G = Grazing Land
L = Locally Important Farmland (Local Importance)
LP = Locally Important Farmland (Local Potential)
Topaz Solar Farm
Carrizo Plain
San Luis Obispo County, California

USDA - Natural Resources Conservation Service
January 5, 2010



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Option B
Farmland Mapping and Monitoring Map
G = Grazing Land
L = Locally Important Farmland (Local Importance)
LP = Locally Important Farmland (Local Potential)
Topaz Solar Farm
Carrizo Plain
San Luis Obispo County, California

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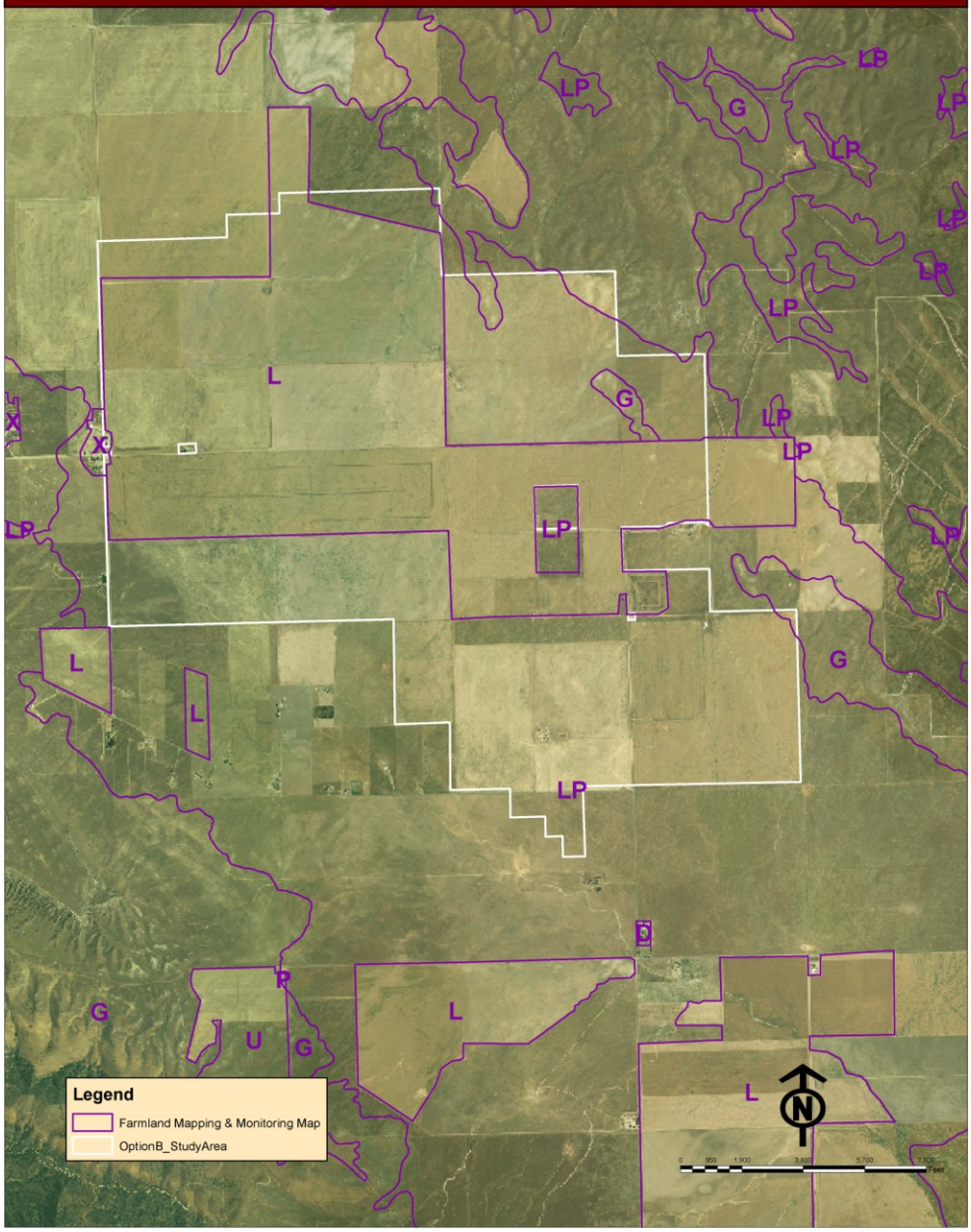
January 5, 2010



U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 12/14/10
Name Of Project Topaz Solar Farm	Federal Agency Involved Department of Energy
Proposed Land Use PV Solar Generating Facility	County And State San Luis Obispo County, California
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 12/14/10

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* Yes ☑ No ☐		Acres Irrigated 98,898	Average Farm Size 492
Major Crop*(s)* wine grapes, broccoli, grain hay	Farmable Land In Govt. Jurisdiction Acres: 299,572 % 14	Amount Of Farmland As Defined in FPPA Acres: 270,407 % 13	
Name Of Land Evaluation System Used CA Revised Storie Index	Name Of Local Site Assessment System None	Date Land Evaluation Returned By NRCS 1/5/11	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	4,100.0	4,000.0		
B. Total Acres To Be Converted Indirectly	3,700.0	2,300.0		
C. Total Acres In Site	7,800.0	6,300.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0.0	0.0		
B. Total Acres Statewide And Local Important Farmland	7,671.0	6,193.0		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	2.8	2.3		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	71	65	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use	15	15	15		
2. Perimeter In Nonurban Use	10	9	10		
3. Percent Of Site Being Farmed	20	20	20		
4. Protection Provided By State And Local Government	20	0	20		
5. Distance From Urban Builtup Area	15	15	15		
6. Distance To Urban Support Services	15	10	10		
7. Size Of Present Farm Unit Compared To Average	10	10	10		
8. Creation Of Nonfarmable Farmland	10	0	0		
9. Availability Of Farm Support Services	5	2	2		
10. On-Farm Investments	20	5	5		
11. Effects Of Conversion On Farm Support Services	10	1	1		
12. Compatibility With Existing Agricultural Use	10	0	0		
TOTAL SITE ASSESSMENT POINTS	160	87	108	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	71	65	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	87	108	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	158	173	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

This form was electronically produced by National Production Services Staff

Clear Form

Form AD-1006 (10-83)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 – Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 – Originator will send copies A, B and C together with maps indicating locations of site(s), to the Natural Resources Conservation Service (NRCS) local field office and retain copy D for their files. (Note: NRCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the NRCS State Conservationist in each state).

Step 3 – NRCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

Step '4 – In cases where farmland covered by the FPPA will be converted by the proposed project, NRCS field offices will complete Parts II, IV and V of the form.

Step 5 – NRCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for NRCS records).

Step 6 – The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 – The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

Part I: In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

Part III: In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

Part VI: Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in § 658.5 (b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will, be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level, may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned relative adjustments must be made to maintain the maximum total weight points at l60.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site "A."}$$

Site Assessment Scoring for the Twelve Factors Used in FPPA

The Site Assessment criteria used in the Farmland Protection Policy Act (FPPA) rule are designed to assess important factors other than the agricultural value of the land when determining which alternative sites should receive the highest level of protection from conversion to non agricultural uses.

Twelve factors are used for Site Assessment and ten factors for corridor-type sites. Each factor is listed in an outline form, without detailed definitions or guidelines to follow in the rating process. The purpose of this document is to expand the definitions of use of each of the twelve Site Assessment factors so that all persons can have a clear understanding as to what each factor is intended to evaluate and how points are assigned for given conditions.

In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. The maximum scores are 10, 15 and 20 points, depending upon the relative importance of each particular question. If a question significantly relates to why a parcel of land should not be converted, the question has a maximum possible protection value of 20, whereas a question which does not have such a significant impact upon whether a site would be converted, would have fewer maximum points possible, for example 10.

The following guidelines should be used in rating the twelve Site Assessment criteria:

1. How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent:	15 points
90-20 percent:	14 to 1 points
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the area within one mile of the proposed site is non-urban area. For purposes of this rule, "non-urban" should include:

- Agricultural land (crop-fruit trees, nuts, oilseed)
- Range land
- Forest land
- Golf Courses
- Non paved parks and recreational areas
- Mining sites
- Farm Storage
- Lakes, ponds and other water bodies
- Rural roads, and through roads without houses or buildings
- Open space
- Wetlands
- Fish production
- Pasture or hayland

Urban uses include:

- Houses (other than farm houses)
- Apartment buildings
- Commercial buildings
- Industrial buildings
- Paved recreational areas (i.e. tennis courts)
- Streets in areas with 30 structures per 40 acres
- Gas stations

- Equipment, supply stores
- Off-farm storage
- Processing plants
- Shopping malls
- Utilities/Services
- Medical buildings

In rating this factor, an area one-mile from the outer edge of the proposed site should be outlined on a current photo; the areas that are urban should be outlined. For rural houses and other buildings with unknown sizes, use 1 and 1/3 acres per structure. For roads with houses on only one side, use one half of road for urban and one half for non-urban.

The purpose of this rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government. With this goal in mind, factor S1 suggests that the more agricultural lands surrounding the parcel boundary in question, the more protection from development this site should receive. Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater
number of points for protection from development. Thus, where more than 90 percent of the area around the proposed site (do not include the proposed site in this assessment) is non-urban, assign 15 points. Where 20 percent or less is
non-urban, assign 0 points. Where the area lies between 20 and 90 percent non-urban, assign appropriate points from 14 to 1, as noted below.

Percent Non-Urban Land within 1 mile	**Points**
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 39 percent	4
30 to 24 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

2. How much of the perimeter of the site borders on land in non-urban use?

More than 90 percent:	l0 points
90 to 20 percent:	9 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the land adjacent to the proposed site is non-urban use. Where factor #1 evaluates the general location of the proposed site, this factor evaluates the immediate perimeter of the site. The definition of urban and non-urban uses in factor #1 should be used for this factor.

In rating the second factor, measure the perimeter of the site that is in non-urban and urban use. Where more than 90 percent of the perimeter is in non-urban use, score this factor 10 points. Where less than 20 percent, assign 0 points. If a road is next to the perimeter, class the area according to the

use on the other side of the road for that area. Use 1 and 1/3 acre per structure if not otherwise known. Where 20 to 90 percent of the perimeter is non-urban, assign points as noted below:

Percentage of Perimeter Bordering Land	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7
58 to 65 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or Less	0

3. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last ten years?

More than 90 percent:	20 points
90 to 20 percent:	19 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the proposed conversion site has been used or managed for agricultural purposes in the past 10 years.

Land is being farmed when it is used or managed for food or fiber, to include timber products, fruit, nuts, grapes, grain, forage, oil seed, fish and meat, poultry and dairy products.

Land that has been left to grow up to native vegetation without management or harvest will be considered as abandoned and therefore not farmed. The proposed conversion site should be evaluated and rated according to the percent, of the site farmed.

If more than 90 percent of the site has been farmed 5 of the last 10 years score the site as follows:

Percentage of Site Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3

23 to 25 percent	2
20 to 22 percent percent or Less	1
Less than 20 percent	0

4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected:	20 points
Site is not protected:	0 points

This factor is designed to evaluate the extent to which state and local government and private programs have made efforts to protect this site from conversion.

State and local policies and programs to protect farmland include:

State Policies and Programs to Protect Farmland

1. Tax Relief:

   A. Differential Assessment: Agricultural lands are taxed on their agricultural use value, rather than at market value. As a result, farmers pay fewer taxes on their land, which helps keep them in business, and therefore helps to insure that the farmland will not be converted to nonagricultural uses.

      1. Preferential Assessment for Property Tax: Landowners with parcels of land used for agriculture are given the privilege of differential assessment.

      2. Deferred Taxation for Property Tax: Landowners are deterred from converting their land to nonfarm uses, because if they do so, they must pay back taxes at market value.

      3. Restrictive Agreement for Property Tax: Landowners who want to receive Differential Assessment must agree to keep their land in - eligible use.

   B. Income Tax Credits

   Circuit Breaker Tax Credits: Authorize an eligible owner of farmland to apply some or all of the property taxes on his or her farmland and farm structures as a tax credit against the owner's state income tax.

   C. Estate and Inheritance Tax Benefits

   Farm Use Valuation for Death Tax: Exemption of state tax liability to eligible farm estates.

2. "Right to farm" laws:

   Prohibits local governments from enacting laws which will place restrictions upon normally accepted farming practices, for example, the generation of noise, odor or dust.

3. Agricultural Districting:

   Wherein farmers voluntarily organize districts of agricultural land to be legally recognized geographic areas. These farmers receive benefits, such as protection from annexation, in exchange for keeping land within the district for a given number of years.

4. Land Use Controls: Agricultural Zoning.

Types of Agricultural Zoning Ordinances include:

A. Exclusive: In which the agricultural zone is restricted to only farm-related dwellings, with, for example, a minimum of 40 acres per dwelling unit.

B. Non-Exclusive: In which non-farm dwellings are allowed, but the density remains low, such as 20 acres per dwelling unit.

Additional Zoning techniques include:

A. Slidinq Scale: This method looks at zoning according to the total size of the parcel owned. For example, the number of dwelling units per a given number of acres may change from county to county according to the existing land acreage to dwelling unit ratio of surrounding parcels of land within the specific area.

B. Point System or Numerical Approach: Approaches land use permits on a case by case basis.

LESA: The LESA system (Land Evaluation-Site Assessment) is used as a tool to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.

C. Conditional Use: Based upon the evaluation on a case by case basis by the Board of Zoning Adjustment. Also may include the method of using special land use permits.

5. Development Rights:

A. Purchase of Development Rights (PDR): Where development rights are purchased by Government action.

Buffer Zoning Districts: Buffer Zoning Districts are an example of land purchased by Government action. This land is included in zoning ordinances in order to preserve and protect agricultural lands from non-farm land uses encroaching upon them.

B. Transfer of Development Rights (TDR): Development rights are transferable for use in other locations designated as receiving areas. TDR is considered a locally based action (not state), because it requires a voluntary decision on the part of the individual landowners.

6. Governor's Executive Order: Policy made by the Governor, stating the importance of agriculture, and the preservation of agricultural lands. The Governor orders the state agencies to avoid the unnecessary conversion of important farmland to nonagricultural uses.

7. Voluntary State Programs:

A. California's Program of Restrictive Agreements and Differential Assessments: The California Land Conservation Act of 1965, commonly known as the Williamson Act, allows cities, counties and individual landowners to form agricultural preserves and enter into contracts for 10 or more years to insure that these parcels of land remain strictly for agricultural use. Since 1972 the Act has extended eligibility to recreational and open space lands such as scenic highway corridors, salt ponds and wildlife preserves. These contractually restricted lands may be taxed differentially for their real value. One hundred-acre districts constitute the minimum land size eligible.

Suggestion: An improved version of the Act would state that if the land is converted after the contract expires, the landowner must pay the difference in the taxes between market value for the land and the agricultural tax value which he or she had been

paying under the Act. This measure would help to insure that farmland would not be converted after the 10 year period ends.

B. Maryland Agricultural Land Preservation Program: Agricultural landowners within agricultural districts have the opportunity to sell their development rights to the Maryland Land Preservation Foundation under the agreement that these landowners will not subdivide or develop their land for an initial period of five years. After five years the landowner may terminate the agreement with one year notice.

   As is stated above under the California Williamson Act, the landowner should pay the back taxes on the property if he or she decides to convert the land after the contract expires, in order to discourage such conversions.

C. Wisconsin Income Tax Incentive Program: The Wisconsin Farmland Preservation Program of December 1977 encourages local jurisdictions in Wisconsin to adopt agricultural preservation plans or exclusive agricultural district zoning ordinances in exchange for credit against state income tax and exemption from special utility assessment. Eligible candidates include local governments and landowners with at least 35 acres of land per dwelling unit in agricultural use and gross farm profits of at least $6.000 per year, or $18,000 over three years.

8. Mandatory State Programs:

A. The Environmental Control Act in the state of Vermont was adopted in 1970 by the Vermont State Legislature. The Act established an environmental board with 9 members (appointed by the Governor) to implement a planning process and a permit system to screen most subdivisions and development proposals according to specific criteria stated in the law. The planning process consists of an interim and a final Land Capability and Development Plan, the latter of which acts as a policy plan to control development. The policies are written in order to:

   - prevent air and water pollution;
   - protect scenic or natural beauty, historic sites and rare and irreplaceable natural areas; and
   - consider the impacts of growth and reduction of development on areas of primary agricultural soils.

B. The California State Coastal Commission: In 1976 the Coastal Act was passed to establish a permanent Coastal Commission with permit and planning authority The purpose of the Coastal Commission was and is to protect the sensitive coastal zone environment and its resources, while accommodating the social and economic needs of the state. The Commission has the power to regulate development in the coastal zones by issuing permits on a case by case basis until local agencies can develop their own coastal plans, which must be certified by the Coastal Commission.

C. Hawaii's Program of State Zoning: In 1961, the Hawaii State Legislature established Act 187, the Land Use Law, to protect the farmland and the welfare of the local people of Hawaii by planning to avoid “unnecessary urbanization”. The Law made all state lands into four districts: agricultural, conservation, rural and urban. The Governor appointed members to a State Land Use Commission, whose duties were to uphold the Law and form the boundaries of the four districts. In addition to state zoning, the Land Use Law introduced a program of Differential Assessment, wherein agricultural landowners paid taxes on their land for its agricultural use value, rather than its market value.

D. The Oregon Land Use Act of 1973: This act established the Land Conservation and Development Commission (LCDC) to provide statewide planning goals and guidelines.

Under this Act, Oregon cities and counties are each required to draw up a comprehensive plan, consistent with statewide planning goals. Agricultural land preservation is high on the list of state goals to be followed locally.

If the proposed site is subject to or has used one or more of the above farmland protection programs or policies, score the site 20 points. If none of the above policies or programs apply to this site, score 0 points.

5. How close is the site to an urban built-up area?

The site is 2 miles or more from an urban built-up area	15 points
The site is more than 1 mile but less than 2 miles from an urban built-up area	10 points
The site is less than 1 mile from, but is not adjacent to an urban built-up area	5 points
The site is adjacent to an urban built-up area	0 points

This factor is designed to evaluate the extent to which the proposed site is located next to an existing urban area. The urban built-up area must be 2500 population. The measurement from the built-up area should be made from the point at which the density is 30 structures per 40 acres and with no open or non-urban land existing between the major built-up areas and this point. Suburbs adjacent to cities or urban built-up areas should be considered as part of that urban area.

For greater accuracy, use the following chart to determine how much protection the site should receive according to its distance from an urban area. See chart below:

Distance From Perimeter of Site to Urban Area	Points
More than 10,560 feet	15
9,860 to 10,559 feet	14
9,160 to 9,859 feet	13
8,460 to 9,159 feet	12
7,760 to 8,459 feet	11
7,060 to 7,759 feet	10
6,360 to 7,059 feet	9
5,660 to 6,359 feet	8
4,960 to 5,659 feet	7
4,260 to 4,959 feet	6
3,560 to 4,259 feet	5
2,860 to 3,559 feet	4
2,160 to 2,859 feet	3
1,460 to 2,159 feet	2
760 to 1,459 feet	1
Less than 760 feet (adjacent)	0

6. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?

None of the services exist nearer than 3 miles from the site	15 points
Some of the services exist more than one but less than 3 miles from the site	10 points
All of the services exist within 1/2 mile of the site	0 points

This question determines how much infrastructure (water, sewer, etc.) is in place which could facilitate nonagricultural development. The fewer facilities in place, the more difficult it is to develop an area. Thus, if a proposed site is further away from these services (more than 3 miles distance away), the site should be awarded the highest number of points (15). As the distance of the parcel of land to services decreases, the number of points awarded declines as well. So, when the site is equal to or further than 1 mile but less than 3 miles away from services, it should be given 10 points. Accordingly, if this distance is 1/2 mile to less than 1 mile, award 5 points; and if the distance from land to services is less than 1/2 mile, award 0 points.

Distance to public facilities should be measured from the perimeter of the parcel in question to the nearest site(s) where necessary facilities are located. If there is more than one distance (i.e. from site to water and from site to sewer), use the average distance (add all distances and then divide by the number of different distances to get the average).

Facilities which could promote nonagricultural use include:

- Water lines
- Sewer lines
- Power lines
- Gas lines
- Circulation (roads)
- Fire and police protection
- Schools

7. Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)

As large or larger:	10 points
Below average: Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more is below average	9 to 0 points

This factor is designed to determine how much protection the site should receive, according to its size in relation to the average size of farming units within the county. The larger the parcel of land, the more agricultural use value the land possesses, and vice versa. Thus, if the farm unit is as large or larger than the county average, it receives the maximum number of points (10). The smaller the parcel of land compared to the county average, the fewer number of points given. Please see below:

Parcel Size in Relation to Average County Size	Points
Same size or larger than average (l00 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

State and local Natural Resources Conservation Service offices will have the average farm size information, provided by the latest available Census of Agriculture data

8. If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	10 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project	9 to 1 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

This factor tackles the question of how the proposed development will affect the rest of the land on the farm The site which deserves the most protection from conversion will receive the greatest number of points, and vice versa. For example, if the project is small, such as an extension on a house, the rest of the agricultural land would remain farmable, and thus a lower number of points is given to the site. Whereas if a large-scale highway is planned, a greater portion of the land (not including the site) will become non-farmable, since access to the farmland will be blocked; and thus, the site should receive the highest number of points (10) as protection from conversion

Conversion uses of the Site Which Would Make the Rest of the Land Non-Farmable by Interfering with Land Patterns

Conversions which make the rest of the property nonfarmable include any development which blocks accessibility to the rest of the site Examples are highways, railroads, dams or development along the front of a site restricting access to the rest of the property.

The point scoring is as follows:

Amount of Land Not Including the Site Which Will Become Non-Farmable	Points
25 percent or greater	10
23 - 24 percent	9
21 - 22 percent	8
19 - 20 percent	7
17 - 18 percent	6
15 - 16 percent	5
13 - 14 percent	4
11 - 12 percent	3
9 - 11 percent	2
6 - 8 percent	1
5 percent or less	0

9. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

This factor is used to assess whether there are adequate support facilities, activities and industry to keep the farming business in business. The more support facilities available to the agricultural

landowner, the more feasible it is for him or her to stay in production. In addition, agricultural support facilities are compatible with farmland. This fact is important, because some land uses are not compatible; for example, development next to farmland cam be dangerous to the welfare of the agricultural land, as a result of pressure from the neighbors who often do not appreciate the noise, smells and dust intrinsic to farmland. Thus, when all required agricultural support services are available, the maximum number of points (5) are awarded. When some services are available, 4 to 1 point(s) are awarded; and consequently, when no services are available, no points are given. See below:

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2
1 to 24 percent	1
No services	0

10. Does the site have substantial and well-maintained on farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of non-farm investment	19 to 1 point(s)
No on-farm investments	0 points

This factor assesses the quantity of agricultural facilities in place on the proposed site. If a significant agricultural infrastructure exists, the site should continue to be used for farming, and thus the parcel will receive the highest amount of points towards protection from conversion or development. If there is little on farm investment, the site will receive comparatively less protection. See-below:

Amount of On-farm Investment	Points
As much or more than necessary to maintain production (100 percent)	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11. Would the project at this site, by converting farmland to nonagricultural use, reduce the support for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted	10 points
Some reduction in demand for support services if the site is converted	9 to 1 point(s)
No significant reduction in demand for support services if the site is converted	0 points

This factor determines whether there are other agriculturally related activities, businesses or jobs dependent upon the working of the pre-converted site in order for the others to remain in production. The more people and farming activities relying upon this land, the more protection it should receive from conversion. Thus, if a substantial reduction in demand for support services were to occur as a result of conversions, the proposed site would receive a high score of 10; some reduction in demand would receive 9 to 1 point(s), and no significant reduction in demand would receive no points.

Specific points are outlined as follows:

Amount of Reduction in Support Services if Site is Converted to Nonagricultural Use	**Points**
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
50 to 59 percent	5
40 to 49 percent	4
30 to 39 percent	3
20 to 29 percent	2
10 to 19 percent	1
No significant reduction (0 to 9 percent)	0

12. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland to nonagricultural use?

Proposed project is incompatible with existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

Factor 12 determines whether conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility of use of the first with the latter. The more incompatible the proposed conversion is with agriculture, the more protection this site receives from conversion. Therefor-, if the proposed conversion is incompatible with agriculture, the site receives 10 points. If the project is tolerable with agriculture, it receives 9 to 1 points; and if the proposed conversion is compatible with agriculture, it receives 0 points.

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor-type site or design alternative for protection as farmland along with the land evaluation information.

For Water and Waste Programs, corridor analyses are not applicable for distribution or collection networks. Analyses are applicable for transmission or trunk lines where placement of the lines are flexible.

(1) How much land is in nonurban use within a radius of 1.0 mile form where the project is intended?

(2)	More than 90 percent	(3)	15 points
(4)	90 to 20 percent	(5)	14 to 1 point(s).
(6)	Less than 20 percent	(7)	0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

(3)	More than 90 percent	(4)	10 point(s)
(5)	90 to 20 percent	(6)	9 to 1 points
(7)	less than 20 percent	(8)	0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

(4)	More than 90 percent	(5)	20 points
(6)	90 to 20 percent	(7)	19 to 1 point(s)
(8)	Less than 20 percent	(9)	0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected	20 points
Site is not protected	0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)

As large or larger	10 points
Below average deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average	9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	25 points
Acreage equal to between 25 and 5 percent of the acres directly convened by the project	1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of on-farm investment	19 to 1 point(s)
No on-farm investment	0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is convened	25 points
Some reduction in demand for support services if the site is convened	1 to 24 point(s)
No significant reduction in demand for support services if the site is converted	0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

Appendix D
Visual Simulation Methodology

Statement of Authenticity of
Truescape Limited

On behalf of

First Solar Inc.

TRUESCAPE
VISUAL COMMUNICATION

1. TRUESCAPE CREDENTIALS

1.1 Truescape has over 12 years experience working in the 3D Photo and Video Simulations industry. Truescape has completed a wide range of different visualisation projects from photo-simulations for simple projects to full computer generated 3D video simulations for complex projects. Truescape's client base spans many industry sectors such as solar, wind, transmission and generation across New Zealand, Australia, and the US.

1.2 Truescape adopts a team approach for project completion as each type and phase of a project calls for a different mix of specialised skill sets. This expertise spans many disciplines including photography, engineering, architecture, surveying, landscape architecture, 3D computer modelling, evidence preparation and presenting evidence as expert witnesses. All members of our staff have either formal qualifications or have undergone professional training and have direct experience working in each these specialised areas.

1.3 Truescape simulations have been produced as evidence in forums such as the New Zealand Environment and High Courts, Australia's Victorian Civil and Administrative Tribunal, the Supreme Court and the Connecticut Siting Council. Members of Truescape's staff have presented evidence as expert witnesses in these Courts, where our work has been subjected to cross-examination and accepted as evidence.

1.4 Truescape has assisted in providing survey controlled simulations for the following developments:

- 2003 – Meridian Energy, Te Apiti Farm, Council Hearing;
- 2004 – Meridian Energy, White Hill Farm, Council Hearing;
- 2004 – Southern Hydro, Dollar Wind Farm South Australia, Panel Hearing;
- 2005 – Genesis Energy, Awhitu Wind Farm, Environment Court;
- 2005 – Unison Energy, Hawkes Bay Wind Farm, Environment Court;
- 2006 – Meridian Energy, Project West Wind, Environment Court;
- 2006 – Acciona Energy, Wind Farm South Australia, Panel Hearing;
- 2007 – Invenergy, Moresville Wind Energy Park, New York; USA Permitting Hearing;

- 2008 – Bluewater Wind, Offshore Wind Farm, Maryland, USA; Permitting Hearing;
- 2008 – Bluewater Wind, Offshore Wind Farm, New Jersey, USA; Permitting Hearing
- 2008 – BP Alternative Energy – White Pines Project, Michigan, USA; Permitting
- 2008 - Meridian Energy, Project Mill Creek, Council Hearing
- 2008 – Meridian Energy, Project Hayes, Environment Court;
- 2009 – Meridian Energy; Project Central Wind; Environment Court
- 2010 – WestWind Energy, Australia, Permit Application;
- 2010 – Pacific Hydro; Australia, Panel Hearing;

2. SCOPE OF STATEMENT

2.1 First Solar Inc. engaged Truescape in October 2010 to provide:

- Seven survey controlled TrueView™ photo simulations from 7 pre-determined key observation point locations. The simulations are a tool to assist with the visual assessment of the proposed "Topaz Solar Farm LLC" project.
- Three computer-generated 3D-Drive-through simulations depicting the proposed Solar Farm as seen from a car driving along portions of Carrisa Highway (Blue Star Memorial Highway 58).

2.2 The scope of Truescape's work does not extend to the assessment or interpretation of the simulations for issues relating to the proposed Solar PV Array Projects visibility and its landscape and visual effects.

2.3 Page 4 provides validation of our methodology with post construction analysis of Project West Wind, a wind farm project in New Zealand.

2.4 We have set out the following in **Appendix A**

- Key Observation Point Locations and Camera Paths of 3D-Drive-through Simulations; (Page 5)
- An overview of the TrueView™ Photo Simulations; (Pages 6-7)
- An overview of the computer generated 3D-Drive-through Video Simulation; (Page 8)
- Methodology; (Pages 9-18)
- Model Input Data used to create the simulations; (Pages 19-23)

3 SUMARY AND CONCLUSION

3.1 The TrueView™ Photo-Simulations have been created using a robust methodology which when combined with the datasets outlined in this evidence sees these simulations generated using the most advanced and accurate technology available at the time of creation. Truescape consider the TrueView™ photo simulations accurately represent the primary human field of view of the Solar Farm when viewed from the surveyed view point positions at the same time of day and reflecting the same conditions as those on the day the photographs were taken.

3.2 Truescape consider that the video simulation of the Topaz Solar Farm Project depicts accurately the landform and panel positions based on the contour and engineering data provided to us. Foreground objects such as buildings, vegetation and road signage etc are representative of that actually seen on the journey simulated. Because of the parameters used in creating the video simulation, Truescape consider that the video is a fair representation of the potential views of the proposed solar farm.

VALIDATION OF THE TRUESCAPE METHODOLOGY

4.1 We have attached below some post construction analysis of the Project West Wind wind farm that compared a simulation against the completed project. This comparison demonstrates the accuracy of the TrueView methodology. In particular, it can be seen that the size and placement of the turbines in this simulation is identical to the wind farm that was constructed. It should be noted that the turbines in the simulation seem more obvious than the actual turbines in the photograph due to the atmospheric conditions experienced on the day the photograph was taken.

4.2 The simulation and photograph were produced 2 years and 7 days apart and both are taken at the same time of day so as to produce the same lighting and shadow conditions.

PHOTOPOINT 18 - GUN EMPLACEMENTS (LOOKING SOUTH TOWARDS WEST WIND)

SIMULATION OF PROJECT WEST WIND PRE CONSTRUCTION (February 2008)

GUN EMPLACEMENTS (LOOKING SOUTH)

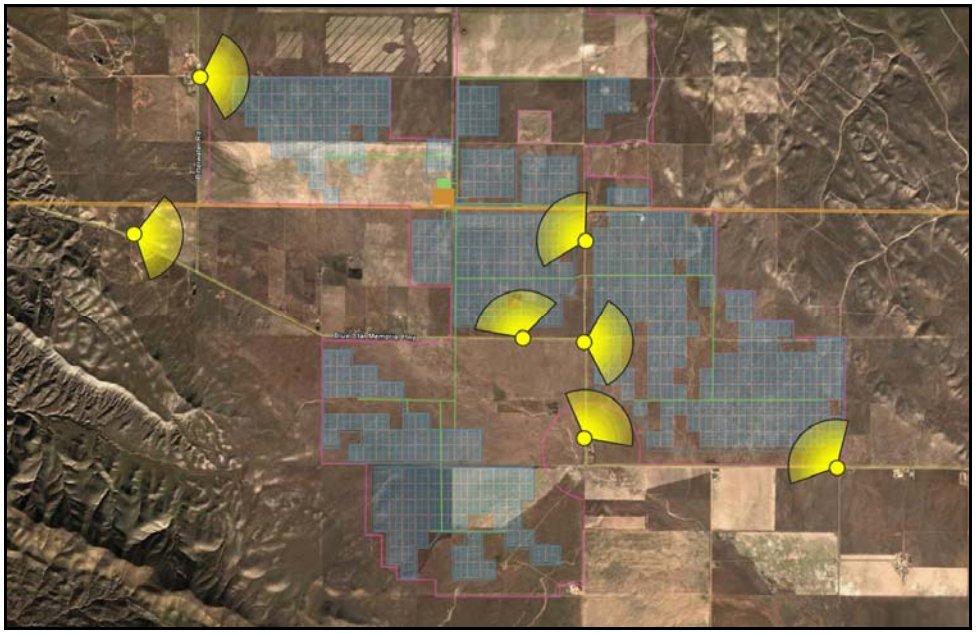
PHOTOGRAPH OF PROJECT WEST WIND POST CONSTRUCTION (February 2010)

4.3 The methodology by which the Topaz Solar Farm LLC Photo Simulations were created is based upon the same survey accurate technology that was used to create the simulation above.

APPENDIX A

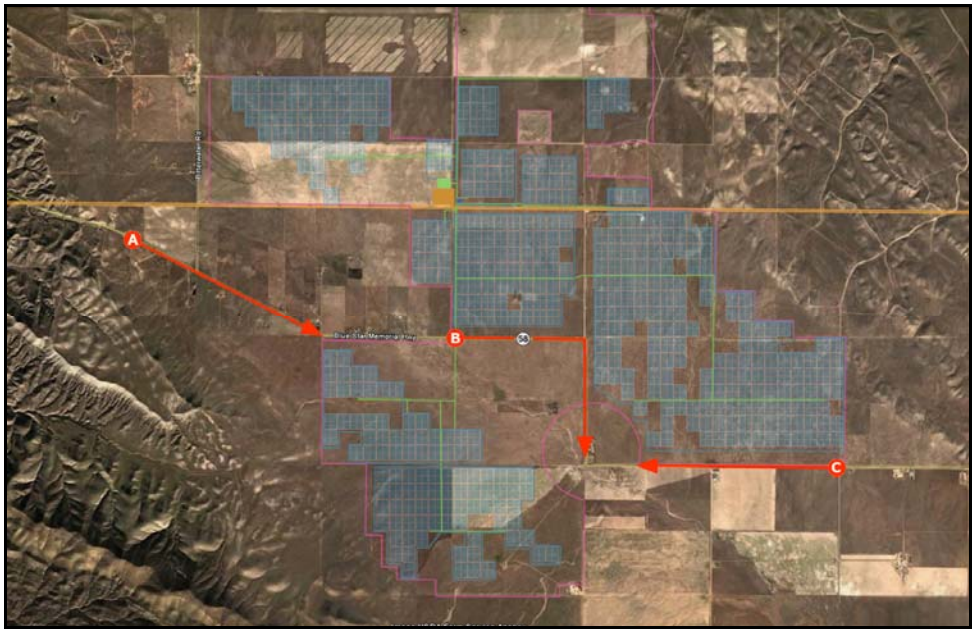
KEY OBSERVATION POINT LOCATIONS

- Location map depicting key observation point locations (KOP) used for the TrueView™ photo simulations.



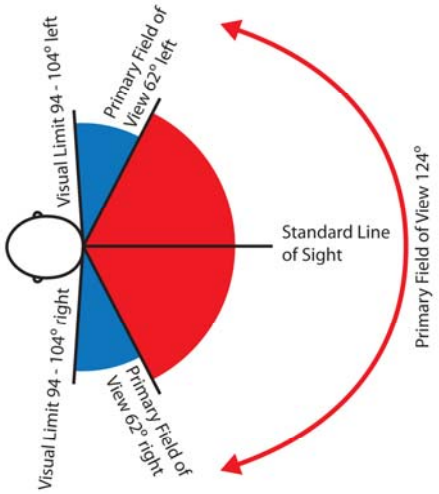
VIDEO SIMULATION PATHS

- Map showing the 3 camera paths of the computer generated 3D-Drive-through video simulations.

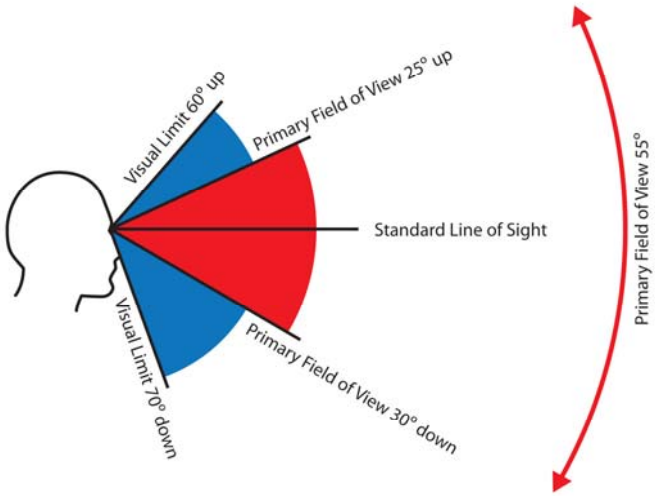


- A TrueView™ is a high resolution, true scale format photo simulation that represents **The Primary Human Field of View** that would be seen if standing 19.7 inches back from the actual photo point position at the same time of day and reflecting the same climatic conditions as those experienced on the day the photograph was taken.

PRIMARY HUMAN FIELD OF VIEW



Primary Human Horizontal Field of View

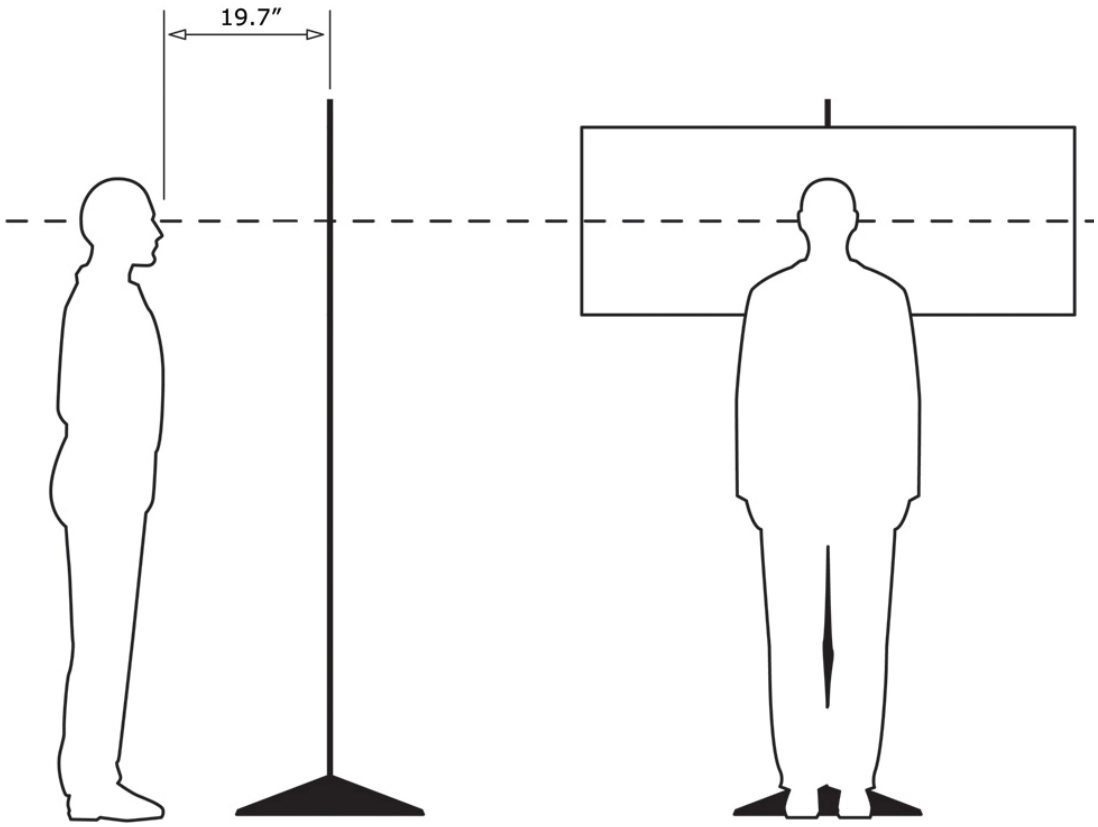


Primary Human Vertical Field of View

Reference: Panero J. and Zelnick M. (1979)
Human dimension and interior space: A source book of design reference standards, London: The Architectural Press Ltd

Correct Viewing of TrueView™ Photo Simulations

- The TrueView™ simulations when viewed at the correct height and from a distance of 19.7 inches from the center of the image completely fill your field of view with the same view you would see at the photo point position.
- The image should be displayed level at such a height to allow the viewer line of sight to be directly at the centre of the image.
- The viewer should be looking forward at the centre of the image at all times to ensure correct viewing as shown below.



3D-DRIVE-THROUGH SIMULATION

- 3D Video Simulations are animated simulations generated using the contour data outlined on Page 19, overlaid with aerial photography. The solar panels, transmission towers and substation components are then placed accurately onto the model and the video is then generated.

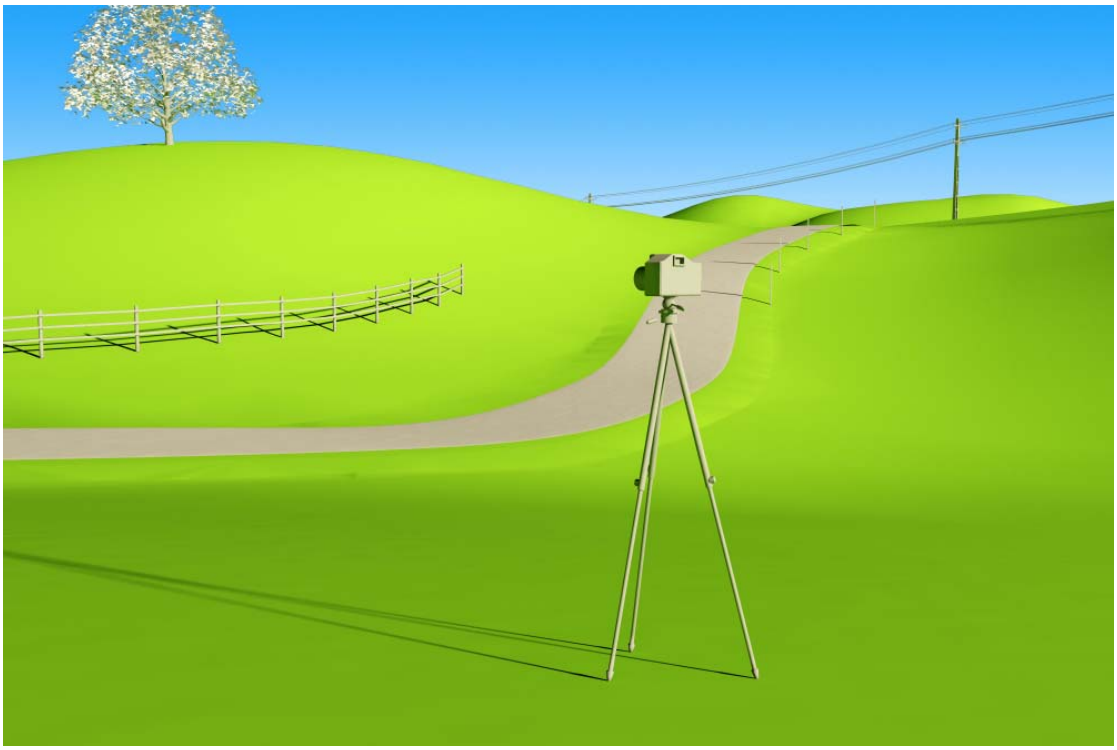
- 3D Video Simulations are an indicative depiction based on land form topography and include “clutter” objects such as vegetation, buildings and fences modelled in 3D.

- The accuracy of the 3D Video Simulations fall within the accuracy levels of the terrain contour data that was used to generate it, which is +/-1.5 ft within the project boundaries and +/-15 ft for terrain outside the project boundaries and roads not directly adjacent to the project.

- The camera in the video simulation is 4.9 ft above the road level and travels along the road not exceeding local speed limit with the view toward the solar farm.

- The image above is a representative screen-shot of the computer generated 3D-drive-by sequence along Carrisa Highway (Blue Star Memorial Highway 58)

THE SITE VISIT



- The site visit is undertaken to capture the necessary photographs and ground mark the photo point position and identify additional reference points to enable the surveyor to survey fix the exact location of the camera.

- A digital SLR 1:1 21 mega pixel camera is used to take the photography. This camera produces photographs at a resolution and clarity as good as current technology will allow when generating simulations.

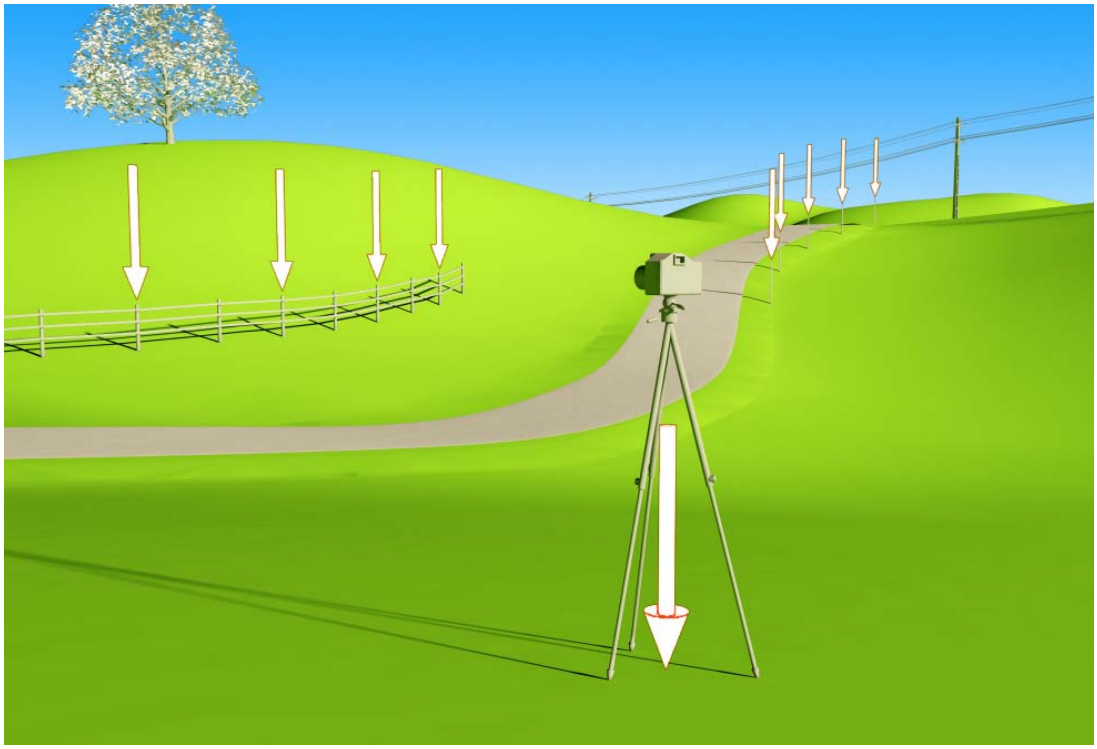
CREATING THE PRIMARY HUMAN FIELD OF VIEW IMAGE

- The photographs are taken so that they overlap precisely to allow both the Primary Human Vertical and Horizontal Field of View to be recreated into a single primary human field of view image.

THE FINAL COLOUR ADJUSTED TrueView™ PHOTOGRAPHY

- Using the middle photographs as the benchmark, each of the adjoining photographs are colour adjusted to ensure consistency throughout the image. The TrueView™ photograph is now complete.

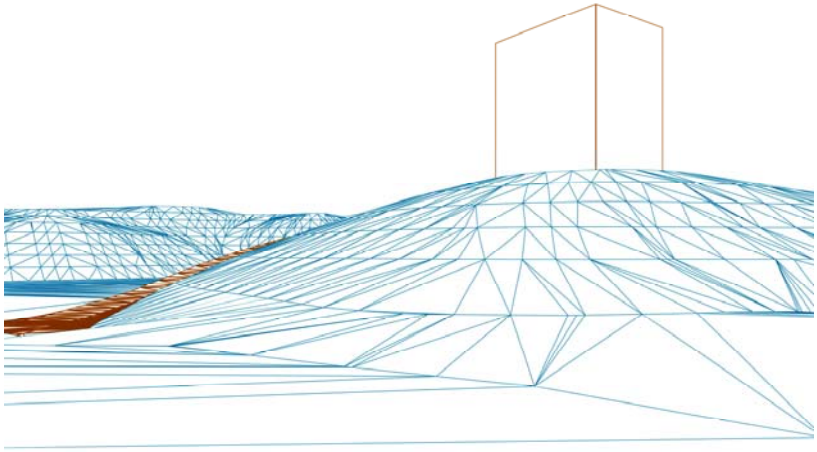
CAPTURING THE SURVEYED REFERENCE POINTS



- To accurately create a TrueView™ photo simulation the exact position of the camera is survey fixed by a surveyor.

- Additional reference points are identified during the site visit so that the 3D model can be accurately placed into the photo. These reference points include things like fences, vegetation, or temporary markers placed in the scene. The surveyor is directed to each of these points.

ALIGNING THE SURVEYED REFERENCE POINTS

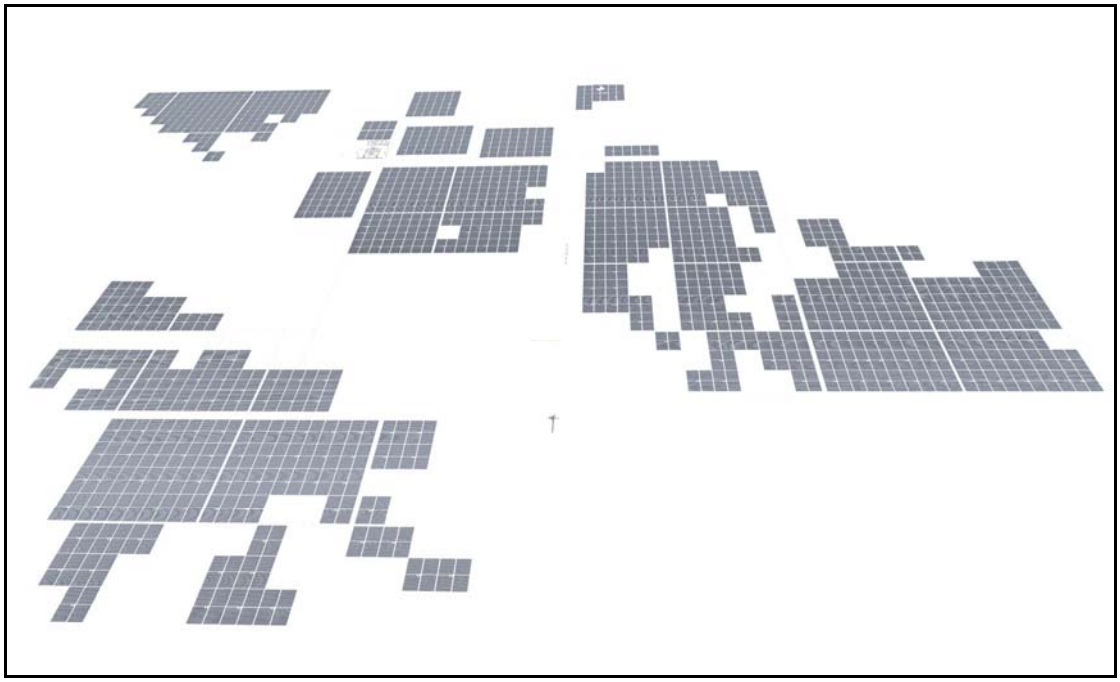


- The next step is to construct the 3D computer model. Using Autodesk® 3ds Max® 3D computer simulation software the survey fixed photo and reference points are imported into the 3D model. A “computer camera” is created to simulate the camera that captured the original photographs, including matching the focal length. The simulated “computer camera” is then positioned at the same survey coordinates as the physical observation point positions.

- The photographs are then incorporated into the computer model. This is done by correctly aligning the “computer camera” to match the surveyed reference points to the reference objects, and to the terrain if required.

BUILDING THE PROPOSED PROJECT IN 3D

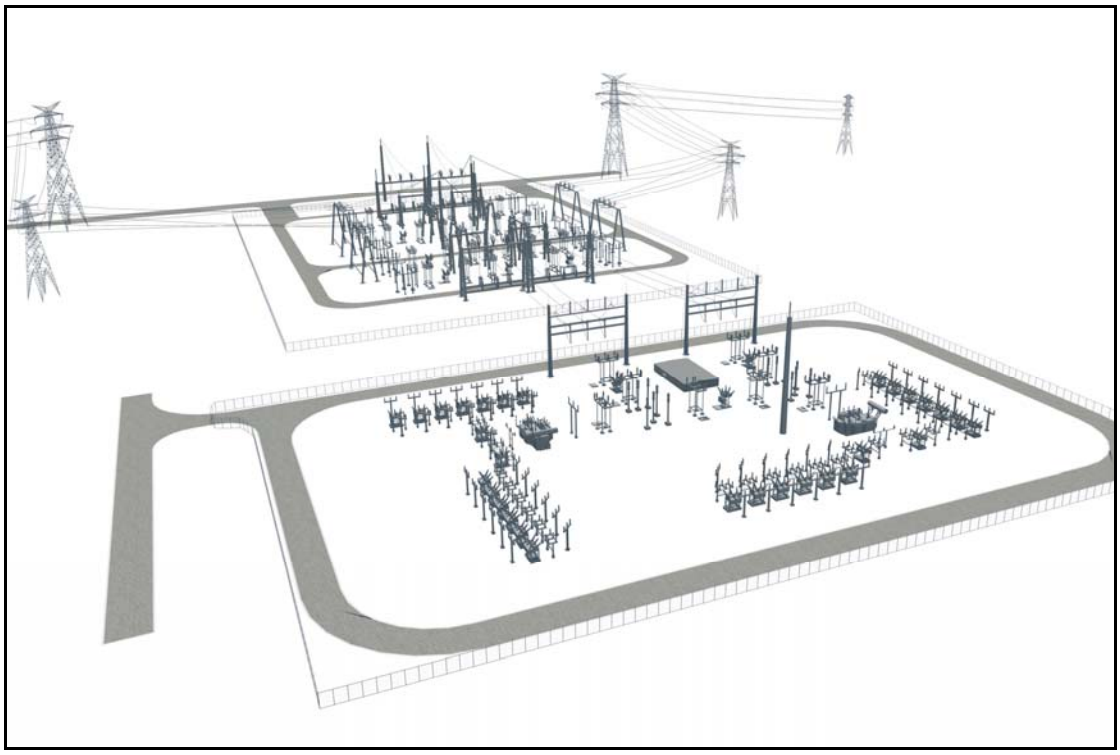
- The proposed project is then modelled in 3D in accordance with all dimensions, site layouts, colours and textures.



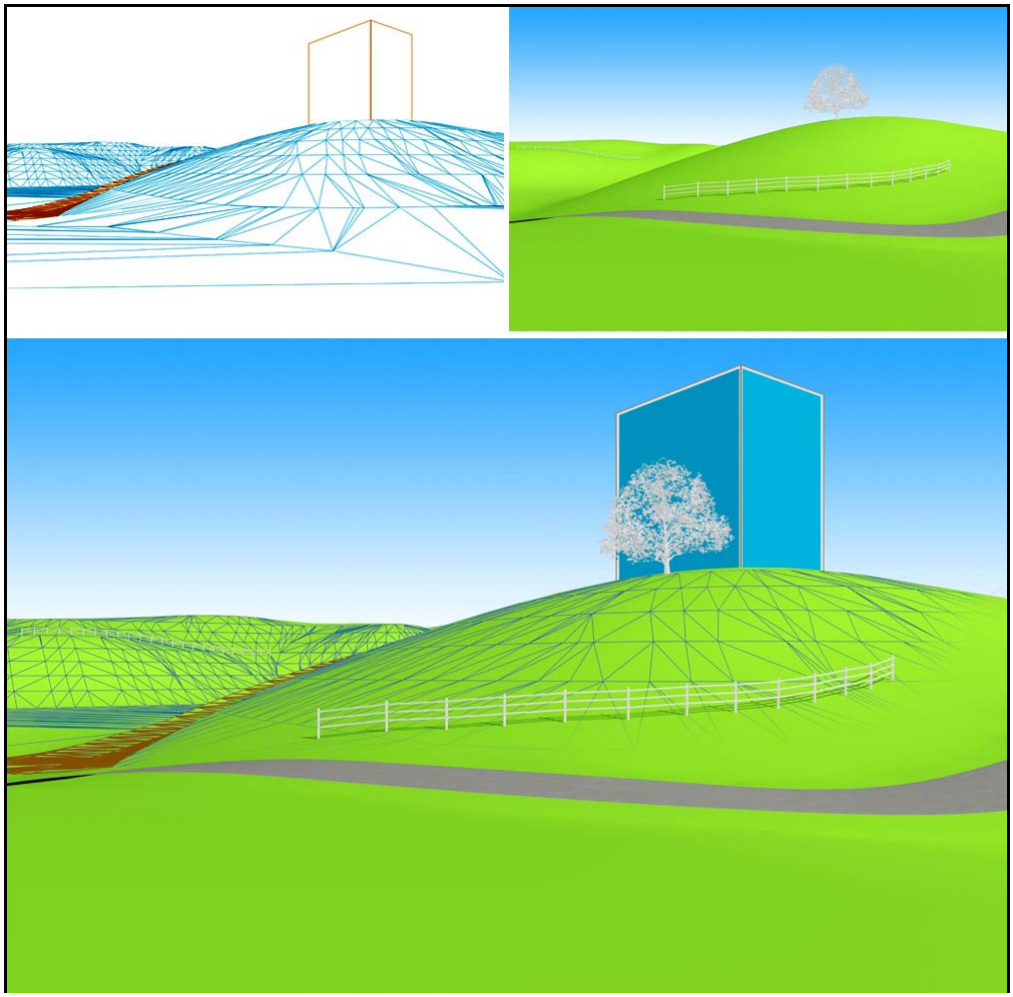
- Elevated view of 3D-model of the solar farm

METHODOLOGY

- All elements of the project are accurately modelled to design drawings



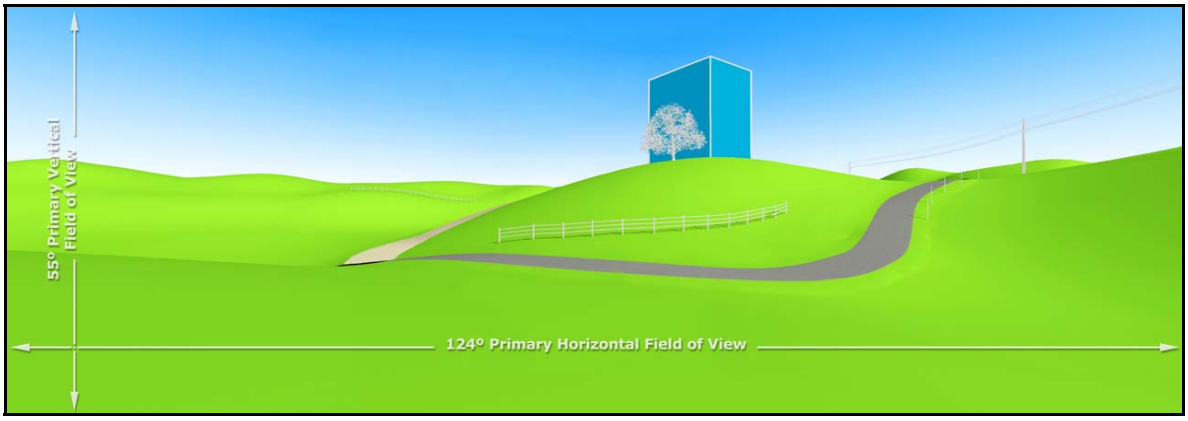
BUILDING THE PROPOSED PROJECT IN 3D



- The 3D terrain model of the site has been generated using the land contour data. The proposed solar plant has now been modelled in 3D and is now imported and positioned accurately into the scene.

- The simulation software allows the sun to be simulated for the precise period of time the original photography was captured for. This ensures the lighting of the solar plant panels as well as the shadows they cast are an accurate depiction of how the proposed solar farm would appear in the photograph at the same time of day and reflecting the same climatic conditions as those experienced at the time the photograph was taken.

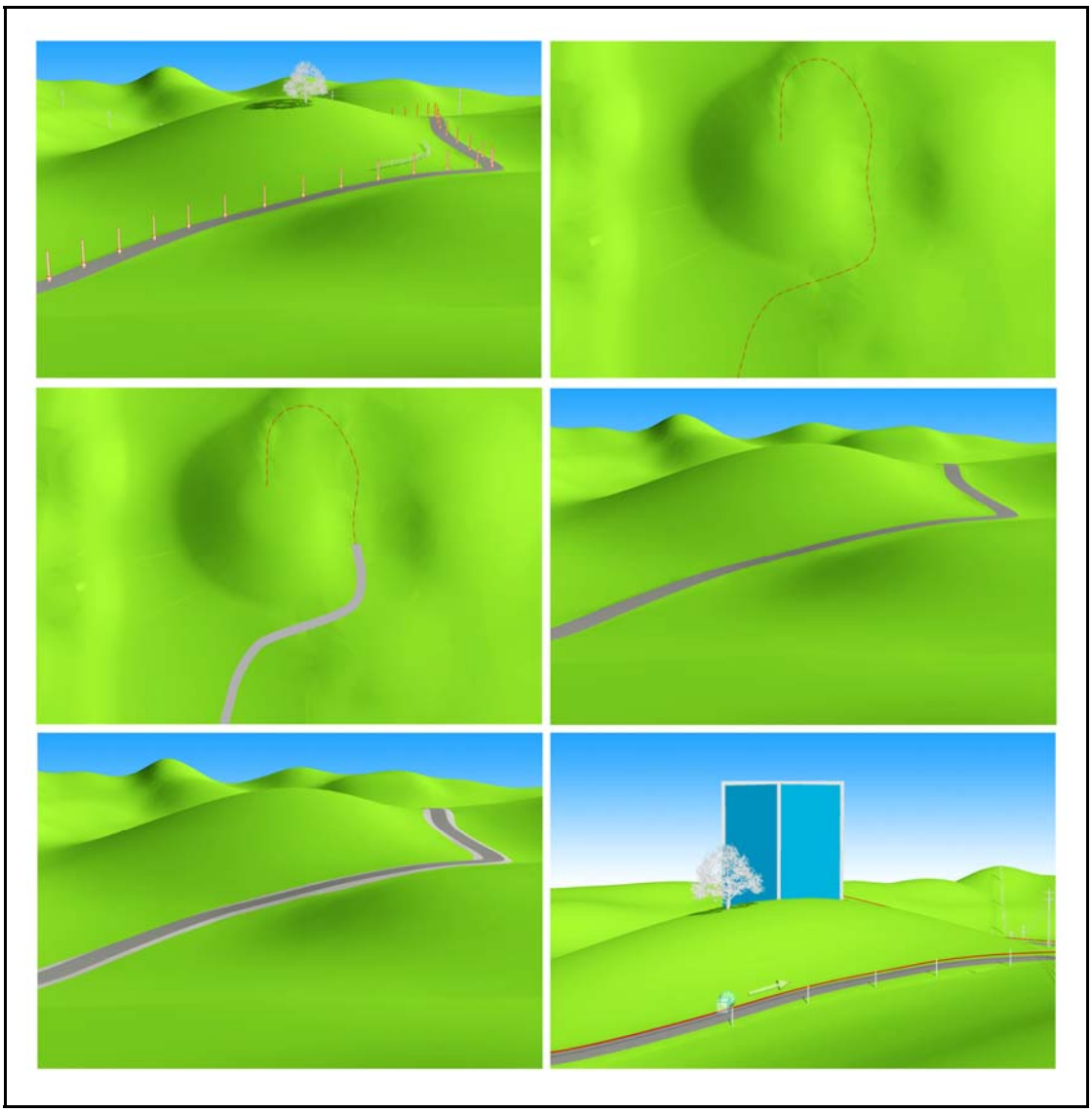
THE FINAL TrueView™ SIMULATION



- In order to correctly place existing objects that are in front of the 3D model of the development, these foreground objects are overlaid, from the original photograph, onto the computer generated image using photo shop software.

- Our extensive experience in researching how to accurately simulate the "Primary Human Field of View" has determined that the lens type is irrelevant when generating such simulations. The key factors are the aligning of the raw photographs in 3D, the size that the simulations are output at, and the viewing distance.

- The full size TrueView™ simulations are printed at a size that represents the "Primary Human Field of View", being 124° horizontal field of view and 55° vertical field of view when standing 19.7 inches from the centre of the image



- The existing road is aligned from aerial photography and terrain data to position the surface and camera for the simulation.

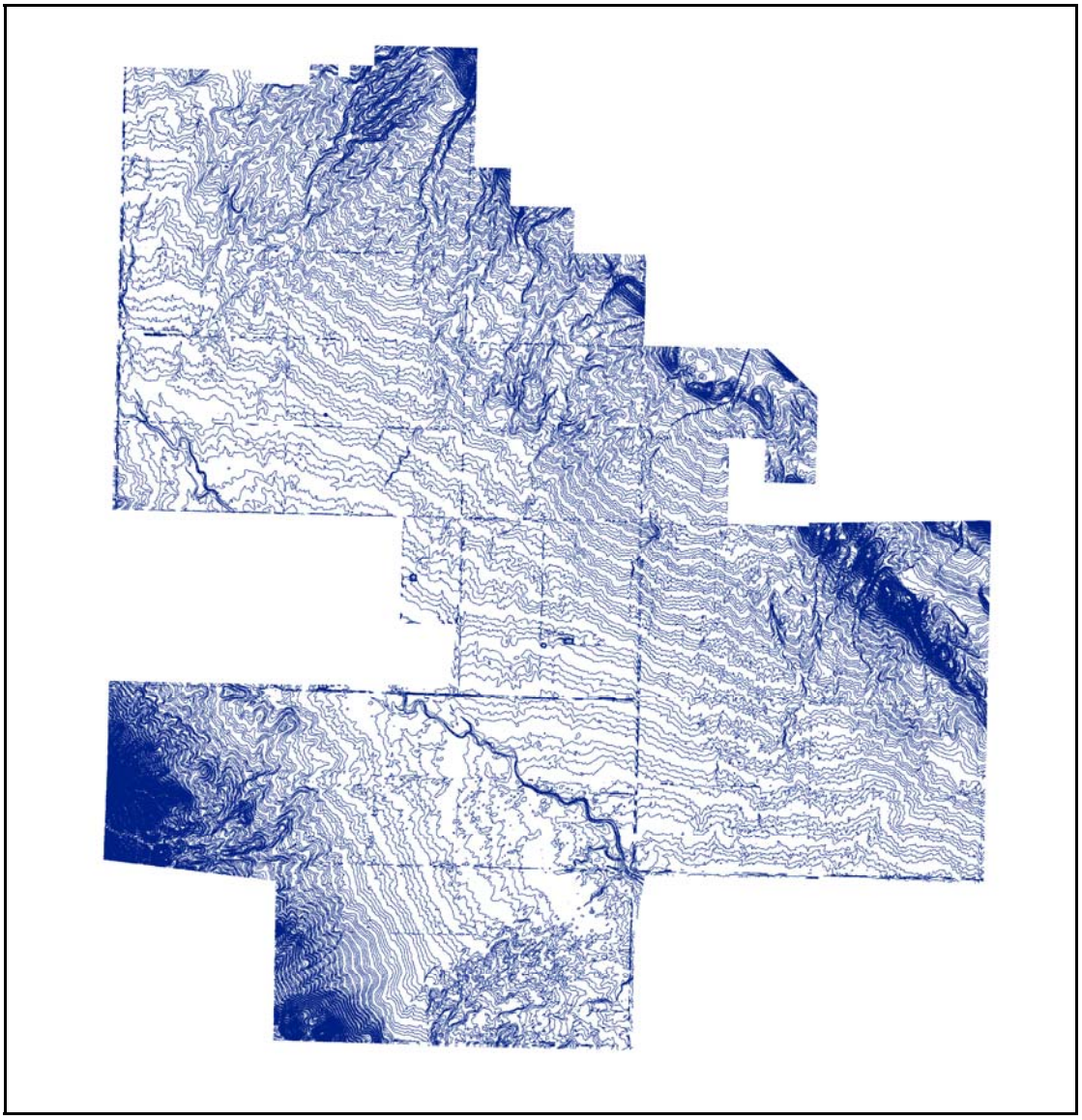
- This road surface and the solar farm components are then combined into one digital terrain model. The contour data has accuracy as stated on page 19 of this document (+/- 1.5 ft for the site and +/- 15 ft for outer terrain).

- Reference video and photography is captured on site and then used to visually place objects such as buildings, fences, power poles and roadside vegetation.

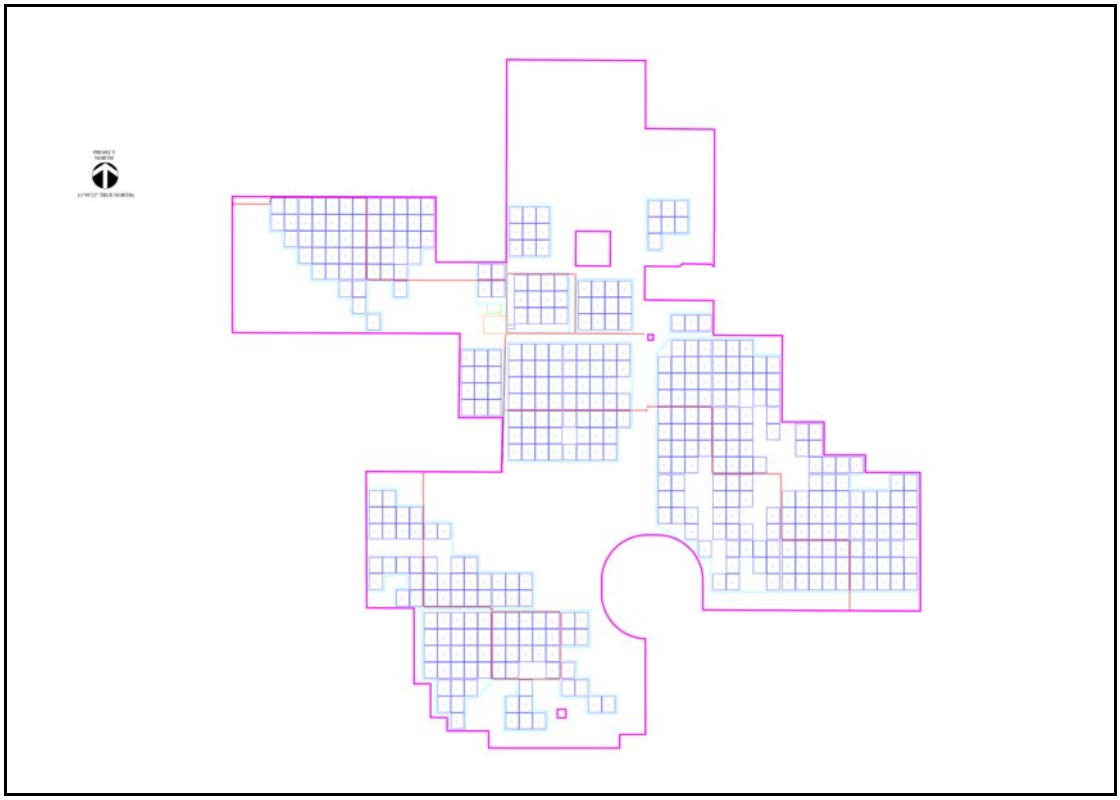
- Aerial maps are used to locate buildings, more major vegetation and models of trees are placed into the scene at the correct location.

MODEL INPUT DATA

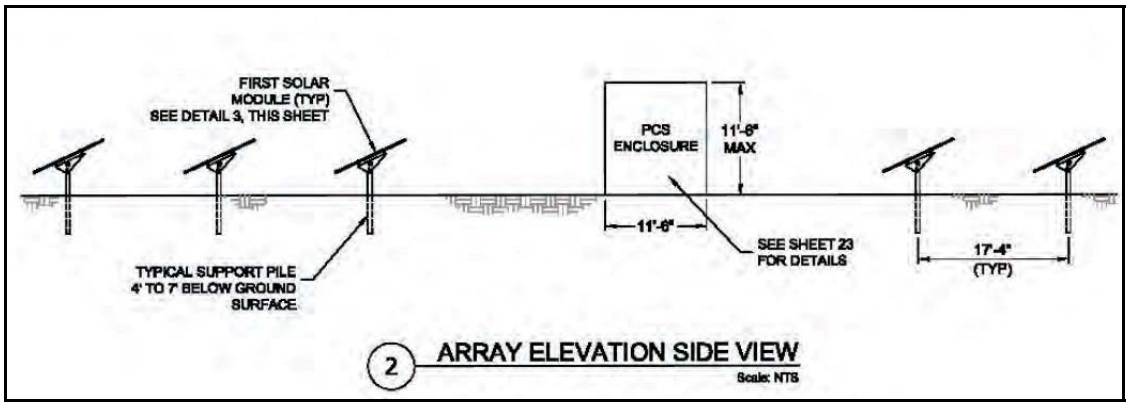
- All data including panel layout, dimensions, array placement, transmission line structure type and placement, substation structures and terrain data at 3 ft contours for the core of the site were provided by First Solar Inc.



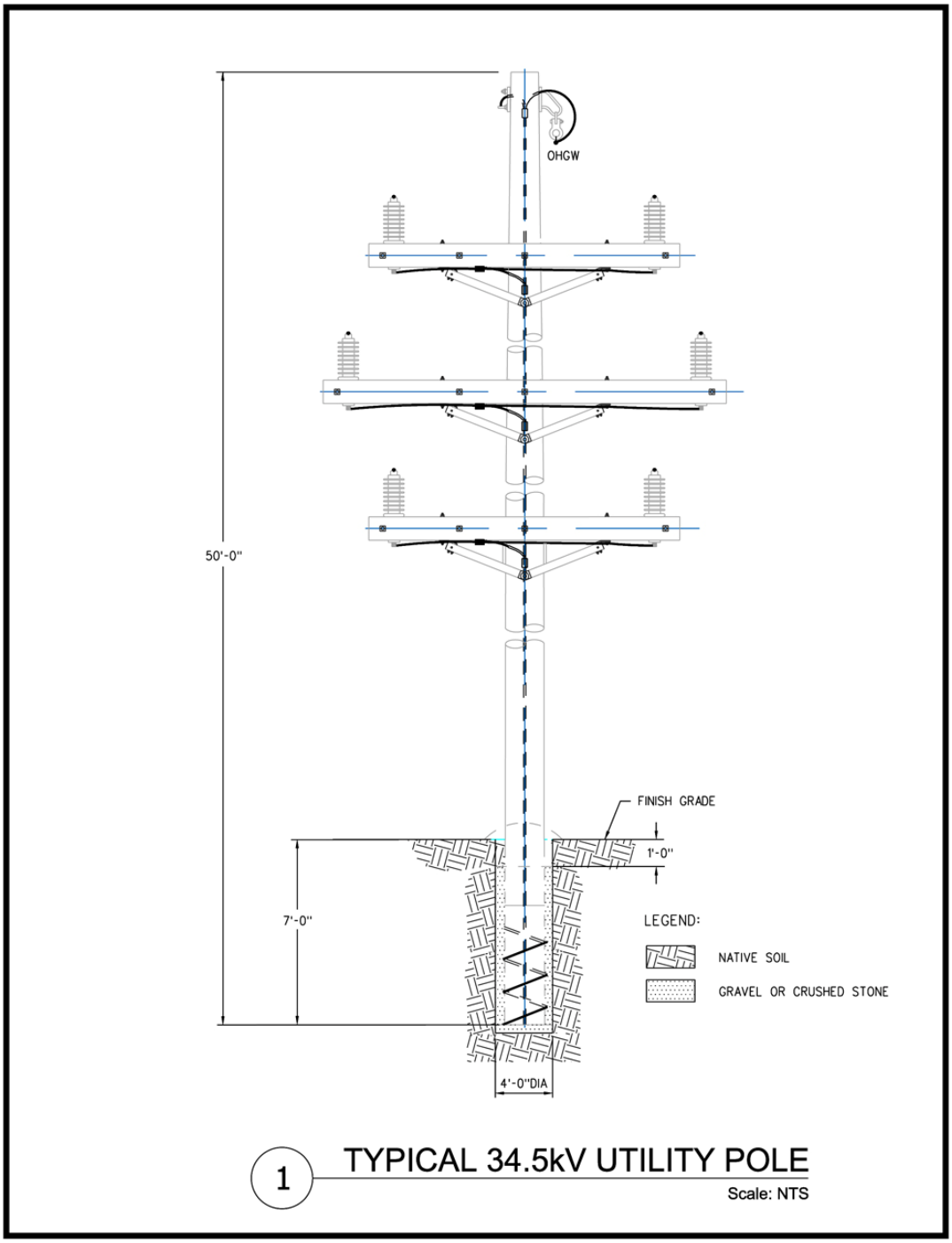
- Above CAD screenshot depicts terrain data supplied at 3 ft contour intervals for the site



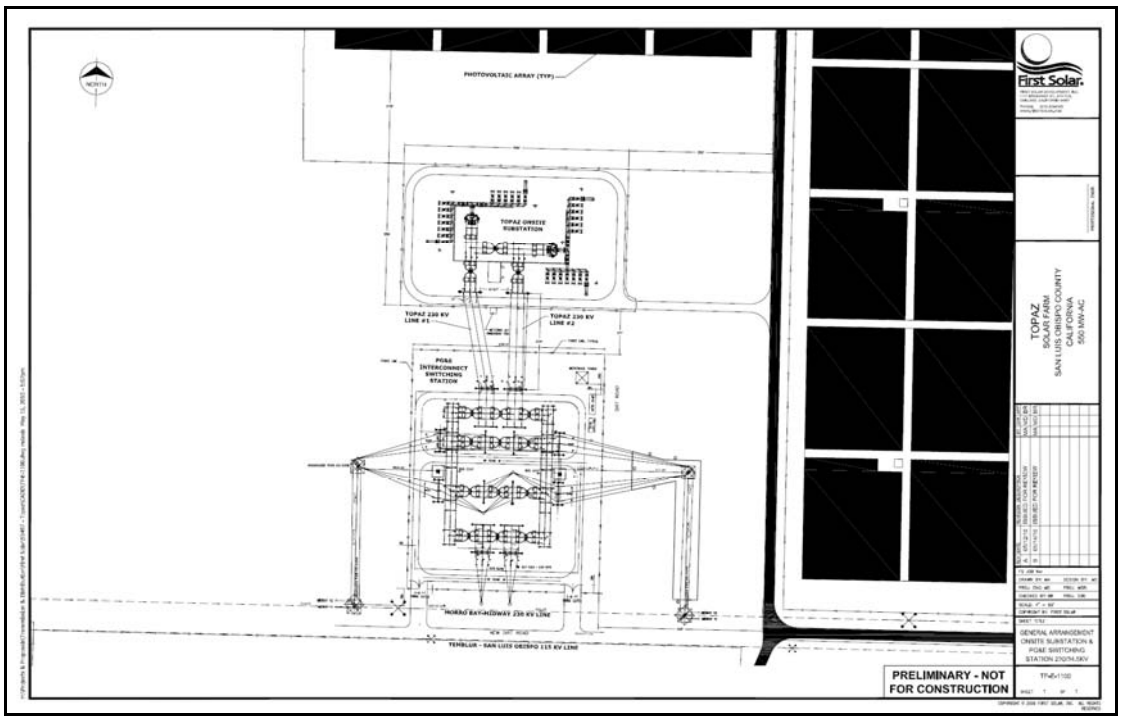
- Above CAD screenshot depicts Solar Plant layout including individual PV array placement, internal substation and interconnection substation placement



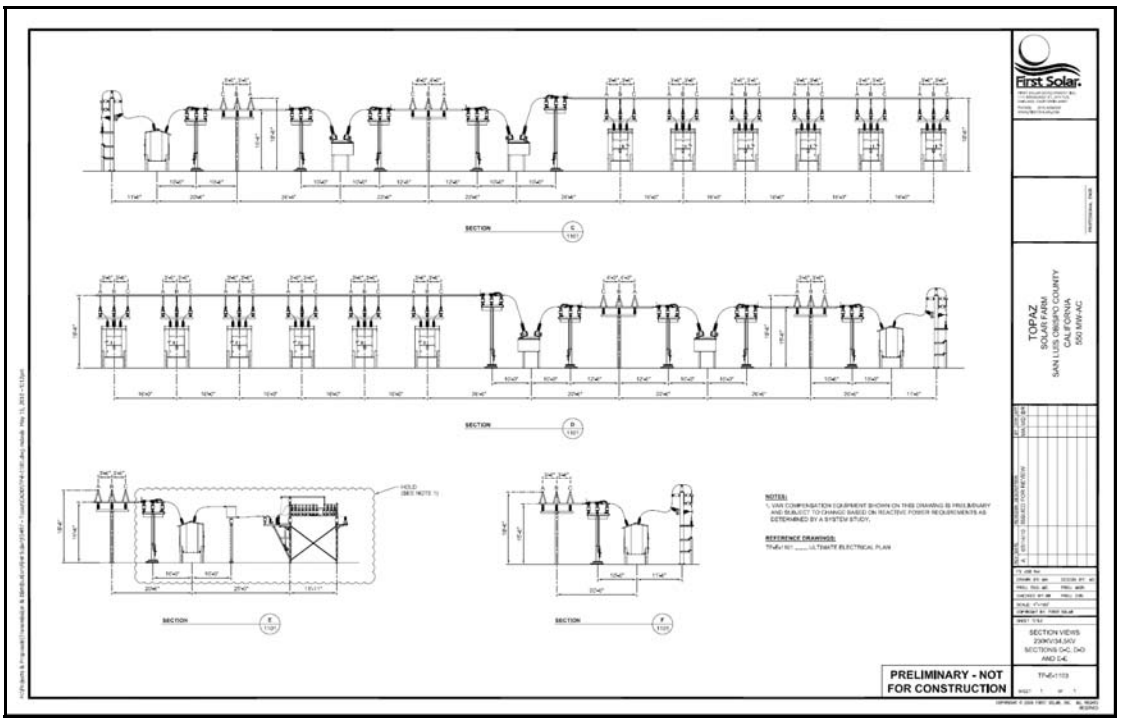
- Above CAD drawing depicting dimensions of solar panels and PCS enclosures.



- CAD drawing depicting 34.5 kV transmission towers, provided by First Solar Inc.



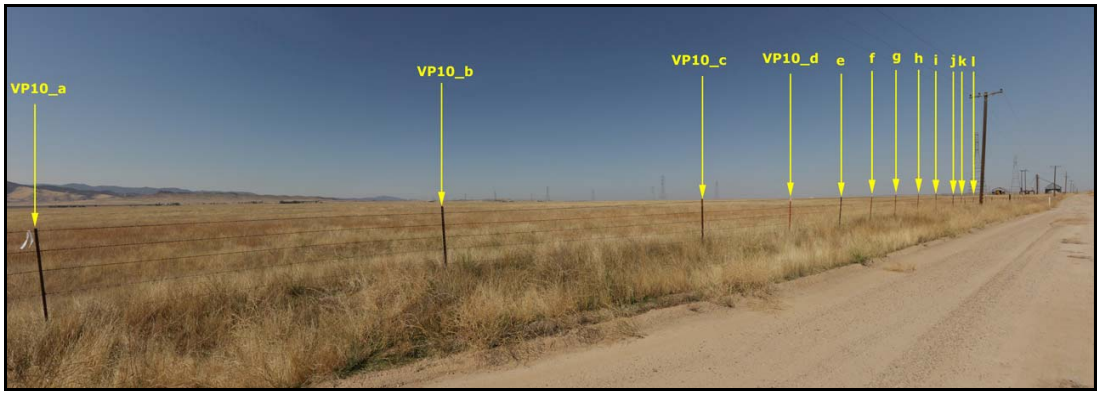
- CAD drawing depicting onsite substation and interconnect switching station layout as well as placement in relation to solar arrays and existing road



- CAD drawing depicting cross section of substation structures

MODEL INPUT DATA

- The images below represent alignment of the digital terrain - depicted by coloured overlay - and 3D model to the real world photography. Camera locations including individual reference points where precision surveyed by: Wallace Group; 612 Clarion Court; San Luis Obispo, CA 93401



- Using key observation point 04 as an example the images above show reference points depicted by coloured lines which have been requested, survey fixed and were used to accurately position 3D model of proposed Solar Farm and substations into the photograph.

TRUESCAPE VISUAL SIMULATIONS

DEPICTING PROJECT LAYOUT 3B.1

Viewpoint 01: (Blue Star Memorial Highway 58) - 1.0 miles north west from Bitterwater Road - Showing proposed Alternate 3B.1 revised layout

First Solar.

Topaz Solar Farm LLC

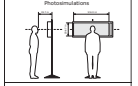
Viewpoint 01

(Blue Star Memorial Highway 58) - 1.0 miles north west from Bitterwater Road

- Viewpoint Location
- Study Area Boundary
- Existing Transmission Line
- Perimeter Fence
- Proposed 34.5 kV Collection System Line
- Proposed underground wire
- Substation, Switching Station and Maintenance Facility
- PV Array

Easting Position (California Zone 5, NAD 83) :	**0954044.3**
Northing Position (California Zone 5, NAD 83):	**2192265.5**
Elevation of Viewpoint Position (NAD 83 / ft):	**2050.6**
Height of Camera Above Ground (ft):	**5.0**
Date of Photography:	**14 October 2010 at 1:51 p.m.**
Orientation of View:	**0**
Horizontal Field of View:	**134°**
Vertical Field of View:	**55°**

Correct Viewing of TrueView™2 Photosimulations



NOTES:

Viewpoint locations have been precision surveyed by

Wallace Group
612 Clarion Court
San Luis Obispo, CA 93401

No part of this photosimulation shall be altered in any way.

Visual Assessments should be made from the full size TrueView™2 only.

Photosimulation Created Using TrueView™2 Technology

PROVIDED BY

TRUESCAPE
VISUAL SIMULATIONS

www.truescape.com

Viewpoint 03: Carrisa Highway (Blue Star Memorial Highway 58) - 0.4 miles west from Tracy Lane - Showing proposed Alternate 3B.1 revised layout

First Solar.

Topaz Solar Farm LLC

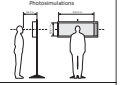
Viewpoint 03

Carrisa Highway (Blue Star Memorial Highway 58) - 0.4 miles west from Tracy Lane

- Viewpoint Location
- Study Area Boundary
- Existing Transmission Line
- Perimeter Fence
- Proposed 34.5 kV Collection System Line
- Proposed underground wire
- Substation, Switching Station and Maintenance Facility
- PV Array

Easting Position (California Zone 5, NAD 83) :	**0950667.7**
Northing Position (California Zone 5, NAD 83) :	**2329779.5**
Elevation of Viewpoint Position (NAD 83 / ft) :	**2010**
Height of Camera Above Ground (ft) :	**5.5**
Date of Photography:	**14 October 2010 at 4:18 p.m.**
Orientation of View:	**NW**
Horizontal Field of View:	**134°**
Vertical Field of View:	**55°**

Correct Viewing of TrueView™2 Photosimulations



NOTES:

Viewpoint locations have been precision surveyed by

Wallace Group
612 Clarion Court
San Luis Obispo, CA 93401

No part of this photosimulation shall be altered in any way.

Visual Assessments should be made from the full size TrueView™2 only.

Photosimulation Created Using TrueView™2 Technology

PROVIDED BY

TRUESCAPE
VISUAL COMMUNICATION

www.truescape.com

Viewpoint 05: Corner of Tracy Lane and Carrisa Highway (Blue Star Memorial Highway 58) - Showing proposed Alternate 3B.1 revised layout

First Solar.

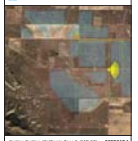
Topaz Solar Farm LLC

Viewpoint 05

Corner of Tracy Lane and Carrisa Highway (Blue Star Memorial Highway 58)

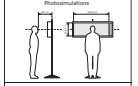
Viewpoint Location
Study Area Boundary
Existing Transmission Line
Perimeter Fence
Proposed 34.5 kV Collection System Line
Proposed underground wire

Substation, Switching Station and Maintenance Facility
PV Array



Easting Position (California Zone 5, NAD 83) :	**0983267.1**
Northing Position (California Zone 5, NAD 83):	**2329267.5**
Elevation of Viewpoint Position (NAD 83 / ft):	**2022.5**
Height of Camera Above Ground (ft):	**5.5**
Date of Photography:	**14 October 2010 at 11:57 a.m.**
Orientation of View:	**E**
Horizontal Field of View:	**134°**
Vertical Field of View:	**55°**

Correct Viewing of TrueView™2 Photosimulations



NOTES:

Viewpoint locations have been precision surveyed by

Wallace Group
612 Clarion Court
San Luis Obispo, CA 93401

No part of this photosimulation shall be altered in any way.

Visual Assessments should be made from the full size TrueView™2 only.

Photosimulation Created Using TrueView™2 Technology

PROVIDED BY

TRUESCAPE
VISUAL SIMULATIONS

www.truescape.com

Viewpoint 08: Carrisa Highway (Blue Star Memorial Highway 58) - On Corner near Carrisa Plains Elementary School - Showing proposed Alternate 3B.1 revised layout

First Solar.

Topaz Solar Farm LLC

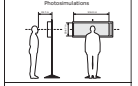
Viewpoint 08

Carrisa Highway (Blue Star Memorial Highway 58) - On Corner near Carrisa Plains Elementary School

- Viewpoint Location
- Study Area Boundary
- Existing Transmission Line
- Perimeter Fence
- Proposed 34.5 kV Collection System Line
- Proposed underground wire
- Substation, Switching Station and Maintenance Facility
- PV Array

Easting Position (California Zone 5, NAD 83) :	**5955165.5**
Northing Position (California Zone 5, NAD 83):	**2329339.5**
Elevation of Viewpoint Position (NAD 83 / ft):	**2653.7**
Height of Camera Above Ground (ft):	**5.5**
Date of Photography:	**14 October 2010 at 11:21 a.m.**
Orientation of View:	**SW**
Horizontal Field of View:	**134°**
Vertical Field of View:	**55°**

Correct Viewing of TrueView™2 Photosimulations



NOTES:

Viewpoint locations have been precision surveyed by

Wallace Group
612 Clarion Court
San Luis Obispo, CA 93401

No part of this photosimulation shall be altered in any way.

Visual Assessments should be made from the full size TrueView™2 only.

Photosimulation Created Using TrueView™2 Technology

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