

Volume I

**Final Environmental
Impact Report**

Topaz Solar Farm
Project

March 2011

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VOLUME II Comments and Responses to Comments

Introduction

Global Responses

Comments and Responses to Comments

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Executive Summary

This ~~Draft~~Final Environmental Impact Report (EIR) has been prepared by San Luis Obispo County (County) as the Lead Agency under the California Environmental Quality Act (CEQA). The County is the “public agency which has the principal responsibility for carrying out or approving the project,” and as such is the “Lead Agency” for the Topaz Solar Farm Project (Proposed Project) under CEQA, as defined in CEQA Guidelines Section 15367. CEQA requires the Lead Agency to consider the information contained in the EIR prior to taking any discretionary action. This EIR is intended to serve as an informational document to be considered by the County and other permitting agencies during deliberations on the Proposed Project.

This Executive Summary summarizes the requirements of the CEQA Statute and Guidelines, provides an overview of the Proposed Project and alternatives, outlines the potential impacts of the project and the recommended mitigation measures, and discloses areas of controversy and issues to be resolved.

Final EIR and Changes Based on Comments to the Draft EIR

The County published the Topaz Solar Farm Project Draft EIR on October 28, 2010. The Draft EIR was available for public review from the date of its release (October 28) through January 3, 2011. As required in CEQA Guidelines Section 15088 (Evaluation of and Response to Comments), the lead agency shall “evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response...The response may take the form of a revision to the draft EIR or may be a separate section in the final EIR.” The County received 82 comment letters; Volume II of the Final EIR includes the comment letters received during the 60-day public review and the County’s response to all written comments.

Some comments resulted in changes to the EIR text. These changes are noted by underlining new text and ~~striking out~~ removed text. In evaluating the comments made on the Draft EIR, the County considered whether changes made in response to comments would warrant recirculation of the EIR. This issue is addressed in detail in Volume II Global Response GR-11. The need for recirculation hinges on the extent of new information presented in the Final EIR. Section 15088.5 of the CEQA Guidelines states that “information can include changes in the project or environmental setting as well as additional data or other information.” Therefore, CEQA provides an opportunity for a lead agency to refine the environmental analysis and incorporate changes that reduce impacts from the project. CEQA does identify what would be significant new information, which the County considered in its evaluation.

The revised analysis in the Final EIR does not present any new significant environmental impact or increase the severity of impacts. The changes identified in the Final EIR clarify and amplify the information and analysis included in the Draft EIR. As such, recirculation is not necessary.

The following information summarizes the key changes presented in the Final EIR:

- In response to comments, the Applicant proposes to implement a revised array layout (Alternative 3B.1) that consolidates the project footprint, removes arrays from specific sections to facilitate wildlife movement, avoids Williamson Act Lands, and increases the setback from Highway 58. This alternative reconfigures the arrays within the project study area.
- Mitigation measures for biological resources have been modified to incorporate additional detail and specificity. Section C.6. Biological Resources includes these modified measures.
- The Applicant provided additional detail on its procedures for handling modules during construction and operation. Section C.9 Hazards and Hazardous Materials has been updated with this information.

1. Summary of Proposed Project

Topaz Solar Farms, LLC, a wholly owned subsidiary of First Solar Inc. (Applicant), proposes to construct and operate a 550 megawatt (MW) photovoltaic (PV) solar power plant (Topaz or Proposed Project). The Applicant proposes the solar facility in the Carrizo Plains, an unincorporated portion of eastern San Luis Obispo County, adjacent to Highway 58 and east of Bitterwater Road. The energy generated by the Proposed Project would be sold to Pacific Gas & Electric (PG&E) under a long-term contract in support of the requirement that it provide its customers with 20 percent of its electricity from renewable sources, as mandated by California's Renewables Portfolio Standard (RPS). See Figure ES-1 for the location of the Proposed Project.

The Proposed Project would be installed over an approximate 4,000- to 4,100-acre (six-square-mile) site that would be located within one of two study areas:

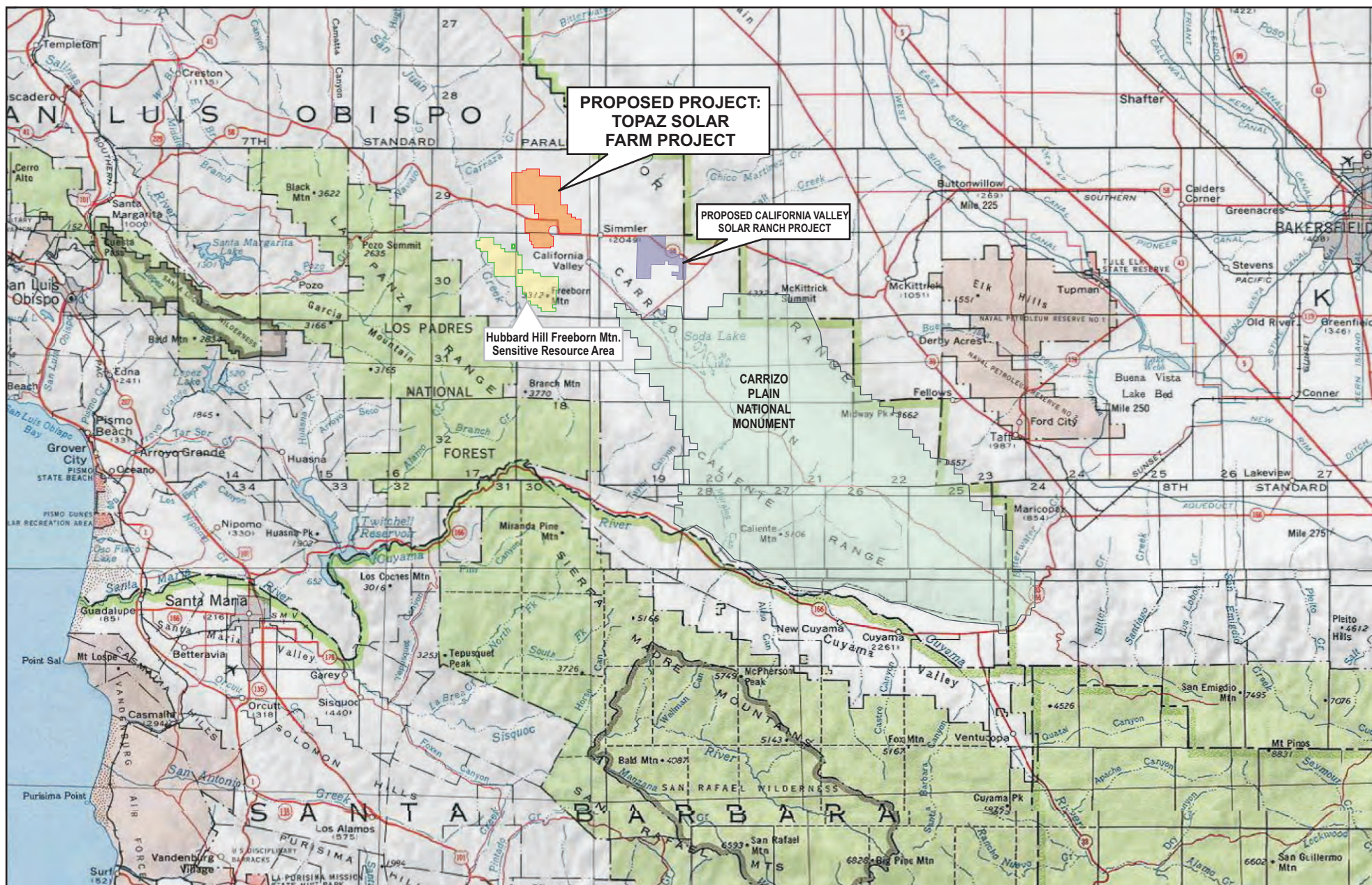
- **Study Area A** is comprised of approximately 7,800 acres and avoids all lands under the Land Conservation Act of 1965 (Williamson Act). If the Proposed Project (Option A – Southern Option) is located within Study Area A, the Proposed Project site (fenced area) would be approximately 4,100 acres.
- **Study Area B** is comprised of approximately ~~4,000~~ 6,300 acres and includes approximately 1,795 acres of land currently under Williamson Act contract. If the Proposed Project (Option B – Northern Option) is located within Study Area B, the Proposed Project site (fenced area) would be approximately 4,000 acres, including 1,212 acres of lands under Williamson Act contract (approximately 30 percent of the Proposed Project site).

Both Study Area A and Study Area B are being analyzed in this EIR as alternative locations for the Proposed Project, but the Proposed Project would only project options, and only one option would be permitted in one of these locations, if approved by the County. Each study area is comprised of land that is primarily used for grazing and dry farming agriculture. The study areas are larger than what would be needed to ultimately accommodate the Proposed Project. Each of the study areas include “reserve areas” that are identified within and between the solar array groupings. These reserve areas are additional available land that has been identified to provide flexibility in the placement of the solar arrays during final design. The reserve areas are within the project footprints and fall within the project study areas (see Figures ES-2 and ES-3). The final Proposed Project site would accommodate solar arrays, as well as an electric substation, learning center, and maintenance facilities. The project would also require upgrades to the existing transmission system and a switching station that would be constructed by PG&E and permitted by the California Public Utilities Commission. Section 2.6 includes additional information about these upgrades.

The Applicant has applied to the County of San Luis Obispo (County) for a Conditional Use Permit (CUP) to allow a solar power plant as a permitted use on the site. Because of its responsibility for issuing this permit, the County is the lead agency under the CEQA and is responsible for preparation of this EIR.

Key components of the Proposed Project include:

- Installation of up to approximately nine million PV solar modules within approximately ~~437~~ 460 arrays, and associated electrical equipment (e.g. Power Conversion Stations [PCS], PV Combining Switchgear [PVCS] houses);
- Direct conversion of sunlight to electricity without the use of water for power generation;
- PV arrays that are approximately five and a half feet in height (the distance from the ground to the top of the PV module table may vary depending on the topography);



PROPOSED PROJECT:
TOPAZ SOLAR FARM PROJECT

PROPOSED CALIFORNIA VALLEY
SOLAR RANCH PROJECT

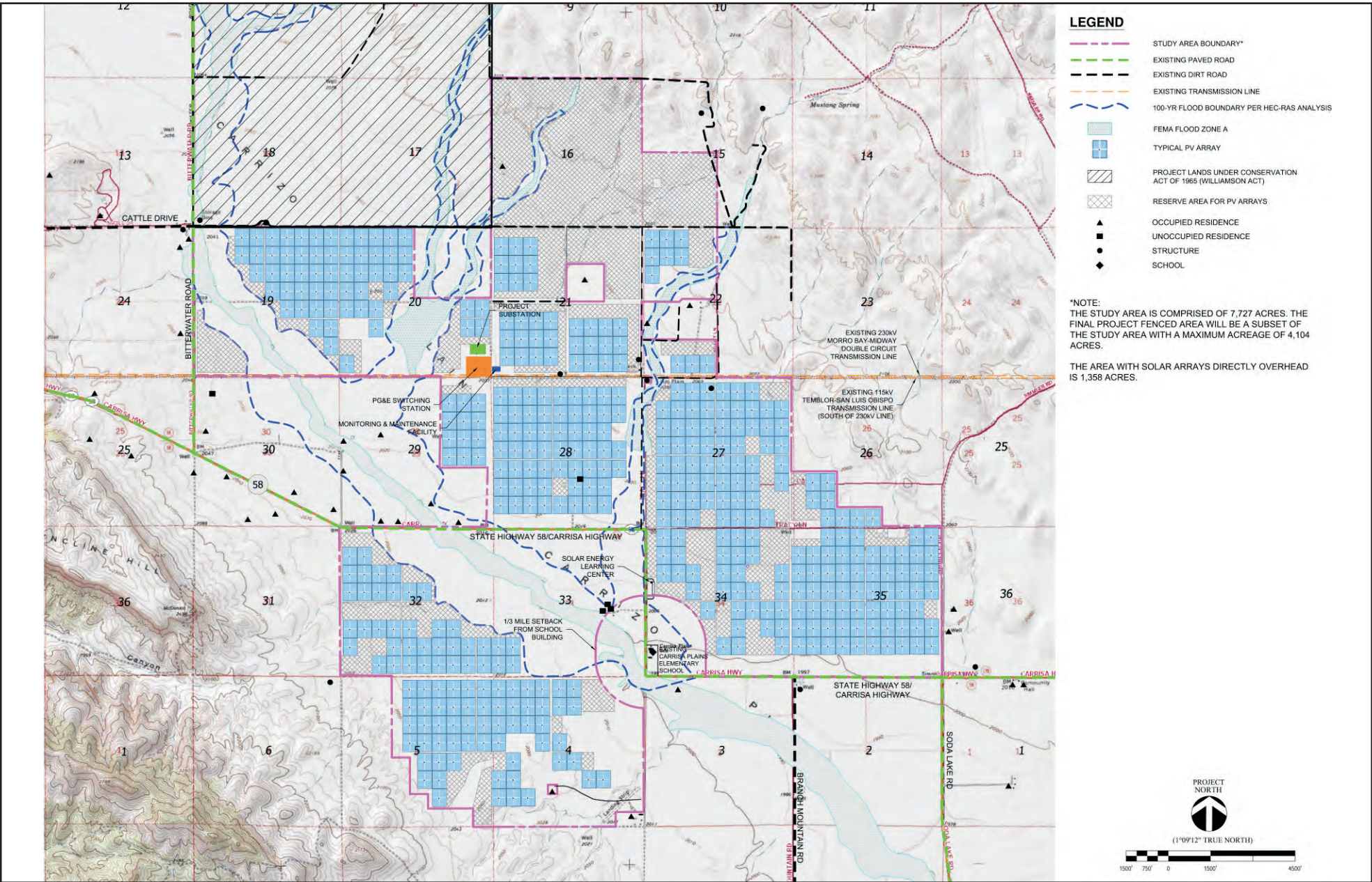
Hubbard Hill Freeborn Mtn.
Sensitive Resource Area

CARRIZO PLAIN
NATIONAL MONUMENT

LOS PADRES
MOUNTAIN NATIONAL
FOREST

Figure ES-1
Regional Location

Topaz Solar Farm Project
EXECUTIVE SUMMARY



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Source: First Solar, Inc., July 2010.

Figure ES-2
**Option A Project Study Area/
Proposed Project Site**

- Each array would be approximately 1.3 MW_{AC}, would occupy approximately seven acres, and would be equipped with a PCS, which includes two inverters and one transformer; (PV arrays could also be configured in a 2.52 MW_{AC} layout within the same project footprint and with the similar components)
- Restoration of portions of the main on-site drainage to Soda Lake to help control off-site sediment flow;
- Electrical substation and switching station;
- Monitoring and Maintenance (M&M) facility (11,250 square feet [sq. ft.]);
- Solar Energy Learning Center (900 sq. ft.);
- Placement of most medium-voltage feeder lines underground;
- Approximately 8 to 12 miles (depending on the option selected) of above-ground medium-voltage (34.5 kV) collector lines;
- Construction of approximately 14 to 22 miles (depending on the option selected) of on-site access roads utilizing existing agricultural roads to the extent feasible;
- Minimal demand for water usage during plant operation, with no water necessary for module washing and water use only for sanitary purposes;
- A leach field and septic system located adjacent to the M&M facility to support the domestic sanitary needs of employees and visitors during operation;
- Four temporary construction staging areas of approximately 10 acres each that would accommodate temporary construction offices, parking, material laydown, and storage area; and
- Perimeter fencing consisting of six-foot-high chain link with three strands of barbed wire on top and small openings approximately every 100 yards to allow for kit fox passage.

The Proposed Project would be interconnected into PG&E's existing Morro Bay-Midway 230 kilovolt (kV) transmission line, which generally runs in an east-to-west direction, north of Highway 58, crossing through the Proposed Project site. PG&E would provide electrical service for construction, as well as for monitoring and maintenance activities during Proposed Project operation. See Section B.4.1.7 for more information on transmission facilities.

As a part of the application for a CUP, the County would consider the Proposed Project's compliance with Land Use Ordinance Section 22.32.060 (B) that requires undergrounding of collection system lines that would be found on-site and would be on the low voltage side of the step-up transformer in the project substation. At this time, the above ground medium-voltage collector lines, noted above, may not be in compliance with this section of the County ordinance. If it is determined that these collector lines are not in compliance, then the Applicant is requesting a waiver of Section 22.32.060 (B).

The Applicant has preliminarily identified some parcels within each study area that may not comply with the requirements of the State Subdivision Map Act or local subdivision requirements. The Applicant will apply for and obtain the necessary approvals from the County to bring these parcels into compliance with State and local requirements. ~~Compliance may be obtained through a certificate of compliance or a parcel or tract map to legalize these underlying parcels.~~ The Applicant has submitted an application for a Tract Map (TR 3032) to combine six parcels of 40 acres each and one parcel of 80 acres into one parcel of 320 acres.

The EIR also included consideration of a Parcel Map and Lot Line Adjustment. ~~To facilitate the transfer of land to the Applicant, two property owners are requesting adjustments to their property boundaries via a Parcel Map and Lot Line Adjustment. The parcel map would have addressed the subdivision of a 640-acre parcel into two parcels of 190 acres and 450 acres. The lot adjustment would have addressed two parcels of 640 acres and 320 acres, and proposed to change the internal lot lines to reconfigure the parcels, but retain the same acreages. The County will review and consider both the Parcel Map and Lot Line Adjustment as part of its review of the CUP. These applications are not being pursued at this time but were evaluated in the EIR in case they are desired in the future to facilitate transfer of the land to the Applicant.~~

2. Environmental Analysis

This section identifies the significant, unmitigable impacts of the Proposed Project. The primary purpose of an EIR is to identify any significant effects of a project, as proposed. Knowledge of the significant impacts from the Proposed Project guides the identification of mitigation measures and of alternatives that reduce these impacts.

2.1 Option A (Southern Option) Impacts

The Proposed Project as a whole would create significant unmitigable project-related and cumulative impacts in the disciplines of aesthetics, agriculture, land use, noise, and transportation and circulation. In addition, the Proposed Project would contribute to cumulatively considerable impacts to biological resources that would be significant and unmitigable. There would also be other significant impacts that could be mitigated to a less than significant level. Other impacts that are adverse but not significant would not require mitigation. Following is a summary of the solar project impacts in each discipline. See Figure ES-2 for the configuration of solar arrays under Option A.

Aesthetics

The aesthetics analysis considers whether the presence of the Proposed Project would substantially change the landscape of the Carrizo Plain. It also considers whether project construction would create a visual impact. Major visual components include approximately ~~437~~ 460 solar arrays, and associated electrical equipment, the electrical substation, switching station, the monitoring and maintenance facility and the Solar Energy Learning Center.

The conclusion of the aesthetics analysis is that the presence of the solar field would result in a significant visual impact because it would result in a dramatic change to the landscape of the Carrizo Plain. It would introduce structure contrast, industrial character, view blockage, skylining, and glare. Along State Highway 58, the project would become the dominant feature in the landscape, strongly altering the character of the landscape, markedly lowering its visual quality, and strongly detracting from existing scenic views of the valley and mountains. While this impact is found to be unmitigable, mitigation measures are presented to reduce the severity of the visual intrusion, particularly substantial setbacks from public roadways, would greatly reduce the level of impact and are recommended as impact minimization measures.

Light reflected off ~~panels~~ modules could be of sufficient intensity to cause substantial glare to drivers along portions of Highway 58 at certain times of the day. Such glare could be distracting or possibly hazardous to motorists along these portions of Highway 58, however mitigation is recommended to reduce glare to drivers on Highway 58 to a less-than-significant level.

Construction of the project would create an impact from substantial headlight glare and ambient off-site night lighting at the laydown and parking lots, as well as visible dust unless dust control is implemented.

However, lighting control measures and standard light/glare and dust control measures (recommended in the air quality analysis) would ensure that light and dust would not create a significant visual impact, respectively.

Agriculture

The agriculture analysis evaluates whether project construction, operation, and maintenance would impact agricultural resources. Upon the start of construction, implementation of Option A would result in significant impacts as a result of temporary interferences with current agricultural activities; however, mitigation would require coordination with agricultural landowners to minimize interference with active agricultural operations.

In addition, implementation of the Proposed Project would permanently convert approximately 4,100 acres of Important Farmland and Grazing Land to a non-agricultural use. However, compensatory mitigation would permanently conserve similar quality farmland in an amount equivalent to that which would be directly impacted by the Proposed Project. Regardless, operation would result in a significant impact by limiting the type of agricultural activity on the site to activities only compatible with the non-agricultural use of the site.

Williamson Act lands are not located within the Option A project site. Therefore, there would be no impact related to the permanent conversion of Williamson Act lands.

Air Quality

This analysis includes consideration of construction emissions (from construction vehicles and dust) and the emissions from operational vehicles and dust. Construction activities would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants that would be likely to exceed the San Luis Obispo APCD significance threshold. Mitigation measures are recommended to reduce construction vehicle emissions, develop a Construction Activity Management Plan including a Dust Control Management Plan, reduce fugitive dust, and provide funding for offsite mitigation of construction equipment. With the implementation of these measures air quality impacts would be adverse but less than significant.

Operation, maintenance, and inspections would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants that would likely exceed the County APCD thresholds. Operational mitigation measures would include preparation of an Operational Dust Control Plan and funding for offsite dust control. These measures would ensure that air quality impacts during operation would be adverse but less than significant.

Climate Change

The proposed solar project would cause GHG emissions through construction activities, operational activities like maintenance and inspection, land use conversion, and other one-time (life-cycle) events such as manufacturing, transport, and ultimately disposal of project components. Indirect GHG emission reductions would also occur because of the energy output provided by the solar power plant. As shown in Table ES-1, implementation of the Proposed Project would result in a substantial reduction of direct and indirect GHG emissions over the life of the project. The Proposed Project would not produce GHG emissions over 10,000 MTCO₂e/yr, therefore impacts would be less than significant.

Table ES-1. Estimated GHG Emissions Inventory for the Proposed Project

Emission Source	One-Time GHG Emissions (MTCO ₂ e)	Life-of-Project GHG Emissions (MTCO ₂ e/yr)
Construction Phase (Short-Term)	122,345	—
Construction Phase (Short-Term), Amortized	—	4,894
Solar Plant Operation, Maintenance, and Inspection	—	446
Land Use Conversion	Negligible	Negligible
Total Proposed Project with Amortized Construction	Not Applicable	5,340
Life-Cycle (One-Time), For Information Only	457,900	18,320
Reductions Provided by Electricity Generation	—	-376,486
Total Proposed Project with Amortized Life-Cycle	Not Applicable	-352,826

Biological Resources

The Proposed Project under Option A would result in the permanent and temporary loss of habitat that now supports or provides foraging habitat for numerous protected animal species, including San Joaquin kit fox, vernal pool and longhorn fairy shrimp, golden eagle and burrowing owl. Construction and operation of the project would also impact other protected or special-status species and though significant, would be reduced to less than significant levels through implementation of mitigation measures. The project would also alter movement patterns for San Joaquin kit fox, pronghorn antelope, tule elk, and could result in habitat fragmentation. The effects of the loss of thousands of acres habitat are difficult to measure; data are not available to evaluate the effects of large solar fields. Because of the size of the project and the importance of the Carrizo Plain habitat, this EIR takes a conservative approach - if data to the contrary are not available, effects are assumed to be severe.

Other potential impacts from the project include increased mortality of endangered, threatened, special status, or candidate wildlife and plant species, temporary and permanent losses of native vegetation, spread of noxious weeds, loss of foraging habitat, and loss of bird nesting sites or nesting birds. ~~Forty-three~~ ^{thirty-nine} mitigation measures required for the project would reduce biological resource impacts to less than significant. Among other actions, these measures include providing restoration and compensation for impacts to native vegetation communities, implementing a Worker Environmental Awareness Program, preparing and implementing a Weed Control Plan, conducting pre-construction surveys, monitoring for State and Federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants, avoiding any located occurrences of listed plants and nesting and breeding birds, implementing biological construction monitoring, avoiding depressions and known water bodies, and acquiring habitat for San Joaquin kit fox.

The following impacts would result from construction and implementation of the Proposed Project:

- **Loss of native vegetation.** Implementation of Option A would result in approximately 1,721~~34~~ acres of permanent and approximately 1,719 acres of temporary impacts to California annual grassland habitat. Additionally the project would result in approximately 2,388~~79~~ acres of permanent impacts to cropland. Typically, the loss of non sensitive plant communities including California annual grassland and cropland would not be considered a significant impact. However, on the project site portions of these habitats support a broad diversity of sensitive plant and animal life. For instance, California annual grassland in the project area provides breeding, dispersal and foraging habitat for a variety of sensitive species including the San Joaquin kit fox, burrowing owl, mountain plover and western spadefoot toad.

- **Spread of noxious weeds.** The Proposed Project has the potential to introduce and increase the spread of noxious or invasive weeds, including Russian thistle, star thistle, milk thistle, and yellow star thistle. This would result from exposing disturbed earth to airborne seeds and from the inadvertent introduction of seeds on vehicles entering the site from elsewhere.
- **Loss of foraging habitat.** The Carrizo Plain supports a wide range of common and sensitive wildlife that utilize the project area and adjacent lands for foraging and other life history requirements. These include breeding, movement, and refugia. Some species are permanent residents of the area, such as San Joaquin kit fox, 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 facility and the permanent conversion of open space through placement of the solar arrays and related facilities on the site. Indirect impacts to foraging habitat could include alterations to existing topographical and hydrological conditions, increased erosion and sediment transport, and the establishment of noxious and invasive weed colonies.
- **Disturbance to wildlife and increased wildlife mortality.** Direct impacts to wildlife during construction of the Proposed 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. Indirect effects on wildlife as a result of the Proposed Project include the introduction of non-native, invasive plant species, alterations to existing hydrological conditions, and exposure to contaminants.
- **Loss of nesting birds or raptors.** The project site provides foraging, cover, and/or breeding habitat for a variety of resident and migratory birds. Direct impacts include ground-disturbing activities associated with construction of the Proposed Project, including solar array installation and grading of new access roads. Indirect impacts could include the loss of habitat due to the colonization by noxious weeds and disruption of breeding or foraging activity due to facility maintenance.
- **Disturbance of endangered, threatened, or proposed-listed plant species.** Rare plants were not detected on the project site; however, irregular plant life histories and below-average rainfall limit the ability to conclude that rare plants are absent. If present, direct impacts to listed plant species could occur from construction activities that remove vegetation, grade soils, or cause sedimentation. Indirect impacts could include the disruption of native seed banks through soil alteration, the accumulation of fugitive dust, increased erosion and sediment transport, and colonization of the site by non-native, invasive plant species. Operational impacts could include trampling or crushing of plants during routine operations, increased erosion, and the colonization and spread of noxious weeds.
- **Loss of habitat for endangered, threatened, or proposed-listed wildlife.** The project would result in loss of habitat for and/or injury or mortality of threatened or endangered wildlife species such as San Joaquin kit fox, vernal pool fairy shrimp or longhorn fairy shrimp, Kern primrose sphinx moth, California condor, golden eagle, and other State and/or federally protected birds. Collision with overhead feeder/distribution lines would be a threat to State and/or federally protected birds.
- **Loss of special-status species identified in local or regional plans, policies, or regulations, or by CDFG and USFWS.** The project would result in loss of special-status plant species; special-status amphibians (including western spadefoot toad); special-status birds (including burrowing owl), wintering birds,

and nesting avian species; and special status mammals (including American badger, pallid bat, and other special-status bat species).

- **Loss of wetlands habitats.** The Applicant conducted a preliminary delineation of potential jurisdictional wetlands occurring within the limits of Option A. This delineation resulted in the documentation of approximately twenty jurisdictional wetland features totaling approximately 2.16 ~~3.11~~ acres (Althouse and Meade, 2010f) are present in the Proposed Project area. These features included Vernal Pools, Ephemeral Wetland Depressions and Channel Wetlands. Most of the jurisdictional wetland features will be avoided and protected by buffers/setback during construction and implementation of the Proposed Project. However construction of road crossings and underground utility trenches would result in the permanent loss of approximately 0.044 acres of jurisdictional waters (Althouse and Meade, 2010d).
- **Interference with wildlife movement.** Construction of the Proposed Project would alter movement patterns of San Joaquin kit fox, pronghorn antelope, and tule elk, and could result in the fragmentation of habitat. To provide for wildlife movement the Applicant has proposed to avoid any portion of the project that occurs within the 100-year flood plain; this would preserve some movement corridors for wildlife passage through and around the Proposed Project site.

Cultural Resources

The cultural resources analysis considers whether ground disturbing activities, including construction of solar arrays, the substation, Visitor Center, fencing, and operation and maintenance facilities, would impact cultural resources (prehistoric, historic, and paleontology). While historic resources were identified within the Option A boundary, none of those resources met the California Register requirements. As proposed, Option A would avoid prehistoric site CA-SLO-2623; therefore, no impacts to this resource would occur. In addition, direct impacts to unknown significant surface or buried prehistoric and historical archaeological sites or buried Native American human remains could result from the project construction and operation. However, mitigation would reduce impacts to this site by requiring further review of the extent of the site and requiring avoidance measures.

In addition, the impact analysis includes the requirement for preparation of a plan in the event that the discovery of paleontological resources are discovered during construction of the Proposed Project. Mitigation for these impacts would include consulting a Paleontological Monitoring and Treatment Plan and monitoring for paleontological resources and data recovery along with training of personnel. These measures would reduce potential adverse impacts to less than significant.

Geology, Soils, and Minerals

The geology, soils and mineral resources analysis describes the impacts of the Proposed Project related to geologic and seismic hazards, soil erosion, and mineral resources and determines whether implementation of the Proposed Project would result in significant impacts by evaluating effects of construction and operation of the Proposed Project against the affected environment.

Project activities were found to accelerate geologic processes such as soil erosion or loss of topsoil due to the large areas of grading and disturbed surfaces. In addition, the Proposed Project would expose people or structures to potential substantial adverse effects because of the potential for seismically induced ground failure and/or groundshaking. Mitigation would reduce these impacts to less than significant by incorporating geotechnical studies in appropriate foundation design and minimize potential damage from slope failures.

Hazards and Hazardous Materials

The hazards and hazardous materials resources analysis describes the potential hazards associated with the Proposed Project site, infrastructure, activities, and materials that could impact human health and the environment. A hazardous materials database search was obtained for the Proposed Project and within 0.5 miles outside the site boundaries to identify potentially hazardous materials present at or near the site.

The EIR identified a potential hazard to people or the environment through the use or accidental release of hazardous materials that could occur due to improper handling and/or storage practices during project construction. Mitigation to reduce this impact would require the Applicant to develop and implement a site-specific spill response plan.

The hazards analysis also identified additional issues of concern including the potential for distracting flashes to pilots flying in the vicinity of the Proposed Project from ~~panel~~module glare; potentially causing the ignition of a wildfire during construction, operation, or maintenance; impacting emergency response or evacuation plans; and mobilization of existing contamination, including agricultural residue, petroleum products, a Valley Fever vector and/or naturally-occurring anthrax. Mitigation measures would reduce the impacts to less than significant. The measures include coordination with the owner of the air strip, developing and implementing a fire safety plan, ~~stopping work during Red Flag warnings~~ensuring compliance with Industrial Operations Fire Prevention Field Guide, installing electrical safety signage, coordinating traffic during emergency events, and sampling and testing contaminated soils. Additional mitigation would prohibit standing water and trash piles and would ensure vaccination of livestock for anthrax.

Land Use and Recreation

The land use and recreation analysis considers whether the construction or presence of the Proposed Project would disrupt, displace, or divide land uses. It also considers whether project construction, operation, and maintenance would conflict with a federal, State, or local land use plan, goal, standards, or policy. The EIR considers whether construction activities would reduce or impact visitation to established recreation areas, or increase the use of or change the character of established recreation areas, diminishing the recreational value.

The Proposed Project would place an extensive assemblage of solar ~~panel~~module arrays and other facility-related structures and equipment between residences that would remain within the study area's boundaries and those located along the outside periphery of the project's boundaries. Although the principal road network between these homes would be maintained, the project would create physical barriers between existing residential uses, thereby disrupting and dividing the overall connectivity of a localized rural residential community for the duration of the project's operational lifetime. Long-term residential land use impacts would be significant and unavoidable. Construction would require the displacement of current agricultural practices of the site; and operation would additionally place permanent physical barriers (e.g., the proposed solar arrays, switching station, substation, M&M, Solar Energy Learning Center and security fencing) between some of these residences for the duration of the project's operational lifetime. Mitigation would require establishing a construction liaison, providing advance notification of construction, and quarterly construction updates. Nonetheless, land use impacts would be significant and unavoidable.

Construction of the project would impact the Carrizo Plain National Monument (CPNM) campgrounds should peak construction workforce rely on the camping grounds for temporary housing. However, the development of construction-phase CPNM camping restrictions and a CPNM construction liaison are

recommended in the recreation analysis, and those measures would ensure that camping would not create a significant recreational impact.

Noise

The noise analysis considers whether construction or operation of the Proposed Project would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances. Construction of the Proposed Project would result in noise levels in excess of the County's noise limits resulting in a significant and unavoidable impact. Mitigation measures would be required that would limit noisy construction activities and delivery hours, provide advance notice of construction, shield the primary construction staging area, and require the implementation of noise-reducing features and practices for construction noise.

Increases in ambient noise levels in the vicinity due to inspection and maintenance activities could exceed the County's hourly allowable noise exposure level during nighttime hours for any nighttime maintenance involving use of a generator or similar equipment within 1,000 feet of an occupied residence or due to noise from security patrols. However, mitigation measures have been recommended that would reduce such noise to less-than-significant levels, such as using electric vehicles for security patrols. Other potential impacts including potential groundborne vibration and permanent noise level increases were found to be adverse but less than significant.

Population and Housing

This analysis considers whether the project labor force would require housing beyond the supply of local housing and temporary housing facilities and whether the project would induce population growth due to the need for workers from outside the project study area.

Construction of the Proposed Project would temporarily induce substantial population growth and would create a demand for temporary accommodations during construction that would result in significant impacts to the existing housing supply. Mitigation would require the Applicant to develop and implement a Worker Housing Program in coordination with San Luis Obispo County to identify qualified temporary accommodations, set protocols for the Applicant to reserve or coordinate accommodations, and delineate guidelines to ensure that temporary accommodations are made in an appropriate manner.

This analysis also considers whether the project would create a substantial demand for labor, a change in local employment, or a decrease in property values. The impacts would be adverse, but less than significant and a change in the local employment would be beneficial.

Public Services, Utilities, and Service Systems

The public services, utilities, and service systems considers whether the construction and operation of the Proposed Project would place demands on public services including schools, fire protection, police protection, and demands on local water, wastewater, and solid waste facilities.

Impacts to public services, in particular fire protection services, would be significant, but mitigation measures would require site features and design review by the Sheriff's Department to ensure proper emergency access and impacts would be less than significant. Impacts on utilities, in particular solid waste facilities, would be significant, but mitigation measures would ensure construction recycling, which would reduce any impacts to be less than significant. Although the California Incentives for Renewables and Efficiency property tax exemption of solar generating systems would prevent San Luis Obispo County from receiving property taxes on all of the components of the Proposed Project,

reassessment of the property taxes based on the purchase price of the project site land would increase the amount of property taxes received ten-fold, a beneficial impact to the County.

Transportation and Circulation

The Transportation and Circulation analysis evaluated the effects of traffic related to construction and operation of the Proposed Project on regional and local roadways. Traffic, including worker commute trips and truck deliveries, related to construction of the project would be added to a portion of Highway 46 that already operates at an unacceptable level of service. Consequently, the Proposed Project would result in a significant impact related to exceedance of an established LOS standard during construction. Mitigation would reduce this impact, but it would remain significant. Additionally, temporary closures of Highway 58 to allow for passage of escorted trucks through the winding portions of that roadway would result in substantial delays to existing traffic, resulting in a significant impact. Proposed Project construction traffic also has the potential to damage roadways in the project vicinity; however, implementation of mitigation would ensure impacts would be less than significant. Construction of project-related transmission structures would not result in impacts related to an obstruction hazard to aircraft. Operation of the project would not result in significant impacts to the local roadway system.

Water Resources

The water analysis considers whether the implementation of the Proposed Project would substantially deplete local groundwater supplies or substantially alter the existing drainage pattern of the site resulting in flooding offsite. It also considers whether project construction would degrade water quality or if project features located in a floodplain would result in flooding, flood diversions, or erosion. Finally the EIR considers if construction or operation of the project could cause an accidental release of contaminants and degrade water quality.

Operation of the solar field would result in potentially significant impacts that would be mitigated to less than significant with regard to groundwater supply, site drainage, water quality, flooding, and erosion with the implementation of mitigation. Mitigation would include preparing a Groundwater Monitoring and Reporting Plan; installing pervious and/or high-roughness groundcover where applicable; and managing construction site dewatering. For project features within a designated floodplain, mitigation would require measures to minimize disturbances in stream channels. To avoid impacts due to accidental releases of contaminants, the project would require an accidental spill control and environmental training, would not be allowed storage of fuels and hazardous materials near sensitive water resources, and would be required to maintain vehicles and equipment.

2.2 Option B (Northern Option) Impacts

The discussion below includes a summary of impacts associated with Option B. Refer to Figure ES-3 for the configuration of solar arrays under Option B.

Aesthetics

The project setting and impacts of Option B are essentially the same as that of Option A. The presence of the solar field would result in a significant visual impact because it would result in a dramatic change to the landscape of the Carrizo Plain and would introduce structure contrast, industrial character, view blockage, skylining, and glare. Light reflected off panels/modules could be of sufficient intensity to cause substantial glare to drivers along portions of Highway 58 at certain times of the day, however mitigation is recommended to reduce glare to drivers on Highway 58 to a less-than-significant level. Construction of the project would create an impact from substantial headlight glare and ambient off-site night lighting at the laydown and parking lots, as well as visible dust unless dust control is implemented.

However, lighting control measures and standard light/glare and dust control measures (recommended in the air quality analysis) would ensure that light and dust would not create a significant visual impact, respectively.

Differences in impacts would result primarily from differences in visual exposure of sensitive viewers to features of Option B. The overall proposed project footprint of Option B would be somewhat less than that of Option A, approximately 4,000 acres instead of 4,100 acres. However, this option would have a greater visual impact to residents and drivers along Highway 58 than Option A unless the setbacks are increased; setbacks from Highway 58 range from 69 to 119 feet. Mitigation would be required to reduce impacts by moving ~~panels~~modules to reserve areas away from Highway 58. Because there is the potential that not all solar arrays would be able to be moved into reserve areas, the visual impact from solar ~~panels~~modules that are much closer to Highway 58 is greater under Option B, than Option A, and is considered significant and unavoidable.

Agriculture

Implementation of Option B would result in the same impacts associated with Option A as a result of temporary interferences with current agricultural activities, the conversion of agricultural land, and permanent interference with agricultural operations; however, mitigation would require coordination with agricultural landowners to minimize interference with active agricultural operations. In addition, Option B would be sited on approximately 1,212 acres of lands under Williamson Act contracts. The Proposed Project would not conflict with the Land Conservation Act because Option B would not proceed without an approved contract cancellation, or Option B would be phased to allow time for the nonrenewal process to be completed before any development occurred on the Williamson Act lands. However, Option B would permanently impact Williamson Act Lands within the project boundary and result in a permanent change to the project environment. Therefore, implementation of Option B would require compensatory mitigation at a 1:1 ratio of Williamson Act or comparable lands; this would be in addition to the 1:1 compensatory mitigation required to address loss of agricultural land.

Air Quality

Implementation of Option B would result in identical impacts as Option A, including generation of dust and exhaust emissions of criteria pollutants and toxic air contaminants that would be likely to exceed the San Luis Obispo APCD significance threshold. Mitigation measures are recommended to reduce construction vehicle emissions, develop a Construction Activity Management Plan including a Dust Control Management Plan, reduce fugitive dust, and provide funding for offsite mitigation of construction equipment. However, with implementation of recommended mitigation measures, impacts to air quality would be less than significant.

Climate Change

Construction and operation Impacts related to climate change and greenhouse gas emissions for Option B would be identical to the less than significant impacts described above for Option A. As shown above in Table ES-1, total direct and indirect GHG emissions of the project, including the reductions provided by electricity generation, would be substantially reduced over the life of the project. The Proposed Project would not produce GHG emissions over 10,000 MTCO₂e/yr, therefore impacts would be less than significant.

Biological Resources

Implementation of Option B would result in all of the impacts described above for Option A. However, Option B would result in a reduction of impacts to California annual grassland and an increase in impacts

to cropland. Construction and operation of Option B would result in approximately ~~1,531~~ 1,133 acres of permanent and ~~1,124 acres of temporary~~ impacts to California annual grassland and approximately ~~2,890.75~~ acres of permanent impacts to cropland. Additionally, within the limits of Option B, the Applicant identified ~~nine~~-jurisdictional wetland features totaling approximately ~~0.7108~~ 0.7108 acres (compared to ~~20~~-jurisdictional wetland features totaling approximately ~~2.163.11~~ acres under Option A). Construction of the Proposed Project under Option B would result in permanent impacts to approximately 0.015 acres (approximately 0.044 acres under Option A) of jurisdictional habitats as a result of excavation activities and placement of fill related to the installation of road crossings and underground utility trenches (Althouse and Meade, 2010).

Cultural Resources

Under Option B, potential impacts to prehistoric and historic resources would be nearly identical to those associated with Option A. Direct impacts to unknown significant surface or buried prehistoric and historical archaeological sites or buried Native American human remains could result from the project construction and operation. However, mitigation would reduce impacts by requiring further review and avoidance measures. Mitigation is also included in the event that paleontological resources are discovered during construction. These measures would reduce potential adverse impacts to less than significant. Implementation of all mitigation measures would ensure that impacts would be less than significant.

Geology, Soils, and Minerals

Construction and operation impacts related to geology, soils, and minerals for Option B would generally be the same as Option A, with respect to accelerating geologic processes such as soil erosion or loss of topsoil due to the large areas of grading and disturbed surfaces. However, because the topography of Option B is relatively gentle, the project would not be subject to seismically induced slope failures. As such, impacts would be less than significant and mitigation would not be required.

Hazards and Hazardous Materials

Construction and operation impacts related to hazards and hazardous materials for Option B would be identical to those of Option A. Potential hazard to people or the environment could result from the use or accidental release of hazardous materials that could occur due to improper handling and/or storage practices during project construction; potentially distracting flashes of light to pilots flying in the vicinity of the Proposed Project from ~~panel~~module glare; potentially causing the ignition of a wildfire during construction, operation, or maintenance; impacting emergency response or evacuation plans; and mobilization of existing contamination, including agricultural residue, petroleum products, a Valley Fever vector and/or naturally-occurring anthrax. However, implementation of mitigation measures would reduce these impacts to less than significant.

Land Use and Recreation

Implementation of Option B would place an extensive assemblage of solar ~~panel~~module arrays and other facility-related structures and equipment between residences that would remain within the study area's boundaries and those located along the outside periphery of the project's boundaries. Although the principal road network between these homes would be maintained, the project would create physical barriers between existing residential uses, thereby disrupting and dividing the overall connectivity of a localized rural residential community for the duration of the project's operational lifetime. Long-term residential land use impacts would be significant and unavoidable.

Construction would require the displacement of current agricultural practices of the site; and operation would additionally place permanent physical barriers (e.g., the proposed solar arrays, switching station, substation, M&M, Solar Energy Learning Center and security fencing) between some of these residences for the duration of the project's operational lifetime. Mitigation would require establishing a construction liaison, providing advance notification of construction, and quarterly construction updates. Nonetheless, land use impacts would be significant and unavoidable.

Construction of the project would impact the Carrizo Plain National Monument (CPNM) campgrounds should peak construction workforce rely on the camping grounds for temporary housing. However, the development of construction-phase CPNM camping restrictions and a CPNM construction liaison are recommended in the recreation analysis, and those measures would ensure that camping would not create a significant recreational impact.

Noise

Construction of the Proposed Project would result in noise levels in excess of the County's noise limits resulting in a significant and unavoidable impact. Mitigation measures would be required that would limit noisy construction activities and delivery hours, provide advance notice of construction, shield the primary construction staging area, and require the implementation of noise-reducing features and practices for construction noise.

Increases in ambient noise levels in the vicinity due to inspection and maintenance activities could exceed the County's hourly allowable noise exposure level during nighttime hours for any nighttime maintenance involving use of a generator or similar equipment within 1,000 feet of an occupied residence or due to noise from security patrols. However, mitigation measures have been recommended that would reduce such noise to less-than-significant levels, including use of electric vehicles for security patrols. Other potential impacts including potential groundborne vibration and permanent noise level increases were found to be adverse but less than significant.

Population and Housing

Impacts related to Population and Housing for Option B would be identical to those identified for Option A. Construction of the Proposed Project would temporarily induce substantial population growth and would create a demand for temporary accommodations during construction that would result in significant impacts to the existing housing supply. Mitigation would require the Applicant to develop and implement a Worker Housing Program in coordination with San Luis Obispo County to identify qualified temporary accommodations, set protocols for the Applicant to reserve or coordinate accommodations, and delineate guidelines to ensure that temporary accommodations are made in an appropriate manner.

This analysis also considers whether the project would create a substantial demand for labor, a change in local employment, or a decrease in property values. The impacts would be adverse, but less than significant and a change in the local employment would be beneficial.

Public Services, Utilities, and Service Systems

Impacts related to public services, utilities, and service systems for Option B would be identical to those identified for Option A. Impacts to public services, in particular fire protection services, would be significant, but mitigation measures would require site features and design review by the Sheriff's Department to ensure proper emergency access to reduce impacts to less than significant. Impacts on utilities, in particular solid waste facilities, would be significant, but mitigation measures would ensure construction recycling, which would reduce any impacts to be less than significant. Although the

California Incentives for Renewables and Efficiency property tax exemption of solar generating systems would prevent San Luis Obispo County from receiving property taxes on all of the components of the Proposed Project, reassessment of the property taxes based on the purchase price of the project site land would increase the amount of property taxes received ten-fold, a beneficial impact to the County.

Transportation and Circulation

Impacts related to transportation and circulation would be exactly the same for Option B as Option A, and no difference in significance determinations would occur from the different project boundaries. Traffic, including worker commute trips and truck deliveries, related to construction of the project would be added to a portion of Highway 46 that already operates at an unacceptable level of service. Consequently, the Proposed Project would result in a significant impact related to exceedance of an established LOS standard during construction. Mitigation would reduce this impact, but it would remain significant. Additionally, temporary closures of Highway 58 to allow for passage of escorted trucks through the winding portions of that roadway would result in substantial delays to existing traffic, resulting in a significant impact. Proposed Project construction traffic also has the potential to damage roadways in the project vicinity; however, implementation of mitigation would ensure impacts would be less than significant. Construction of project-related transmission structures would not result in impacts related to an obstruction hazard to aircraft. Operation of the project would not result in significant impacts to the local roadway system.

Water Resources

Similar to Option A, operation of the solar field proposed under Option B would result in potentially significant impacts that would be mitigated to less than significant with regard to groundwater supply, site drainage, water quality, flooding, and erosion with the implementation of mitigation. Mitigation would include preparing a Groundwater Monitoring and Reporting Plan; installing pervious and/or high-roughness groundcover where applicable; and managing construction site dewatering. For project features within a designated floodplain, mitigation would require measures to minimize disturbances in stream channels. To avoid impacts due to accidental releases of contaminants, the project would require an accidental spill control and environmental training, would not be allowed storage of fuels and hazardous materials near sensitive water resources, and would be required to maintain vehicles and equipment.

2.3 Cumulative Impacts

Under the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the environmental impact report (“EIR”) together with other projects causing related impacts.” 14 Cal Code Regs §15130(a)(1). This EIR uses a “list of past, present, and probable future projects producing related or cumulative impacts.” 14 Cal Code Regs §15130(b)(1)(A). Reasonably foreseeable projects that could contribute to the cumulative effects scenario are listed in Section D of this EIR. Because the majority of the projects identified include only minor construction and renovation if any, the cumulative analysis focuses primarily on the cumulative impacts of the Proposed Project with the additional solar project and PG&E Morro Bay–Midway 230 kV transmission line reconductoring and switchyard construction.

The cumulative analysis concludes that the impacts of the Proposed Project, when combined with impacts from past, present, and reasonable future projects would create impacts that would be considered cumulatively significant and unavoidable to the following resource areas:

- Aesthetics - Locally future foreseeable projects range between two and seven miles from the Carrizo Plain National Monument, which would contribute to the conversion of a natural landscape to a

landscape with prominent industrial character; therefore, the Proposed Project would make a substantial adverse contribution of visual elements in the landscape;

- Agriculture - Implementation of both the Topaz Project and CVSR California Solar Ranch Project (CVSR) solar projects and the proposed transmission line and switchyards in the Carrizo Plain would result in the conversion of thousands of acres of lands that are currently in agricultural production, are under Williamson Act Contracts, and/or have the potential for agricultural production due to their soil quality and the history of agricultural uses on other similar soils in the project area; therefore, the loss of agriculture land contributes to significant and unavoidable impacts associated with the decrease in agricultural land throughout the State and the County;
- Biological resources - Because so much of the remaining habitat for the special status species in the Proposed Project area has been lost or degraded already, relatively minor changes within remaining habitat, particularly when considered cumulatively, would still have significant and unavoidable impacts; and cumulative impacts also have the potential to substantially reduce the size of movement corridors and alter the movement patterns of the San Joaquin Kit Fox, implementation of mitigation measures would reduce these impacts but without a regionally focused strategy for maintaining movement corridors for SJKF, the contribution of the Proposed Project to these cumulative impacts would be significant and unavoidable;
- Noise - The combination of construction-related traffic associated with the Topaz Project and the CVSR Project would result in traffic noise levels that exceed the County's threshold of 60 dB Ldn/CNEL at the property line of a residential land use resulting in a significant and unavoidable impact; and
- Transportation and Circulation - The addition of construction-related traffic from the cumulative projects to segments of Highway 46 in the AM and PM peak hours would result in a significant cumulative impact.

2.4 Growth-Inducing Effects

The San Luis Obispo General Plan recognizes that certain forms of growth are beneficial, both economically and socially. Section 15126.2(d) of the State CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth inducing if it "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Potential growth inducing components of the project addressed in this section relate to employment and population growth, increased power generation and regional population growth, and increased transmission capacity that serves renewable power development.

An average construction workforce of 400 workers per day would be required, and would occur over approximately 36 months. Workers are expected to be hired from within San Luis Obispo County to the extent practicable, including the cities of San Luis Obispo, Paso Robles, and Atascadero. Additionally, workers may be recruited from the Bakersfield area of Kern County. Some workers would originate outside the study area, and would temporarily relocate to accommodations within the Counties of San Luis Obispo and Kern for the duration of construction activities. However, as a temporary component, the construction phase would not trigger additional population growth in the area.

No more than 15 full-time staff would be employed during operation. Both San Luis Obispo County and Kern County have housing vacancy rates of greater than 9 percent, representing 38,456 vacant housing units. Even if all 15 full-time workers were to relocate to the study area, it is anticipated that adequate housing would be available without exceeding the demands of the existing housing supply within San Luis Obispo and Kern Counties. Therefore, project operation would not result in new growth in the area relating to the potential population increase.

2.5 Significant Irreversible Commitment of Resources

Section 15126.2(c) of the State CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of the project. Irreversible impacts can also result from damage caused by environmental accidents associated with the project. Build-out of the Proposed Project would commit nonrenewable resources during project construction and ongoing utility services during project operations. During project operations, oil, gas, and other nonrenewable resources would be consumed. Therefore, an irreversible commitment of nonrenewable resources would occur as a result of long-term project operations. Compliance with all applicable building codes, County policies and goals, and the mitigation measures identified in this EIR would ensure that all natural resources are conserved to the maximum extent possible.

2.6 PG&E Transmission System Upgrades

The Proposed Project would transmit the electricity generated onsite to the State's electrical grid through an existing PG&E transmission line that crosses the project site in an east to west direction. PG&E and the CAISO have studied the transmission system in the region and determined that in order to carry power generated by the Proposed Project and by the proposed California Valley Solar Ranch project, the existing transmission line would need to be upgraded and a switchyard for each solar project in the Carrizo Plain would need to be constructed for project interconnection into the transmission system (called the Solar Switching Station and Caliente Switching Station, respectively). The Solar Switching Station proposed for the Topaz project would be located within the project site boundary. The PG&E reconductoring project would be approved by the California Public Utilities Commission (CPUC), which has jurisdiction over California's investor-owned utilities. Because the County does not have the authority to approve the PG&E transmission system improvement, the impact analysis is presented in this EIR for two purposes. First, the analysis will inform the public and County decisionmakers of the impacts of this future upgrade, which would not be required if the solar projects were not approved. Second, the CPUC will consider whether this analysis is adequate to support its decision on the PG&E upgrades, when they are formally proposed.

3. Areas of Controversy

Pursuant to CEQA Guidelines Section 15132(b)(2), areas of controversy and issues to be resolved that are known to the County or were raised during the scoping process for the EIR include:

- Aesthetics impacts including glare, views from residences, and nighttime lighting;
- Loss or conversion of agriculture land, including Williamson Act Lands;
- Dust generated during construction could cause Valley Fever;
- Temperature rise on surrounding properties, especially to those surrounded by ~~panels~~ modules;
- Consequences of global warming, as they relate to local conditions;
- Biological impacts associated with locally important species and habitats;
- Hazards associated with the use of Cadmium Telluride in the PV ~~panels~~ modules;
- Ensuring landownership consent and access to properties;
- A significant change in ambient noise considering the quiet rural character of the project area;
- Concerns that population would increase as a result of hiring operational workers from outside the study area and local residents would not be hired for construction or operation;

- Concerns that temporary housing would be needed for the construction workforce;
- Concerns that population increases associated with new operational workers would increase the demand for emergency services and adversely affect schools, parks, and recreational facilities;
- Traffic impacts and deterioration of roads as a result of construction activity;
- Potential for lowering groundwater levels and degradation of water quality;
- Concern with the location of the solar facilities (why the Carrizo Plain?);
- Cumulative impacts of all the solar projects in the region; and
- Use of other technologies or rooftop solar to provide electricity.

This is not an exhaustive list of the potential areas of controversy, but key issues that were raised during the scoping process. The EIR addresses each of these potential areas of concern or controversy in detail, examines project-related and cumulative environmental impacts, identifies significant adverse environmental impacts, and proposes mitigation measures designed to reduce or eliminate potentially significant impacts. Appendix 1 of this EIR includes the Notice of Preparation, response letters, and the scoping comments received.

4. Issues to be Resolved

Section 15123(b)(3) of the CEQA Guidelines requires that any "issues to be resolved including the choice among alternatives and how to mitigate significant effects" should be identified in the EIR summary. The following major issues will be resolved by the County in its decision process:

- Approach to selection of Option A or Option B;
- Choose among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified; and
- Determine whether additional mitigation measures need to be applied to the Proposed Project.

5. Summary of Alternatives Analysis

Section 15126.6 of the State CEQA Guidelines states that an EIR must address "a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Based on the significant and unavoidable impacts on aesthetics, agriculture, biological resources (cumulative), land use, noise, and transportation, along with the proposed project objectives, several alternatives were considered as summarized below and discussed in detail in Chapter E of this EIR.

All of the alternatives evaluated in this section have been developed to meet the principal objectives of the Proposed Project, as summarized in Section E.1.1 (Consistency with Project Objectives). As such, these alternatives represent potential replacements to both Options A and B. The on-site alternatives evaluated in the EIR are reconfigurations of the Proposed Project within the overall study area boundaries for Options A and B. The off-site alternatives would also be substitutions to both Options A and B. These alternatives have been selected for evaluation due to their ability to meet the Proposed Project's primary objectives while potentially reducing some adverse environmental impacts.

5.1 Comparison of Alternatives

Table ES-2 presents a comparison of the five on-site alternatives with the Proposed Project. The two off-site alternatives are not included in the comparison table because there is less information available for these alternatives and the severity of their associated impacts cannot be predicted with as much certainty as for the alternatives located in the Proposed Project study area.

5.2 Environmentally Superior Alternative

Consistent with CEQA Guidelines Section 15126.6(d) and (e)(2), this section identifies the Environmentally Superior Alternative. Based on the analysis presented in Section E and on the impact analysis for the Proposed Project presented in Section C of this EIR, **Alternative 4 Reduced MW (No WA Lands)** and **Alternative 5 Reduced MW (Biology)** have been identified as the environmentally superior alternatives. These alternatives have been selected because they would avoid all impacts south of Highway 58, increase the project's setbacks from Highway 58 and the rural residential homes along it, increase setbacks from the Carrisa Plains Elementary School, and decrease the length of project construction. These measures would substantially reduce the severity of several temporary and permanent impacts, including air quality, climate change/greenhouse gas, hazards and hazardous materials, population and housing, public service, utilities and service systems and water resources. Additionally, south of Highway 58 significant and unavoidable impacts related to the temporary and permanent disruption, displacement, or division of existing land uses and agricultural operations (Class I) would be eliminated, as would construction-related noise impacts (Class I). Implementation of either of these two alternatives would also avoid all of the impacts associated with reconductoring the Morro Bay-Midway 230 kV transmission line.

Alternatives 4 and 5 would also reduce the severity of the following significant impacts but not to a level that would be less than significant (they would remain Class I):

- Aesthetics: Introduction of structure contrast, developed character, view blockage, skylining and glare north of Highway 58, and cumulative aesthetic impacts;
- Agriculture: Construction and operational activities would interfere with existing agricultural operations north of Highway 58, and cumulative agricultural impacts;
- Biological Resources: Construction and operational activities would incrementally contribute to adverse and unavoidable cumulative impacts related to special status species and San Joaquin kit fox connectivity corridors;
- Land Use: Construction and operational activities north of Highway 58 would disrupt, displace or divide of exiting land uses;
- Noise: Construction and operation activities north of Highway 58 would substantially increase ambient noise levels in the project vicinity, and cumulative noise impacts: and
- Transportation and Circulation: Project implementation would increase vehicle trips to local or areawide circulation system or reduce existing "Levels of Service" on public roadway(s) and cumulative transportation impacts during construction.

For an on-site alternative that maintains the Proposed Project's objective of producing 550 MW of renewable energy, **Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)** has been identified as the environmentally superior alternative. This alternative would eliminate the cumulatively significant and unavoidable (Class I) impact related to San Joaquin kit fox movement corridors, and also contribute to the protection and preservation of movement corridors for other wildlife species along the eastern and westerns sides of the Alternative 3B.1 project area in perpetuity. Alternative 3B.1 would additionally

avoid all impacts to Williamson Act lands, and substantially reduce impacts to native annual grassland habitat in comparison to both Options A and B (833 acres of disturbance as opposed to 1,721 acres of disturbance under Option A and 1,133 acres of disturbance under Option B). Alternative 3B.1's reduction in grassland habitat would reduce impact to special-status species from Class I to Class II with mitigation. Due to its increased setbacks from Highway 58 (500 feet) and the Carrisa Plains Elementary School (1,760 feet), this alternative would also lessen the severity of the Proposed Project's aesthetic impacts. Due to its compacted size, overall earth-disturbing activities associated with this alternative would be reduced by 14 to 17 percent in comparison to the Proposed Project. Although not necessarily linear in response to this decreased size, in comparison to the Proposed Project, impacts related to agriculture, air quality, biological resources, paleontological resources, and geology, mineral resources and soils under this alternative would also be expected to be reduced. However, impacts to aesthetics, agriculture, land use, noise and transportation and circulation (though less than the Proposed Project) would still remain significant and unavoidable (Class I).

5.3 Alternatives Considered

Alternatives that would avoid or substantially lessen any of the significant effects of the project and that would feasibly attain most of the basic project objectives were considered with respect to its relationship to the Proposed Project's objectives. Three alternatives were found to meet the CEQA criteria and thus were retained for the EIR's alternatives analysis.

Alternative 1 Increased Setbacks (North/South)

Option A avoids the placement of solar ~~panel~~module arrays in Sections 7, 8, 17 and 18 of T29S, R18E, all of which are designated Williamson Act lands. As proposed, Option A would additionally place solar ~~panel~~module arrays an estimated 409 to 775 feet (0.08 to 0.15 mile) away from the Highway 58 Right-of-Way (ROW).

Under **Alternative 1**, all of the solar ~~panel~~module arrays would be placed a minimum of 2,640 feet (one-half mile) away from the north and south boundaries of the Highway 58 ROW; the solar ~~panel~~module arrays that would be removed from the one-half mile buffer area would be replaced with solar ~~panel~~module arrays in Section 7, 8, 17 and 18 of T29S, R18E. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

The "footprint" of this alternative would include portions of T29S, R18E Sections 7, 8, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 34 and 35 north of Highway 58; south of Highway 58 this alternative's "footprint" would include parts of Sections 32 and 33 of T29S, R18E, as well as portions of Sections 4 and 5 of T30S, R18E. The solar ~~panel~~module arrays reserve areas associated with this alternative would be the same as for Option A, except that no reserve areas would be placed within one-half mile of Highway 58.

As with proposed Options A and B, the M&M building and project substation and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carrisa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc. would be similar to Proposed Project Option A, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

Table ES-2 Comparison of Alternatives - Impact Severity Compared to Proposed Project

Resource	Proposed Project	Alternative 1	Alternative 2	Alternative 3	Alternative 3B.1	Alternative 4	Alternative 5
Aesthetics: Permanent structure contrast, view blockage, skylining and glare	Options A and B: Significant and unavoidable Option B: Less severe south of Highway 58	Same as Option A but less severe due to 0.5 mile setbacks	Same as Option B but less severe due to 0.5 mile setbacks	Same as Option A but more severe impacts than Alternative 1 due to reduced setbacks	<u>Significant and Unavoidable but less than Option A due to increased setback</u>	Significant & unavoidable but less severe than Option A or B due to reduced size & setbacks (Preferred Alternative)	Same as Alternative 4 (Preferred Alternative)
Agriculture: Permanent loss of agricultural operations and uses	Options A and B: Significant and unavoidable north of Highway 58 Option B: No impacts south of Highway 58	Same as Option A but less severe due to 0.5 mile setback	Same as Option B	Same as Option A but more severe than Alternative 1 due to reduced setbacks	<u>Same as Option A but less severe due to reduced size (Preferred Alternative 550 MW)</u>	Significant and unavoidable but less severe due to reduced project size and 0.33 mile setbacks; (Preferred Alternative)	Same as Alternative 4 (Preferred Alternative)
Agriculture: Conflicts with Williamson Act Lands	Option A: No impact Option B: Adverse impact (1,212 acres)	Same as Option B but less severe (approx. 721 acres)	Same as Option B	Same as Option A	<u>No impact Same as Option A (Preferred Alternative 550 MW)</u>	Same as Option A (Preferred Alternative)	Same as Option B but less severe (approx. 876 acres) (Preferred Alternative)
Biological Resources: Contribution to cumulative impacts to special status species	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Options A and B	Same as Options A and B	<u>Less impact due to reduced area of grassland habitat (Preferred Alternative 550 MW)</u>	Same as Options A and B but less severe due to reduced project size	Same as Options A and B but less severe due to reduced size; preferable to Alternative 4 due to avoidance of 3 sections
Biological Resources: Contribution to cumulative impacts to movement corridors for San Joaquin kit fox	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Options A and B	Same as Options A and B	<u>Less impact - reduced encroachment on wildlife corridor (Preferred Alternative 550 MW)</u>	Same as Options A and B but less severe due to reduced project size	Same as Options A and B but less severe due to reduced project size; preferable to Alternative 4 due to avoidance of 3 sections
Land Use: Temporary and permanent disruptions, displacements or divisions of exiting land uses	Options A and B: Significant and unavoidable north of Highway 58 Option B: No impacts south of Highway 58	Same as Option A	Same as Option B	Same as Option A but more severe impacts than Williamson Act Lands Alternative 1 due to reduced setbacks	<u>Same as Option A but less severe due to reduced project size (Preferred Alternative 550 MW)</u>	Same as Options A or B but less severe due to reduced project size (Preferred Alternative)	Same as Options A and B but less severe due to reduced project size (Preferred Alternative)
Noise: Increases in ambient noise levels during construction	Options A and B: Significant and unavoidable north of Highway 58 Option B: Less severe south of Highway 58	Same as Option A but less severe due to 0.5 mile setbacks	Same as Option B but less severe due to 0.5 mile setbacks	Same as Option A but more severe impacts than Williamson Act Lands Alternative 1 due to reduced setbacks (0.33 mile)	<u>Same as Option A but less severe due to increased setbacks and reduced project size (Preferred Alternative 550 MW)</u>	Significant and unavoidable but less severe than either Option A or B due to reduced project size and 0.33 mile setbacks (Preferred Alternative)	Significant & unavoidable but less severe than Option A/B due to reduced project size & setbacks (Preferred Alternative)

Table ES-2 Comparison of Alternatives - Impact Severity Compared to Proposed Project

Resource	Proposed Project	Alternative 1	Alternative 2	Alternative 3	Alternative 3B.1	Alternative 4	Alternative 5
Transportation and Circulation: Increased congestion and contributions to existing unacceptable Levels of Service along local and areawide roads during construction	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Option B	Same as Options A and B	Same as Option A (Preferred Alternative 550 MW)	Same as Options A and B but less severe due to reduced construction period (Preferred Alternative)	Same as Options A and B but less severe due to reduced construction period (Preferred Alternative)

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar ~~panel~~module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Alternative 2 Increased Setbacks (North)

Similar to Alternative 1, **Alternative 2** would result in all solar ~~panel~~module arrays being placed a minimum of one-half mile away from the Highway 58 ROW as well as the Carrisa Plains Elementary School and rural residential uses adjacent to Highway 58. This alternative would, however, place the solar ~~panel~~module arrays that are removed within the proposed Option B one-half mile buffer area to Sections 34 and 35 of T29S, R18E. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

The conceptual site plan for Alternative 2 would include portions of T29S, R18E Sections 7, 8, 15, 16, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 34 and 35 north of Highway 58; no solar ~~panel~~module arrays would be placed south of Highway 58. The solar ~~panel~~module arrays reserve areas associated with this alternative would be the same as for proposed Option B, except that no reserve areas would be allowable within one-half mile of Highway 58 within Sections 27, 28, 29, 33, 34 or 35 of T29S, R 18E.

As with proposed Options A and B, the M&M Building and project substation and switching station would be located in Section 20 of T29S, R18E. Under this alternative, it is assumed that the Solar Energy Learning Center would be located north of the Carrisa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc. would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar ~~panel~~module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Alternative 3 Increased Setbacks (No WA Lands)

Alternative 3 would provide an approximate 1,760 (one-third mile) setback between the Proposed Project's solar ~~panel~~module arrays and the north and south boundaries of the Highway 58 ROW; it would additionally avoid all lands within the project study area that are currently under Williamson Act contracts. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

The conceptual site plan for Alternative 3 would include portions of T29S, R18E Sections 15, 16, 19, 20, 21, 22, 26, 27, 28, 29, 32, 33, 34 and 35, as well as portions of Sections 4 and 5 of T30S, R18E. Similar to Option A, this alternative would be located on lands north and south of Highway 58, but all solar ~~panel~~module arrays would be positioned a minimum of one-third mile from its ROW; the solar ~~panel~~module arrays removed from the one-third mile buffer area would be placed in Sections 15 and 16 of T29S, R18E.

The solar ~~panel~~module arrays reserve areas associated with this alternative would be the same as for proposed Option A, except that no reserve areas would be placed within one-third mile of Highway 58 within Sections 27, 28, 29, 32, 33, 34 or 35 of T29S, R 18E or Section 4 of T30S, R18E.

As with proposed Options A and B, the M&M Building and project substation and switching station would be located in Section 20 of T29S, R18E. Under this alternative, it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc. would be similar to Proposed Project Option A, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar ~~panel~~module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)

Alternative 3B.1 is a refined variant of Alternatives 3A and 3B. The Applicant submitted Alternative 3A in their comment letter as a replacement for Alternative 3 presented in the Draft EIR. Alternative 3B.1 would reduce and consolidate the project footprint by an estimated 13 (Option B) to 15 (Option A) percent from the original Proposed Project while maintaining a 550 MW generating capacity. Under this alternative the facility's fenceline would encompass an estimated 3,500 acres and entirely avoid Sections 15, 16, 17, 18, 22, 26 and 35 of T29S, R18E, as well as the eastern and southern portions on Section 4 and the western and southern portions of Section 5 of T30S, R18E. Alternative 3B.1 would avoid all lands associated with Williamson Act contracts, and reduce the use of lands associated with native annual grassland habitat and wildlife movement corridors.

This alternative is considered feasible as it represents only a consolidation and reconfiguration of the Proposed Project's solar arrays and no change to its technology or interconnection to PG&E's high voltage transmission grid. All of the lands considered under Alternative 3B.1 fall within Study Area A and have been evaluated in the EIR.

Due to Alternative 3B.1's compaction and smaller "footprint" size (3,500 acres) this alternative would reduce both construction-related and operational impacts to active agricultural activities and uses. Alternative 3B.1 would eliminate impacts to Williamson Act lands and reduce the magnitude of temporary and permanent impacts to existing agricultural uses and practices.

Under Alternative 3B.1, 833 acres of native annual grassland habitat would be permanently impacted by project implementation resulting in a net reduction of impacts to grassland habitat by 888 acres (52 percent reduction) in comparison to Option A (1,721 acres) and 300 acres (26 percent reduction) in comparison to Option B. Alternative 3B.1 would avoid all permanent impacts to native habitat and wildlife movement corridors in Sections 15, 16, 22, 26 and 35 and the eastern-most portions of Sections 27 and 34 of T29S, R18E, thereby reducing cumulative impacts to San Joaquin kit fox movement corridors to a level of less than significant with mitigation.

Due to the compacted "footprint" of Alternative 3B.1, some solar panel arrays and collection poles would be placed in jurisdictional waters and along the edges of 100-year floodplains. This alternative would result in an estimated 750 cubic yards of fill within jurisdictional waters. The Applicant has committed to securing the necessary regulatory approvals for placement of these project features within jurisdictional waters.

Alternative 4 Reduced MW (No WA Lands)

Alternative 4 would reduce the Proposed Project's generating capacity to 400 MW of electricity by decreasing the number, acreage and configuration of the solar ~~panel~~module arrays. This alternative would place all solar ~~panel~~module arrays north of Highway 58 and position them a minimum of one-

third mile from its ROW. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. Due to its decreased generating capacity this alternative would not require reconductoring of PG&E's 230 kV transmission line between the Proposed Project's switching station and the Midway Substation.

Alternative 4 would include portions of Sections 51, 16, 19, 20, 21, 22, 26, 27, 28, 29, 34 and 35 of T29S, R18E. All project-related facilities would be located a minimum of one-third mile north of Highway 58, and Sections 7, 8, 17 and 18 of T29S, R18E would be avoided.

The solar ~~panel~~module arrays reserve areas associated with this alternative would be the same as for proposed Option A, except that no reserve areas would be placed within one-third mile of Highway 58 within Sections 27, 28, 29, 32, 33, 34 or 35 of T29S, R 18E or anywhere south of Highway 58.

As with proposed Options A and B, the M&M building and project substation and switching station would be located in Section 20 of T29S, R18E. Under this alternative, it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc. would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

This alternative is considered feasible as it would not change the Proposed Project's technology or interconnection to PG&E's high voltage transmission grid and would only change the solar ~~panel~~module array configuration, spatial breadth and maximum generating capacity of either proposed Option A or B.

Alternative 5 Reduced MW (Biology)

Alternative 5 was identified to reduce potential impacts to wildlife corridors and kit fox habitat in Sections 26 27, 34 and 35 of T29S, R18E. Alternative 5 would decrease the Proposed Project's generating capacity to 400 MW by reducing the number, acreage and configuration of the solar ~~panel~~module arrays. However, as opposed to Alternative 4, this alternative would remove all of the solar ~~panel~~module arrays located in Sections 26, 27, 34 and 35 of T29S, R18E and replace them in Sections 17, 18 and 19 of T29S, R18E. Alternative 5 would place all solar ~~panel~~module arrays north of Highway 58 and their location would be a minimum of one-third mile from its ROW. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. Due to its decreased generating capacity this alternative would not require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation.

Alternative 5 would include portions of Sections 15, 16, 17, 18, 19, 20, 21, 22, 28 and 29 of T29S, R18E. All elements of this alternative would be placed at least one-third mile north of Highway 58. The solar ~~panel~~module array reserve areas associated with this alternative would be the same as for Proposed Project Option B, except that no reserve areas would be located in either Sections 7, 8, 26, 27, 34 and 35, the southwest quarter of Section 19, or anywhere within one-third mile of the Highway 58 ROW.

As with proposed Options A and B, the M&M Building and project substation and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc. would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

Alternative 5 is considered feasible because it would not change the Proposed Project's technology or interconnection to PG&E's high voltage transmission grid and would only alter the project's solar ~~panel~~module array configuration, spatial extent and maximum generating capacity.

Alternative 6 Westlands CREZ

The Renewable Energy Transmission Initiative (RETI) incorporated a new Competitive Renewable Energy Zone (CREZ), the Westlands CREZ, in its Phase 2A Update Report, dated December 2009. Alternative 6 Westlands CREZ has a potential renewable energy resource of up to 5,000 MW and is located on agriculture lands that are no longer in use (RETI, 2010). This CREZ was identified as being a moderate solar area, between 5 to 6 kilowatt hours per square meter per day (kWh/m²/day); it was incorporated in the RETI analysis because it consists of disturbed agricultural land and is adjacent to an existing transmission line (NREL, 2008; RETI, 2010).

The Westlands Water District has a lease contract with Westside Holdings, a private investment group, to use approximately 30,000 acres of fallow agriculture land for a 5,000 MW solar power plant (Sheehan, 2010). The farmland has been retired over the past decade because of a combination of water shortages and salt buildup that makes the soil toxic to crops (Sheehan, 2010).

Alternative 6 Westlands CREZ consists of approximately 30,000 acres of private land within the Westlands Water District lands service area between Kings County and Fresno County, east of Huron, north of Kettleman City, and southwest of Lemoore (Sheehan, 2010). Approximately 20,000 acres of this area are encumbered by Williamson Act contracts. The total acreage of this area would be much greater than what would be needed for an alternative to the Proposed Project, but details regarding the construction and planning ~~of~~ for specific projects within the Westlands solar park project have yet to be released. As such, the Westlands region has been considered generally rather than by a specific project design. The first phase of the Westlands Solar Park is expected to be larger than the Proposed Project. As with any solar generation project, definition of specific transmission line availability would be required, and if transmission line upgrades were needed, they would have to be evaluated under CEQA and/or NEPA.

This alternative appears to be feasible but a final determination of feasibility would be dependent upon transmission interconnection, site evaluation, design, and permitting.

Alternative 7 North Carrizo Plain

Alternative 7 North Carrizo Plain would be accessed by Highway 46, and is located 25 miles west of US Highway 101 and 27 miles east of Interstate 5. Parcels are zoned for agriculture, and are generally 40 to 160 acres in size. There are no residences in the area. According to the RETI Phase 1B Report, approximately 2,500 acres of land in the North Carrizo Plain Alternative would be feasible for a solar PV project. This alternative would be approximately one mile wide and four miles long, and would run along the Cholame Valley Road, just north of Highway 46 until reaching the San Luis Obispo/Monterey County line. The alternative is located at 1,100 to 1,200 feet above sea level and would require avoidance of Cholame Creek and nearby wetlands.

This alternative appears to be feasible but a final determination would be dependent upon whether the land could be acquired, whether a transmission interconnection is viable and acceptable to PG&E and the CAISO, engineering site evaluation (e.g., soil characteristics), design, and permitting.

5.4 Alternatives Eliminated from Further Consideration

The following list outlines the six types of alternatives that are addressed, with an explanation as to why each alternative was eliminated.

Site Alternatives

A number of alternative sites were considered during the environmental review of the former Ausra Carrizo Energy Solar Farm (CESF) and suggested by scoping comments including:

- **Sites Evaluated in CEC Staff Assessments:** Six alternative sites were considered by the California Energy Commission in the environmental review of the former Ausra CESF. The alternative sites were similar to the Proposed Project in land characteristics, and are located within reasonable proximity to transmission infrastructure. None of the sites, however, were considered to be environmentally superior to the proposed site.
- **Kern County Abandoned Oil Fields:** Disturbed oil fields in San Luis Obispo and Kern Counties were considered as site alternatives. Although numerous plugged oil wells are located in San Luis Obispo and Kern Counties, no plugged oil fields with the appropriate characteristics for development of solar power were found. Because of this, an alternative on a disturbed oil field was not found to be technically feasible.
- **Mojave Desert BLM Land:** A number of solar projects have been proposed on public land under the jurisdiction of the BLM. Although the sites are considered to be feasible, they were not considered to be environmentally superior to the proposed site and would not significantly reduce impacts without creating significant impacts of their own.

Distributed Solar Photovoltaic Alternative

A distributed solar alternative would consist of PV ~~panels~~modules that would absorb solar radiation and convert it directly to electricity. The 2009 Integrated Energy Policy Report (IEPR) defines distributed generation resources as “grid-connected or stand-alone electrical generation or storage systems, connected to the distribution level of the transmission and distribution grid, and located at or very near the location where the energy is used” (CEC,2009). Distributed solar facilities vary in size from kilowatts to tens of megawatts, but do not require transmission to get to the areas in which the generation is used. While it will very likely be possible to achieve 550 MW of distributed solar energy over the upcoming years, the very limited numbers of existing facilities make it difficult to conclude with confidence that it would be able to happen within the timeframe required for the Proposed Project. As a result, this technology was eliminated from detailed analysis.

Other Solar Technologies

Several alternative solar generation technologies were evaluated as potential alternatives to the Proposed Project, including parabolic trough, Stirling Dish, Distributed Power Tower, and Linear Fresnel. Parabolic trough technology consists of a large field of trough-shaped solar collectors arranged in parallel rows which convert solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. Stirling dish technology converts thermal energy to electricity by using a mirror array to concentrate and focus sunlight on the receiver end of a Stirling engine. The Solar Power Tower technology converts thermal energy to electricity by using heliostat (mirror) fields to focus energy on boilers located on power tower receivers near the center of each heliostat array. Finally, a solar Linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. While each of these solar generation technologies was found to achieve all or most project objectives, they were not found to be technically feasible at the Proposed Project site because they require a higher rate of solar insolation than does a solar PV facility and higher rate of solar insolation than what is available at the project site.

Conservation and Demand-Side Management

Conservation and demand-side management consist of a variety of approaches for the reduction of electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. This alternative is not technically feasible because PG&E is required to achieve aggressive energy efficiency goals laid out by the CPUC in 2004, with the aim of exceeding the maximum achievable potential energy savings defined at that time. Additional energy efficiency beyond that occurring in the baseline condition may be technically possible, but it is speculative to assume such a level of energy efficiency is achievable. With population growth and increasing demand for energy, conservation and demand-management alone is not sufficient to address all of California's energy needs. Additionally, it would not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements, so technologies such as PV solar facilities would still be required.

5.5 No Project Alternative

Consideration of the No Project Alternative is required by Section 15126.6(e) of the CEQA Guidelines. The analysis of the No Project Alternative must discuss the existing conditions at the time the Notice of Preparation was published (April 30, 2010), as well as: "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" [CEQA Guidelines Section 15126.6 (e)(2)]. The requirements also specify that: "If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed" [CEQA Guidelines Section 15126.6 (e)(3)(B)].

Under the No Project Alternative, construction and operation of Proposed Project would not occur. The baseline environmental conditions for the No Project Alternative are the same as for the Proposed Project. The baseline conditions would continue to occur into the future, undisturbed, in the absence of project-related construction activities, unless other development occurred on the site.

The objectives of the Proposed Project would remain unfulfilled under the No Project Alternative. This means that the contribution of the Proposed Project to meeting California's renewable generation goals would not occur. There are two possibilities for the No Project Alternative to the Proposed Project:

1. **Development of other solar projects in the Carrizo Plain.** Given the transmission capacity available (with reconductoring of the PG&E transmission line) to serve generation in the Carrizo Plain, it is possible that other solar projects would be proposed in the Carrizo Plain. If this occurs, the impacts would likely be similar to those of the Proposed Project, or potentially greater depending on the size (in terms of generating capacity and associated acreage) of the facility or facilities proposed.
2. **Development of solar projects in other parts of California.** If the County determines that development of the Proposed Project is not appropriate in the Carrizo Plain, renewable generation development could occur in other parts of the State.

6. Summary of Impacts and Mitigation Measures

The tables on the following pages provide a summary of the potential impacts of the Proposed Project and the mitigation measures identified through the EIR analysis to reduce impacts.

Table ES-3. Summary of Significant Unmitigable (Class I) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
Aesthetics	
AE-2: Project would introduce structure contrast, industrial character, view blockage, skylining and glare	AE-2.1: Maintain setbacks for public roads (Option A only) AE-2.2: Install electric lines underground AE-2.3: Provide offsite screening for residences AE-2.4: <u>Prepare and implement an Exterior lighting conditions plan</u> AE-2.5: Install a physical barrier to mitigate potential reflective glare AE-2.6: Increase setbacks from Highway 58 (Option B only)
AE-3: Project would create cumulatively considerable contribution to significant visual impacts when combined with impacts from past, present, and reasonable future projects	AE-2.1: Maintain setbacks for public roads (Option A only) AE-2.2: Install electric lines underground AE-2.3: Provide offsite screening for residences AE-2.4: <u>Prepare and implement an Exterior lighting plan</u> AE-2.5: Install a physical barrier to mitigate potential reflective glare AE-2.6: Increase setbacks from Highway 58 (Option B only)
Agriculture	
AG-2: Operation would permanently convert Important Farmland to non-agricultural use	AG-2.1: Mitigate the loss of farmland through permanent preservation of off-site farmlands
AG-4: Project would create cumulatively considerable agricultural impacts when combined with impacts from past, present, and reasonable future projects	AG-1.1: <u>Coordinate Construction Timing Plan activities with agricultural landowners</u> AG-2.1 Mitigate the loss of farmland through <u>payment to an agricultural land trust permanent preservation of off-site farmlands</u> AG-3.1: Mitigate the loss of Williamson Act Lands through permanent preservation of off-site farmlands. (Option B only)
Biological Resources	
BR-34: The Proposed Project would contribute to a cumulatively considerable impact to special status species when combined with impacts from past, present, and reasonable future projects	BR-34.1: Establish the "California Valley Land Acquisition Program"
BR-35: The Proposed Project would contribute to a cumulatively considerable impact to wildlife connectivity or corridors when combined with impacts from past, present, and reasonable future projects (Class I for SJKE)	BR-35.1: Establish Fencing Plan to create fence removal or modification incentives
Land Use and Recreation	
LU 1: Construction would temporarily disrupt, displace or divide land uses	LU 1.1: Establish Construction Liaison LU 1.2: Advance Notification of Construction LU-1.3: Quarterly Construction Updates
LU 2: Operation and maintenance of the project would permanently disrupt, displace or divide land uses	No mitigation available to reduce impact
LU-3: Project would contribute to a cumulatively considerable land use impact when combined with impacts from past, present, and reasonable future projects	No mitigation available to reduce cumulative impacts
Noise	
NS-1: Construction noise would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances, such as the County Noise Element thresholds	NS-1.1: Limit on-site noisy construction activities NS-1.2: Provide advanced notice of construction NS-1.3: Shield construction staging areas NS-1.4: Implement noise-reducing features and practices for construction noise TR-1.1: Prepare and implement traffic control plan

Table ES-3. Summary of Significant Unmitigable (Class I) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
NS-5: Project would contribute to a cumulatively considerable noise impact when combined with impacts from past, present, and reasonable future projects	NS-1.1: Limit on-site noisy construction activities NS-1.2: Provide advanced notice of construction NS-1.3: Shield construction staging areas NS-1.4: Implement noise-reducing features and practices for construction noise TR-1.1: Prepare and implement traffic control plan
Transportation and Circulation	
TR 1: Project implementation would increase vehicle trips to local or areawide circulation system or reduce existing "Levels of Service" on public roadway(s)	TR 1.1: Prepare and implement traffic control plan TR 1.2: Repair roadway damage
TR 5: Project would create cumulatively considerable transportation and circulation impacts when combined with impacts from past, present, and reasonable future projects	No additional feasible mitigation

1. The notation "MM" (Mitigation Measure) identified in the Draft EIR for the biology mitigation measures was removed in the Final EIR but it is not shown as a change with strikethrough text to facilitate the readability of the table..

Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
Aesthetics	
AE-1: Visibility of construction activities, equipment, and night lighting	AE-1.1: Opaque fencing of Section 35 laydown area AE-1.2: Setback for construction parking lots AE-1.3: Minimize construction lighting AQ-1.2: Develop Construction Activity Management Plan (CAMP) AQ-1.3: Reduce Fugitive Dust
Agriculture	
AG-1: Coordinate construction activities with agricultural landowners Construction activities would temporarily interfere with Active Agricultural Operations.	AG-1.1: Construction Timing Plan
AG-3: Operation would conflict with Williamson Act lands	AG-3.1: Mitigate the loss of Williamson Act Lands through permanent preservation of off-site farmlands. (Option B only)
Air Quality	
AQ-1: Construction activities would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants	AQ-1.1: Reduce Construction Vehicle Emissions (NOx, ROG, and DPM) AQ-1.2: Develop Construction Activity Management Plan (CAMP) AQ-1.3: Reduce Fugitive Dust AQ-1.4: Provide Funding for Offsite Mitigation of Construction Equipment
AQ-2: Operation, maintenance, and inspections would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants	AQ-2.1: Prepare Operational Dust Control Plan AQ-2.2: Provide Funding for Offsite Mitigation of Dust Control
AQ-4: Project would create cumulatively considerable impacts to air quality when combined with impacts from past, present, and reasonable future projects	AQ-1.1: Reduce Construction Vehicle Emissions (NOx, ROG, and DPM) AQ-1.2: Develop Construction Activity Management Plan (CAMP) AQ-1.3: Reduce Fugitive Dust AQ-1.4: Provide Funding for Offsite Mitigation of Construction Equipment AQ-2.1: Prepare Operational Dust Control Plan AQ-2.2: Provide Funding for Offsite Mitigation of Dust Control

Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
Biological Resources	
BR-1: Construction activities would result in temporary and permanent losses of vegetation	BR-1.1: Implement a Worker Environmental Education Program. BR-1.2: Implementation of Best Management Practices (BMPs) BR-1.3: Development of a Habitat Restoration and Revegetation Plan BR-1.4: Compensation for permanent impacts to vegetative communities BR-2.1: Prepare and implement a Weed Control Plan BR-16.3: Preparation of a Habitat Mitigation and Monitoring Plan
BR-2: The project would result in the establishment and spread of noxious weeds, invasive and non-native plants	BR-1.1, BR-1.2, BR-1.3, BR-2.1 BR-2.2: Develop a Grazing Plan
BR-3: The project would cause the loss of foraging habitat for wildlife	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-16.3
BR-4: Construction activities would result in disturbance to wildlife and may result in wildlife mortality	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1 BR-4.1: Implement protective dust control pond design, monitoring and management plan BR-4.2: Implement biological construction monitoring
BR-6: Construction activities could <u>would</u> result in the loss of nesting birds or raptors	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.1, BR-4.2 BR-6.1: Conduct pre-construction surveys for nesting and breeding birds and implementation of avoidance measures
BR-7: The project could <u>would</u> disturb Endangered, Threatened, Proposed, Petitioned or Candidate plant species or their habitat	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2 BR-7.1: Conduct pre-construction surveys for State and Federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants and implementation of avoidance measures BR-7.2: Compensate for impacts to State and Federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants
BR-8: The project could <u>would</u> result in injury or mortality of, and loss of habitat for, vernal pool fairy shrimp or longhorn fairy shrimp	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.2 BR-8.1: Complete protocol-level surveys for listed vernal pool fairy shrimp BR-8.2: Avoid seasonal depressions and known waterbodies BR-8.3: Compensate for impacts to vernal pool or longhorn fairy shrimp or their habitat
BR-9: The project could <u>would</u> result in loss of Kern primrose sphinx moth	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.2 BR-9.1: Complete focused surveys for Kern primrose sphinx moth and implement avoidance measures BR-9.2: Compensate for impacts to Kern primrose sphinx moth
BR-10: The project could <u>would</u> result in the loss of blunt-nosed leopard lizards	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.2 BR-10.1: Conduct focused pre-construction surveys for blunt-nosed leopard lizard and implement avoidance measures BR-10.2: Compensate for impacts to occupied blunt-nosed leopard lizard habitat
BR-11: The project could <u>would</u> result in the loss of California condors	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.1, BR-4.2 BR-11.1: Monitor construction in condor habitat and remove trash and microtrash from the work area daily
BR-12: The project could <u>would</u> result in the loss of golden eagle, American peregrine falcon, bald eagle, white-tailed kite and Swainson's hawk.	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.1, BR-4.2, BR-6.1
BR-13: The project could <u>would</u> result in electrocution of State and/or federally protected birds	BR-13.1: Implement Avian Power Line Interaction Committee guidelines (APLIC)
BR-14: The project could <u>would</u> result in collision with overhead wires by State and/or federally protected birds	BR-13.1 BR-14.1: Prepare and implement a Bird and Bat Monitoring and Avoidance Plan

Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
BR-15: Glare from the reflection of sunlight off the solar panels/modules could would contribute to the risk of avian collision on the project site	BR-1.1, BR-1.2, BR-4.1, BR-4.2, BR-14.1
BR-16: The project could <u>would</u> result in the loss of giant kangaroo rat	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2 BR-16.1: Complete focused pre-construction giant kangaroo rat burrow/precinct surveys and implement avoidance measures BR-16.2: Compensate for permanent impacts to giant kangaroo rat and San Joaquin antelope squirrel BR-16.3: Prepare a Habitat Mitigation and Monitoring Plan
BR-17: The project would result in the loss of San Joaquin kit fox	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.3, BR-17.1: Conduct focused pre-construction San Joaquin kit fox surveys and implement avoidance measures BR-17.2: Compensate for permanent impacts to San Joaquin kit fox
BR-18: The project could <u>would</u> result in the loss of San Joaquin antelope squirrel	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.1, BR-16.2, and BR-16.3 BR-18.1 Complete focused pre-construction San Joaquin Antelope squirrel surveys and implement avoidance measures
BR-19: The project would result in the loss of Special-Status plant species	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.3 BR-19.1: Conduct pre-construction surveys for Special-Status plants and implement avoidance measures BR-19.2: Compensate for impacts to Special-Status plant species
BR-20: The project could <u>would</u> result in the loss of coast horned lizard, San Joaquin coachwhip and silvery legless lizard	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.2 BR-20.1: Complete focused pre-construction surveys for silvery legless lizards, coast horned lizard and San Joaquin coachwhip and implement avoidance measures
BR-21: The project would result in the loss of western spadefoot toad	BR-1.1, BR-1.2, BR-1.3, BR-2.1, BR-4.2, BR-8.2, and BR-21.1: Complete focused pre-construction western spadefoot toad surveys and implement avoidance measures
BR-22: The project would result in the loss of burrowing owl	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.3 BR-22.1: Complete focused pre-construction burrowing owl surveys and implement avoidance measures BR-22.2: Compensate for impacts to burrowing owl
BR-23: The project would disturb wintering birds	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.1, BR-4.2, BR-6.1, BR-16.3
BR-24: The project could <u>would</u> disturb nesting avian species of special concern	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-6.1
BR-25: The project could <u>would</u> result in loss of American badger	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.3 BR-25.1: Complete focused pre-construction surveys for American badger surveys and implementation of avoidance measures
BR-26: The project could <u>would</u> result in loss of McKittrick pocket mouse, Tulare grasshopper mouse and short-nosed kangaroo rat	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-4.2, BR-16.3
BR-27: The project could <u>would</u> result in loss of sensitive bats	BR-1.1, BR-1.2, BR-4.2, BR-16.3 BR-27.1: Conduct pre-construction Maternity colony or hibernaculum surveys for sensitive bats BR-27.2: Provide substitute roosting habitat BR-27.3: Exclude bats prior to eviction from roosts
BR-29: The project would result in the loss of jurisdictional wetland habitats	BR-1.1, BR-1.2, BR-1.3, BR-1.4, BR-2.1, BR-16.3
BR-30: The project would result in the alteration of movement patterns for San Joaquin kit fox	BR-1.1, BR-1.2, BR-16.3, BR-17.2 BR-31.1: Prepare and implement a pronghorn friendly fencing plan
BR-31: The project could result in the alteration of movement patterns for pronghorn antelope	BR-1.1, BR-1.2, BR-16.3, BR-17.2, BR-31.1

Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project (Options A and B, unless noted otherwise)

Impact	Mitigation Measure(s) ¹
BR-35: The Proposed Project would contribute to a cumulatively considerable impact to wildlife connectivity or corridors when combined with impacts from past, present, and reasonable future projects (Class II for pronghorn)	BR-35.1: Establish Fencing Plan to create fence removal or modification incentives
Cultural and Paleontological Resources	
CR-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	CR-2.1: Unanticipated Discovery Plan CR-2.2: Sensitivity Training for Construction Personnel
CR 4: Project would contribute to a cumulatively considerable cultural resource impact when combined with impacts from past, present, and reasonable future projects	CR-2.1: Unanticipated Discovery Plan CR-2.2: Sensitivity Training for Construction Personnel
PA-1: Construction of the project would potentially destroy or disturb significant paleontological resources. Excavation for Proposed Project structures could damage unique or significant fossils	PA-1.1: Paleontological Monitoring and Treatment Plan PA-1.2: Paleontological Construction Monitoring
PA 2: Project would contribute to a cumulatively considerable paleontology resource impact when combined with impacts from past, present, and reasonable future projects	PA-1.1: Paleontological Monitoring and Treatment Plan PA-1.2: Paleontological Construction Monitoring
Geology, Mineral Resources, and Soils	
GE-1: Results in triggering or acceleration of geologic processes, such as landslides, substantial soil erosion or loss of topsoil (Option A Only)	GE-1.1: Conduct landslide survey and protect against slope instability
GE-2: Project would expose people or structures to potential substantial adverse effects as a result of seismically induced ground failure and/or groundshaking (Option A Only)	GE-1.1: Conduct landslide survey and protect against slope instability
GE 7: Project would contribute to a cumulatively considerable geology, mineral resources or soils impact when combined with impacts from past, present, and reasonable future projects	GE-1.1: Conduct landslide survey and protect against slope instability
Hazards and Hazardous Materials	
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	HZ-1.1: Develop and implement site-specific spill response plan HZ-1.2: Develop and implement hazardous materials business plan HZ-1.3: Prepare and implement a hazardous waste management plan HZ-1.4: Develop and implement spill prevention, control, and countermeasures plans HZ-1.5: Use licensed herbicide applicator HZ-1.6: Ensure proper disposal or recycling of photovoltaic panels modules and support structures HZ-1.7: Ensure proper removal and transport of broken panels
HZ-4: Create an aeronautical or motor vehicle hazard or result in a significant aerial obstruction within two miles of an airport or airstrip	AE-2.5 Install a physical barrier to mitigate potential reflective glare HZ-4.1 Notify California Valley Airport
HZ-5: Expose people or structures to a risk of loss, injury, or death involving wildland fires	HZ-5.1: Develop and implement a fire protection plan HZ-5.2: Ensure compliance with Industrial Operations Fire Prevention Field Guide HZ-5.2: Cease work during Red Flag Warnings HZ-5.3: Install electrical safety signage

**Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project
(Options A and B, unless noted otherwise)**

Impact	Mitigation Measure(s) ¹
HZ-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan	HZ-6.1: Coordinate traffic during emergencies HZ-6.2: Provide heli-pad on site TR-1.2: Prepare and implement a traffic control plan
HZ-7: Create a hazard to the public or the environment by mobilizing existing contamination or generating disease vectors	HZ-1.2: Develop and implement hazardous materials business plan HZ-7.1: Sample and test contaminated soil HZ-7.2: Prohibit standing water and trash piles HZ-7.3: Ensure proper handling of livestock vaccination for naturally occurring anthrax AQ-1.3: Reduce fugitive dust
HZ 8: Project would contribute to a cumulatively considerable hazard to the public or the environment when combined with impacts from past, present, and reasonable future projects	HZ-5.1: Develop and implement a fire protection plan HZ-5.2: Ensure compliance with Industrial Operations Fire Prevention Field Guide HZ-5.2: Cease work during Red Flag Warnings HZ-5.3: Install electrical safety signage HZ-6.1: Coordinate traffic during emergencies HZ-6.2: Provide heli-pad on site TR-1.2: Prepare and implement a traffic control plan HZ-1.2: Develop and implement hazardous materials business plan HZ-7.1: Sample and test contaminated soil HZ-7.2: Prohibit standing water and trash piles HZ-7.3: Ensure livestock vaccination for naturally occurring anthrax AQ-1.3: Reduce fugitive dust
Land Use and Recreation	
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	R-3.1: <u>Develop and implement</u> Construction-Phase CPNM Camping Restrictions R-3.2: <u>Establish</u> CPNM Construction Liaison
R-4: Construction or operation and maintenance activities would change the character of a recreational area or program, diminishing its recreational value	R-3.1: <u>Develop and implement</u> Construction-Phase CPNM Camping Restrictions R-3.2: <u>Establish</u> CPNM Construction Liaison
R-6: Project would contribute to cumulative recreation impacts when combined with impacts from past, present, and reasonable future projects	R-3.1: <u>Develop and implement</u> Construction-Phase CPNM Camping Restrictions R-3.2: <u>Establish</u> CPNM Construction Liaison
Noise	
NS-4: Routine inspection and maintenance activities would substantially increase ambient noise levels in the project vicinity above levels existing without the Project	NS-4.1: Use <u>smaller vehicles and/or</u> electric vehicles for security patrols NS-4.2: Limit noisy nighttime maintenance activities
Population and Housing	
PH-2: Project labor force would require housing that exceeds the supply of local housing or temporary housing facilities	PH-2.1: Develop and implement Worker Housing Program
PH-4: The project would induce substantial population growth	PH-2.1: Develop and implement Worker Housing Program
PH-5: Project would create cumulative considerable population and housing impacts when combined with impacts from past, present, and reasonable future projects	PH-2.1: Develop and implement Worker Housing Program
Public Services, Utilities, and Service Systems	
PS-1: Project construction and operation would place demands on public services	PS-1.1: Provide and maintain emergency access onsite PS-1.2: Sheriff Department access review PS-1.3: Assure Adequate Funding for County Staffing Impacts

**Table ES-4. Summary of Significant but Mitigable (Class II) Impacts for the Proposed Project
(Options A and B, unless noted otherwise)**

Impact	Mitigation Measure(s) ¹
PS-2: Project construction and operation would place demands on local water, wastewater, and solid waste facilities	PS-2.1: Require recycling of at least 50 percent of construction waste PS-2.2: Provide documentation of construction and demolition waste recycling
PS-4: Project would contribute to cumulatively considerable public services, utilities, and service systems impacts when combined with impacts from past, present, and reasonable future projects	PS-1.1: Provide and maintain emergency access onsite PS-1.2: Sheriff Department access review PS 1.3: Assure Adequate Funding for County Staffing Impacts PS-2.1: Require recycling of at least 50 percent of construction waste PS-2.2: Provide documentation of construction and demolition waste recycling.
Transportation and Circulation	
TR 2: Construction would temporarily disrupt school bus services	TR 2.1: Coordinate Construction Traffic with School Bus Routes (Annually)
Water Resources	
WR-1: Substantially deplete local groundwater supplies or interfere with groundwater recharge.	WR-1.1: Groundwater Monitoring and Reporting Plan WR-1.2: Install pervious and/or high-roughness groundcover where applicable WR-1.3: Construction site dewatering management WR-1.4: Design onsite drainage improvements to maximize groundwater recharge WR-1.5: Develop master Drought Water Management and Water Conservation Education Program
WR-2: Substantially alter the existing drainage pattern of the site in a manner that results in flooding on- or off-site.	WR-1.2: Install pervious and/or high-roughness groundcover where applicable WR-1.4: Design onsite drainage improvements to maximize groundwater recharge
WR-4: Project features located in a floodplain or watercourse could result in flooding, flood diversions, or erosion.	WR-1.2: Install pervious and/or high-roughness groundcover where applicable WR-4.1: Minimize disturbance within stream channels
WR-5: Construction or operation of the project could result in accidental releases of contaminants that could degrade water quality.	WR-5.1: Accidental spill control and environmental training WR-5.2: No storage of fuels and hazardous materials near sensitive water resources WR-5.3: Maintain vehicles and equipment
WR 6: Project would contribute to a cumulatively considerable impact to water resources when combined with impacts from past, present, and reasonable future projects	WR-1.1: Groundwater Monitoring and Reporting Plan WR-1.2: Install pervious and/or high-roughness groundcover where applicable WR-1.3: Construction site dewatering management WR-1.4: Design onsite drainage improvements to maximize groundwater recharge WR-1.5: Develop master Drought Water Management and Water Conservation Education Program WR-4.1: Minimize disturbance within stream channels WR-5.1: Accidental spill control and environmental training WR-5.2: No storage of fuels and hazardous materials near sensitive water resources WR-5.3: Maintain vehicles and equipment

1. The notation "MM" (Mitigation Measure) identified in the Draft EIR for the biology mitigation measures was removed in the Final EIR but it is not shown as a change with strikethrough text to facilitate the readability of the table..

A. Introduction

This Environmental Impact Report (EIR) has been prepared to analyze potentially significant environmental effects associated with the construction and operation of the Topaz Solar Farm Project (Proposed Project) proposed by Topaz Solar Farms LLC, a wholly owned subsidiary of First Solar, Inc (Applicant). Topaz Solar Farms LLC has submitted an application for a Conditional Use Permit (CUP) to the County of San Luis Obispo (County) to construct and operate a 550 megawatt (MW) photovoltaic (PV) solar power plant in the Carrizo Plain, an unincorporated area within the eastern portion of the County (refer to Figure A-1 for the location of the Proposed Project).

The County is the “public agency which has the principal responsibility for carrying out or approving the project,” and as such is the “Lead Agency” for this project under the California Environmental Quality Act of 1970 (CEQA) as defined in CEQA Guidelines Section 15367. CEQA requires the Lead Agency to consider the information contained in the EIR prior to taking any discretionary action. This EIR is intended to serve as an informational document to be considered by the County and other permitting agencies during their respective permit processing of the Proposed Project.

The Initial Study prepared by the County indicated that the Proposed Project may have a significant effect on the environment and that an EIR would be required to more fully evaluate potential adverse environmental impacts that may result from development of the Proposed Project. As a result, this EIR has been prepared in accordance with CEQA, as amended (Public Resources Code [PRC] Section 21000, et seq.), and the State CEQA Guidelines for Implementation of CEQA (California Code of Regulations [CCR], Title 14, Section 15000 et seq.). This ~~Draft~~ Final EIR also complies with the procedures established by the County for implementation of CEQA.

Questions regarding the preparation of this document and County review of the Proposed Project should be referred to:

County of San Luis Obispo
Environmental & Resource Management Division
Department of Planning and Building
976 Osos Street, Room 200
San Luis Obispo, CA 93408
Contact: Steven McMasters, Senior Planner
Telephone: (805)781-5096; e-mail: smcmasters@co.slo.ca.us

A.1 Purpose and Intended Uses of the EIR

This EIR has been prepared to evaluate environmental impacts that may result from implementation of the Proposed Project. As the Lead Agency, the County has the authority for preparation of this ~~Draft~~ Final EIR and, after the comment/response process, certification of the Final EIR and a decision on the Proposed Project as described in this EIR. The County has the authority to make decisions on discretionary actions relating to development of the Proposed Project and may conditionally approve or deny the CUP. As stated previously, this EIR is intended to serve as an informational document to be considered by the County during permit considerations on the Proposed Project. This EIR evaluates and mitigates a reasonable worst-case scenario of potential impacts associated with the Proposed Project. An EIR also identifies and evaluates the impact of alternatives to the Proposed Project; discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of past, present, and reasonably anticipated future projects.

Topaz Solar Farm Project
A. INTRODUCTION

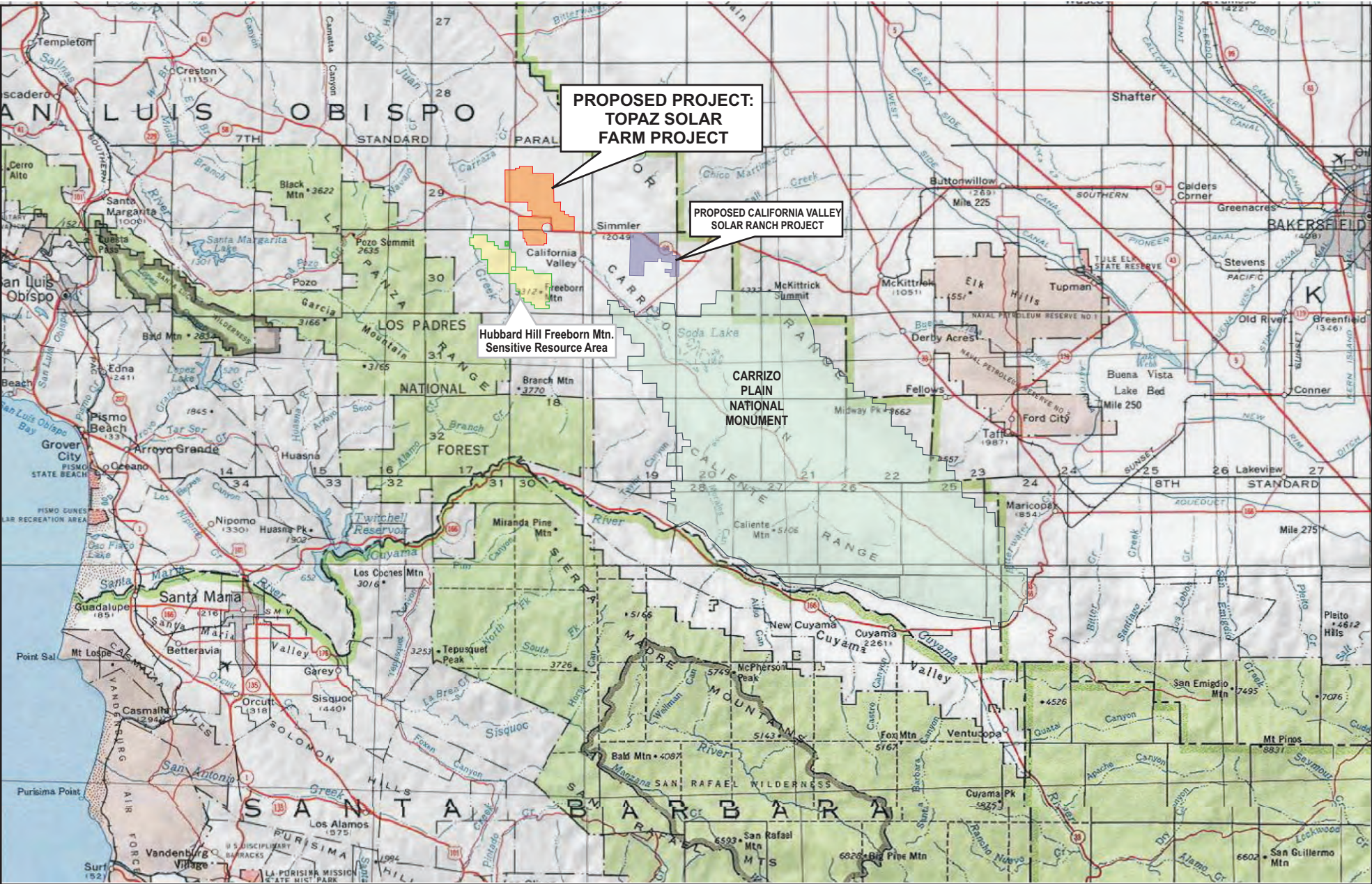


Figure A-1
Regional Location



This EIR will serve as a project EIR pursuant to the Guidelines for CEQA (State CEQA Guidelines) (CCR Title 14, Chapter 3, Sections 15000-15387), Sections 15161 and 15168(a)(2), respectively. According to Section 15161 of the State CEQA Guidelines, a project EIR is appropriate for specific development projects in which information is available for all phases of the project, including planning, construction, and operation. This EIR will provide project-level analysis for all aspects of the project.

CEQA requires the Lead Agency to consider the information contained in the EIR prior to taking any discretionary action. This EIR provides information to the Lead Agency and other public agencies, the general public, and decision makers regarding the potential environmental impacts from the construction and operation of the Proposed Project. The purpose of the public review of the EIR is to evaluate the adequacy of the environmental analysis in terms of compliance with CEQA. Section 15151 of the CEQA Guidelines states the following regarding standards from which adequacy is judged:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have not looked for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Under CEQA, “[t]he purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the proposed project, and to indicate the manner in which those significant effects can be mitigated or avoided” (PRC Section 21002.1[a]). An EIR is the most comprehensive form of environmental documentation identified in CEQA, the CEQA Guidelines, and provides the information needed to assess the environmental consequences of a proposed project. EIRs are intended to provide an objective, factually supported, full-disclosure analysis of the environmental consequences associated with a proposed project that has the potential to result in significant, adverse environmental impacts.

A.1.1 Scope of this EIR

As required by the State CEQA Guidelines, Section 15128, this EIR must identify the effects of the Proposed Project determined to be significant. This EIR is considered a “full-scope” EIR in which all environmental impact categories identified in the County’s Initial Study and Environmental Checklist Form are discussed in Section C of this document. In compliance with CEQA, the County prepared a Notice of Preparation (NOP) for the Proposed Project and solicited comments through distribution of the NOP. Three public scoping meetings were held to provide an opportunity for the public to comment on the scope of the EIR. The comments received in response to the NOP were used to refine the scope of the analysis addressed in this EIR.

A.2 Overview of Proposed Project

The Applicant proposes to construct and operate a 550-MW_{AC} PV solar power plant on private land in the Carrizo Plain, north and south of Highway 58 and east of Bitterwater Road. The Proposed Project would be installed over an approximate 4,000- to 4,100-acre (six-square miles) site that would be located within one of two study areas:

- **Study Area A** is comprised of approximately 7,800 acres and avoids all lands under the Land Conservation Act of 1965 (Williamson Act). If the Proposed Project (Option A – Southern Option) is located within Study Area A, the Proposed Project site (fenced area) would be approximately 4,100 acres.
- **Study Area B** is comprised of approximately 6,300 acres and includes approximately 1,795 acres of land currently under Williamson Act contract. If the Proposed Project (Option B – Northern Option) is located within Study Area B, the Proposed Project site (fenced area) would be approximately 4,000 acres, including 1,212 acres of lands under Williamson Act contract (approximately 30 percent of the Proposed Project site).

Both Study Area A and Study Area B are being analyzed in this EIR as alternative locations for the project, but the project would only be permitted in one of these locations ~~project options, and only one option would be permitted~~ if approved by the County. Each study area is comprised of land that is primarily used for grazing and dry farming agriculture. The study areas are larger than what would be needed to ultimately accommodate the Proposed Project to allow some flexibility in the final project design. The final Proposed Project site would accommodate solar arrays, as well as an electric substation, switching station, and maintenance facilities. Refer to Section B, Project Description, and Appendix 2, Supplemental Project Description Figures, for a detailed description of the Proposed Project.

The Proposed Project would be interconnected into Pacific Gas & Electric's (PG&E) existing Morro Bay-Midway 230 kilovolt (kV) transmission line, which generally runs in an east-to-west direction, north of Highway 58, crossing through the Proposed Project site. PG&E would provide electrical service for construction, as well as for monitoring and maintenance activities during Proposed Project operation. See Section B.4.1.8 and Appendix 4 for more information on transmission facilities.

A.3 Purpose and Need for the Proposed Project

The energy generated by the Proposed Project would be sold to PG&E under a long-term contract in support of the requirement that it provide its customers with 20 percent of its electricity from renewable sources, as mandated by California's Renewable Portfolio Standard (RPS). Section 15124 of the CEQA Guidelines requires that a clearly written statement of objectives be presented in an EIR to help lead agencies develop a reasonable range of alternatives and to aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. Project objectives and a discussion of the siting selection criteria for the Proposed Project are discussed in Section B.2 of this EIR.

A.4 Other Solar Projects in the Area

In addition to the Proposed Project, the California Valley Solar Ranch (CVSR) project has been proposed in the Carrizo Plain. In January 2009, High Plains Ranch II, LLC, a wholly owned subsidiary of SunPower Corporation Systems (SunPower) submitted a CUP application to the County. SunPower proposes to construct and operate a 250 MW PV solar power plant approximately four miles east of the proposed Topaz project. The CVSR project includes solar arrays that would cover nearly 2,000 acres, as well as an electric substation, maintenance facilities, public viewing areas, and an approximately 2.8-mile 230 kV transmission line. In addition, this project includes a proposed commercial aggregate surface mine located north of the solar project. The mined aggregate would be used in construction of the SunPower project as well as other development in the Carrizo Plain area (including other solar projects), if approved.

The CVSR project is currently in the process of obtaining permits to operate on the Carrizo Plain on the same general timeline as the Proposed Project (Topaz). Similar to the Proposed Project, the energy generated by the CVSR project would be sold to PG&E under a long-term contract in support of

California's RPS mandate. The County is also the lead agency for preparation of the CVSR EIR. The County released the CVSR Draft EIR for public review in August 2010. The CVSR Final EIR was released on January 5, 2011.

Both the Proposed Project (Topaz) and the CVSR project are considered to be of statewide, regional, or areawide significance, according to CEQA Section 15206. Sections C (Environmental Analysis) and Section D (Cumulative Scenario and Methodology) of this EIR address the cumulative impacts associated with the two solar projects being constructed in the same geographic area and under similar timeframes.

There are two past projects, the Carrizo Energy Solar Farm (Ausra CA, LLC) and former Arco project, which were also proposed in the Carrizo Plain. The Carrizo Energy Solar Farm was under consideration by the California Energy Commission from October 2007 to November 2009, when the applicant withdrew its application and the Commission's proceeding was terminated. This project would have been a solar thermal power plant on Section 28 (north of Highway 58) and the northern portion of Section 33 (south of Highway 58) in Township 29 South, Range 18 East. This project would have consisted of 195 Compact Linear Fresnel Reflector solar concentrating lines, and associated steam drums, steam turbine generators, air-cooled condensers, and infrastructure, producing a nominal 177 MW. After termination of the project, First Solar acquired options on lands (Sections 28 and 33) previously considered for the Ausra Carrizo Energy Solar Farm project and has incorporated these lands into the Topaz Proposed Project.

In 1983, Arco constructed a 177-acre solar facility on Section 27 in Township 29 South, Range 18 East. At its peak, the facility generated about 5.2 MWs of solar energy. The facility operated from 1983 to 1990 and was dismantled in 1995. PG&E currently owns the property, which remains fenced and includes a small substation. Section 27 is now part of the Topaz Proposed Project and will be used for the solar arrays and associated facilities.

A.5 Transmission Interconnection

To interconnect the Proposed Project to the Morro Bay-Midway No. 1 and 2 lines requires an interconnection application that is processed under California Independent System Operator's (CAISO) Large Generator Interconnection Procedure (LGIP), which is a part of CAISO's Tariff approved by the Federal Energy Regulatory Commission. The Morro Bay-Midway 230 kV lines are owned by PG&E and subject to the operational control of CAISO. The LGIP procedures lay out a timeline (24 months) of studies and deposit requirements required to complete an interconnection agreement that specifies the interconnection and network facilities that will be required to interconnect a project. The process is overseen by CAISO to assure statewide consistency and to adhere to CAISO's open access policies. Beginning in 2009, CAISO modified its procedures and placed LGIP applications into groups known as clusters, so that the impact on projects interconnecting in the same area can be studied together. The new cluster procedures assure timeliness of application processing, fairness among projects in the same cluster, and upgrades required to accommodate interconnected generation are minimized.

The Proposed Project holds three positions in the CAISO interconnection queue: number 166 (Q166), number 194 (Q194), and number 242 (Q242). Interconnection agreements have been executed for Q166 (210 MW) and Q194 (190 MW). An interconnection agreement has not yet been executed for Q242 (150 MW), which is included with the CVSR project (Q239) in what is known as the South Carrizo Transition Cluster (Topaz Solar Farm, LLC., 2009b).

In its September 2009 report, 2020 Renewable Transmission Conceptual Plan (Based on Renewable Energy Transmission Initiative [RETI] Process Study Results Inputs), the ~~California Independent System Operator~~

{CAISO} identified that upgrades to the PG&E electric transmission system would be required to accommodate 1,000 MW of solar energy generation in the Carrizo area. These upgrades would include an interconnection substation for each solar project, and “reconductoring” of the 230 kV transmission lines between the Carrizo Plain and PG&E’s Midway Substation (a distance of about 34 miles). Reconductoring is referring to the installation of additional capacity (e.g., addition of lines) to the existing 230 kV transmission line.

The environmental impacts of these future transmission upgrades are considered a related action to the Proposed Project and are fully evaluated and presented in Appendix 4 of this EIR. Impact summaries of the transmission upgrades are included in the impact analysis ~~of the solar facility~~ in Section C of this EIR. This PG&E transmission upgrade project has been determined to be necessary to accommodate several projects in the region, including the final 150 MWs of power generated by the Proposed Project. The California Public Utilities Commission (CPUC) is responsible for reviewing and permitting PG&E’s anticipated transmission line upgrades and switching station, and will consider the evaluation presented in Appendix 4 in its decision-making process.

A.6 County EIR Process and Agency Review

A.6.1 San Luis Obispo County

The Applicant has submitted an application to the County for a CUP for the project (DRC2008-00009), which would be located on private lands. In consideration of this application, the County has prepared this EIR to evaluate the potential environmental impacts of the Proposed Project.

CEQA requires lead agencies to solicit and consider input from other interested agencies, citizen groups, and individual members of the public, and provide the public with full disclosure of the expected environmental consequences of the proposed project with an opportunity to provide comments. CEQA also requires the project to be monitored after it has been permitted to ensure that mitigation measures are carried out.

The following information summarizes some of the key steps in the CEQA and public notification/involvement process and explains what actions have been taken to date on the Proposed Project:

- **Notices of Preparation/Initial Study.** The County issued a Notice of Preparation (NOP) of a Draft EIR for the Topaz Solar Farm Project and an accompanying Initial Study (IS) on September 2, 2008 and held a 30-day comment period. A Supplemental NOP and IS was released on July 14, 2009 to address project changes and a change in the applicant from Optisolar to First Solar. A second 30-day public review period was held on this NOP. During this second public review period, one “neighborhood” Scoping Meeting was held on July 15, 2009 at the Carrisa Plains Heritage Association Community Center in the Carrizo Plain. In addition, a Planning Commission meeting was held on June 11, 2009 at the County Government Center in San Luis Obispo.

On April 30, 2010, the County issued a second supplemental NOP and IS to keep the public and agencies apprised of the Applicant’s revisions to the Proposed Project. The Applicant revised the project in response to public comments by providing two project options and reconfiguring the placement of arrays to avoid drainage areas, providing more space between arrays for wildlife, and in one option avoiding Williamson Act lands, among other changes. A 30-day public review period was held for the second supplemental NOP and a “neighborhood” Scoping Meeting was held on May 18, 2010 at the Carrisa Plains Heritage Association Community Center. Appendix 1 of this EIR includes the Notices of Preparation and public comment letters received during the three scoping events.

- **Draft EIR Preparation.** ~~A~~The Draft EIR ~~is~~ was circulated for review and comment to appropriate agencies and additional individuals and interest groups who have requested to be notified of EIR projects. The County ~~will~~ provided ~~for~~ a 60-day public review period on the Draft EIR, and ~~will~~ subsequently responded to each comment on the Draft EIR received in writing through a Response to Comments ~~chapter~~ volume in the Final EIR. This review period exceeds the minimum public review period requirements per Section 15105 of the State CEQA Guidelines. The Response to Comments will be provided to each agency or person who provided written comments on the EIR two weeks before the scheduled Planning Commission hearing on the Final EIR and project.
- **Preparation and Certification of Final EIR.** The County Planning Commission will consider the Final EIR before making their decision on the project. At least one public hearing will be held by the Planning Commission to consider the Final EIR, take public testimony, and then approve, conditionally approve, or deny the project. Should the Planning Commission's decision be appealed, it would then go to the Board of Supervisors for a final action. The Board would then consider the appeal along with the Final EIR, all public comments, and the Proposed Project before taking a final action on the project.

Figure A-2 provides a flowchart of the EIR process. ~~Currently, this Draft EIR is in the Public/Agency Review period of this process.~~

Figure A-2. The EIR Process



A.6.2 Other Agencies

Several other local, State and federal agencies will rely on information in this EIR to inform them in their decisions regarding issuance of specific permits related to project construction or operation. In addition to the County, State agencies such as the California Department of Transportation, California Department of Fish and Game, Regional Water Quality Control Board, and Office of Historic Preservation would be involved in reviewing and/or approving the project. Federal agencies with potential reviewing and/or permitting authority include the U.S. Fish and Wildlife Service and United States Army Corps of Engineers, and local agencies include the County of San Luis Obispo Air Pollution Control District. A list of preliminary required permits and approvals is included in Table A-1 in Section A.6.3 below.

Department of Energy

First Solar has stated that the Proposed Project may receive federal funding through Department of Energy's (DOE) American Recovery and Reinvestment Act (ARRA). All projects receiving financial assistance from DOE must be reviewed under the National Environmental Policy Act (NEPA) of 1969 – 42 U.S.C. Section 4321 et seq. First Solar has stated that it is pursuing NEPA compliance independent of this EIR process.

California Public Utilities Commission

The CPUC regulates the activities of California's investor-owned utilities, including PG&E. PG&E will be responsible for submitting an application to the CPUC to receive approval for the transmission facilities. The CPUC will evaluate and decide on the transmission components of the project including the transmission upgrades, associated towers to connect the project to the existing transmission line, and the switching station that will be sited within the boundaries of the Topaz project. See Section B (Project Description) for more information. In addition to the CPUC issued permit, the transmission line upgrades required for the existing transmission line and the switching station must be evaluated under CEQA. The CPUC will consider using the environmental analysis presented in Appendix 4 of this EIR to support its decision on the PG&E reconductoring project.

A.6.3 Required Permits and Approvals

This EIR is intended to provide environmental review for the Proposed Project pursuant to the requirements of CEQA. The Final EIR must be certified by the County as to its adequacy in complying with CEQA requirements before any action is taken on the Proposed Project. The County must consider the information contained in the Final EIR in making its decision on the CUP. In addition to the County's decision on the CUP, the Proposed Project would (potentially) be subject to the applicable agency permits and approvals listed in Table A-1. The Final EIR is intended to provide CEQA review for all required permits and approvals needed to construct, operate, and maintain the Proposed Project.

Table A-1. Permits or Other Actions Potentially Required Prior to Construction

Agency/Department	Jurisdiction	Permit or Regulatory Requirement
FEDERAL		
U.S. Army Corps of Engineers	Clean Water Act, 33 USC 1341 Section 10, Rivers and Harbors Act Permit	<ul style="list-style-type: none"> Individual/Nationwide Section 404 Permit
U.S. Fish and Wildlife Service	Endangered Species Act 16 USC 1531 1544 Migratory Bird Treaty Act and Eagle Protection Act Fish and Wildlife Coordination Act	<ul style="list-style-type: none"> Section 10(a) Incidental Take Permit <i>or</i> Biological Assessment, Section 7 Consultation, Biological Opinion
STATE		
California Department of Fish and Game	Manage fish, wildlife, plant resources and habitats; California ESA, California Native Plant Protection Act, California Fish and Game Code Section 1601	<ul style="list-style-type: none"> Streambed Alteration 1601 Permit Section 2081 Incidental Take Permit Mitigation agreement/plan
California Department of Transportation, District 5	Streets and Highways Code 660 711.21 Cal. Code of Regs. 1411.1 1411.6	<ul style="list-style-type: none"> Encroachment Permits (TR-0100) Traffic Control Plans
California Air Resources Board	Statewide	<ul style="list-style-type: none"> Portable Engine Registration for specified non-mobile portable engines
Regional Water Quality Control Board, Region 3 (Central Coast)	Clean Water Act, Section 401	<ul style="list-style-type: none"> 401 Water Quality Certification Storm Water Construction General Permit 99-08-DWQ National Pollutant Discharge and Elimination System (NPDES) Permit Waste Discharge Requirements (WDRs)
California State Historic Preservation Office	Any archaeological or paleontological work	<ul style="list-style-type: none"> Cultural Resources Use Permit, Field Use Authorization, or an Archaeological Resources Protection Act (ARPA) Permit (if required)

Table A-1. Permits or Other Actions Potentially Required Prior to Construction

Agency/Department	Jurisdiction	Permit or Regulatory Requirement
LOCAL AND REGIONAL		
San Luis Obispo County, Department of Planning and Building	Land Use Ordinance/General Plan Subdivision Map Act, Section 66410 Rules of Procedure to Implement the California Land Conservation Act Flood control/channels, building, sanitation	<ul style="list-style-type: none"> • Conditional Use Permit (DRC2008-00097) • Grading Permit • Flood Control/Drainage Channel Encroachment/Crossing Permit • Building Permit • Sanitation Permit • Parcel map or tract map approval for illegal parcels • Waiver of Section 22.32.060 (B) underground collection lines • Williamson Act Contract cancellation (Option B-Northern Option)
San Luis Obispo County, Air Pollution Control District	Health and Safety Code 42300 et seq.	<ul style="list-style-type: none"> • Authority to Construct and Permit to Operate – New Stationary Source (e.g., back-up generator, greater than 50 horsepower, <u>gasoline dispensing facility with capacity of 1,500 gallons or more, welders, and/or aggregate material processing equipment</u>) • Fugitive Dust Permit • <u>Exemption determination that naturally occurring asbestos is not present at the site of construction activities</u>
San Luis Obispo County, Public Works and Transportation, Traffic Engineering Group	County Roads and Highways	<ul style="list-style-type: none"> • Road/Highway Encroachment/Crossing Permit

A.7 Reader's Guide to the ~~Draft~~ Final EIR

A.7.1 Incorporation by Reference

As permitted in Section 15150 of the State CEQA Guidelines, an EIR may reference all or portions of another document that is a matter of public record or is generally available to the public. Information from the documents that have been incorporated by reference has been briefly summarized in the appropriate sections of this EIR, along with a description of how the public may obtain and review these documents.

The documents listed below have been used in preparing this EIR.

- First Solar's Application for Conditional Use Permit (and subsequent addenda).
- County of San Luis Obispo General Plan Elements (as amended).
- County of San Luis Obispo County Code and other titles references herein.
- California Energy Commission Preliminary Staff Assessment for the Carrizo Solar Energy Farm (CEC-700-2008-011-PSA), November 2008. Available online at: <http://www.energy.ca.gov/sitingcases/carrizo/index.html>.

Copies of project related documents are available on the County's Topaz Solar Farm project website at:

<http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/optisoloar.htm>

The County's General Plan, Ordinances and other Zoning and Land Use Planning documents are available on the County's website at:

http://www.slocounty.ca.gov/planning/General_Plan__Ordinances_and_Elements.htm

Copies can also be viewed, upon request, at the San Luis Obispo County, Department of Building and Planning, in San Luis Obispo (address provided under the Introduction section above).

A.7.2 EIR Organization

The Final EIR consists of two volumes. Volume I includes the environmental analysis of the Proposed Project and incorporates any changes made from the Draft to the Final EIR. Volume II includes the comment letters submitted during the public review period and responses to all written comments on the Draft EIR.

Pursuant to State CEQA Guidelines, Section 15120(c), this EIR contains the information and analysis required by Sections 15122 through 15131. Each of the required elements is covered in one of the EIR chapters and appendices, which is organized as follows.

Volume I: Final EIR – Environmental Analysis

- **Executive Summary.** A summary description of the Proposed Project, the alternatives, their respective environmental impacts and the Environmentally Superior Alternative.
- **Section A (Introduction).** A discussion of the background, purpose and need for the project, briefly describing the Proposed Project, and outlining the public agency use of the EIR.
- **Section B (Project Description).** Detailed description of the Proposed Project.
- **Section C (Environmental Setting, Analysis, and Mitigation Measures).** A comprehensive analysis and assessment of impacts and mitigation measures for the Proposed Project. This section is divided into main sections for each of 14 environmental issue areas (e.g., Air Quality, Biological Resources, etc.) that contain the environmental settings and impacts of the Proposed Project.
- **Section D (Cumulative Scenario and Methodology).** A discussion of the cumulative scenario and impacts with regard to the Proposed Project and alternatives.
- **Section E (Alternatives).** A description of the alternatives evaluation process, as well as a description of alternatives considered but eliminated from further analysis and the rationale thereof. This section also includes an analysis and assessment of impacts for alternatives retained, including the No Project Alternative.
- **Section F (Other CEQA Considerations).** A discussion of growth-inducing effects, long-term implications of the project, and significant environmental effects, which cannot be avoided if the Proposed Project is implemented.
- **Section G (References)**
- **Section H (Glossary, Acronyms, Abbreviations)**
- **Section I (Preparers of the ~~Draft~~ Final EIR)**
- **Appendices**
 - Appendix 1 Notice of Preparation/Initial Studies (NOP/IS) and Scoping comments
 - 1A May 2010 NOP/IS and Scoping Comments
 - 1B July 2009 NOP/IS and Scoping Comments
 - 1C September 2008 NOP/IS and Scoping Comments
 - Appendix 2 Supplemental Project Description Figures
 - Appendix 3 CdTePV Technology

Appendix 4	<u>Analysis of PG&E Reconductoring Transmission Upgrades to PG&E Solar-Midway 230 kV Transmission Line</u>
Appendix 5	Aesthetics
	5A Visual Simulations, Options A and B
	5B Reflectivity Study
Appendix 6	Agricultural Resources Background Information
	6A Summary of Historic Agricultural Patterns and Uses
	6B National Resources Conservation Service – Web Soil Survey
Appendix 7	Air Quality Background Information
Appendix 8	Greenhouse Gas Background
	8A First Solar Greenhouse Gas and Climate Change Report
	8B Sarnia Air Temperature Analysis
Appendix 9	Biological Resources and Jurisdictional Waters
	9A Applicant Prepared Studies
	9B Habitat Connectivity Planning in the Carrizo Plain
	9C Applicable Regulations, Plans, and Standards
Appendix 10	Cultural Resources Background Information
Appendix 11	Geological/Geotechnical Background Information
Appendix 12	Environmental Data Resources Report
Appendix 13	Policy Consistency
Appendix 14	Noise Background Information
Appendix 15	Socioeconomic and Fiscal Impacts
Appendix 16	Transportation and Circulation
	16A Topaz Solar Farm Transportation Impact Study
	16B Truck Management Plan
Appendix 17	Water Resources
	17A SB 610 Water Supply Assessment
	17B Groundwater Supply Assessment
Appendix 18	<u>Mitigation Monitoring and Reporting Program</u>

These appendices are available only in electronic format on the CD attached to the inside front cover of this Volume I.

Volume II: Final EIR – Comments and Responses to Comments

- **Introduction.** A summary of the contents of Volume II of the Final EIR.
- **Global Responses.** This section presents detailed information on comments made by multiple commenters.
- **A. Public Agencies and Tribal Governments.** This section includes the comment letters submitted by public agencies and tribal governments with the responses following each letter.
- **B. Organizations.** This section includes the comment letters submitted by organizations with the responses following each letter
- **C. Individuals.** This section includes the comment letters submitted by individuals with the responses following each letter.
- **D. Applicant.** This section presents the comment letters submitted by Topaz Solar Farm LLC, applicant for the Proposed Project and by PG&E, applicant for the transmission line upgrades.
- **Appendices**

RTC-1 Attachments to C43 Samuel Johnston Letter

RTC-2 Attachments to D1 Topaz Solar Farm LLC Letter

RTC-3 Applicant-Provided Plans and Programs

These appendices are available only in electronic format on the CD attached to the inside front cover of Volume II.

List of Appendices

The following appendices are available only in electronic format on the CD attached to the inside front cover of the EIR.

Appendix 1 (Notice of Preparation/Initial Studies (NOP/IS) and Scoping comments)

- **Appendix 1A: May 2010 NOP/IS and Scoping Comments.** Second Supplemental Notice of Preparation for the Topaz Solar Farm Conditional Use Permit Draft Environmental Impact Report. (6.6 mb)
- **Appendix 1B: July 2009 NOP/IS and Scoping Comments.** Supplemental Notice of Preparation for the Topaz Solar Farm Conditional Use Permit Draft Environmental Impact Report. (1.6 mb)
- **Appendix 1C: September 2008 NOP/IS and Scoping Comments.** Notice of Preparation for the Topaz Solar Farm Conditional Use Permit Draft Environmental Impact Report. (2.6 mb)

Appendix 2 (Supplemental Project Description Figures)

- Includes additional figures depicting the proposed Topaz Solar Farm Project, which are also referenced in Section B of this EIR. (6.2 mb)

Appendix 3 (CdTePV Technology)

- Informational brochures about the First Solar FS Series 2 PV Module and Recycling Program. (2.7 mb)

Appendix 4 (~~Analysis of PG&E Reconductoring~~Transmission Upgrades to PG&E Solar-Midway 230 kV Transmission Line)

- Environmental analysis of the 35-mile segment of the PG&E Solar–Midway 230 kilovolt (kV) transmission line reconductoring, Caliente Switching Station, and the Solar Switching Station required as a result of construction of the proposed Topaz Solar Farm Project and California Valley Solar Ranch projects. (33.7 mb)

Attachments to Appendix 4:

- **Attachment 4B: Switchyard Alternatives.** Detailed engineering plans for the six switching station alternatives. Includes grading and drainage information (prepared for California Solar Ranch Project).
- **Attachment 4C: Passive Repeater Foundation Layout.** Example of a microwave reflector line drawing.
- **Attachment 4D: Air Quality Assessment.** PG&E Air Quality Assessment: First Solar and SunPower Switching Station Projects and Carrizo to Midway Transmission Line Reconductoring Project June 8.
- **Attachment 4E.1: Biological Resources Report.** Biological Resources Report and Addendum for the Carrizo to Midway Reconductoring Project. May 2010.
- **Attachment 4E.2 Biological Resources Report – Addendum 2.** Addendum 2 to the Biological Resources Report for the Carrizo to Midway Project, Kern and San Luis Obispo Counties, California. December 2010 (prepared by consultant to PG&E).
- **Attachment 4E.3 Botanical Survey Summary Report.** Result of Botanical Surveys for the PG&E Company, Carrizo to Midway Reconductoring Project, Kern and San Luis Obispo Counties, California. December 2010 (prepared by consultant to PG&E).
- **Attachment 4F: Project-Parcel Tracking Table.** PG&E Carrizo to Midway Project-Parcel Tracking Table. December 2010 (prepared by PG&E).

- **Attachment 4G: PG&E Response to County Comments Memo. Draft 3- PG&E Carrizo to Midway Reconductoring and Switching Station Projects-Response to Comments on California Valley Solar Ranch Project- DEIR. December 2010 (prepared by PG&E).**

Appendix 5 (Aesthetics)

- ***Appendix 5A: Visual Simulations, Options A and B.*** Visual simulations (7 each for Options A and B) of the Topaz Solar Farm project (prepared by Applicant's consultant). **(176 mb)**
- ***Appendix 5B: Reflectivity Study.*** Analysis of specular solar reflections from the photovoltaic panels onto nearby locations surrounding the proposed Topaz Solar Farm Project (prepared by Applicant). **(0.7 mb)**

Appendix 6 (Agricultural Resources Background Information)

- ***Appendix 6A: Summary of Historic Agricultural Patterns and Uses.*** Analysis of the pattern of agricultural practices in properties associated with the proposed Topaz Solar Farm and California Valley Solar Ranch projects (prepared by EIR Team). **(2.6 mb)**
- ***Appendix 6B: National Resources Conservation Service – Web Soil Survey.*** USDA Natural Resources Conservation Service Farmland Classification – San Luis Obispo County, California – Topaz Solar Farm Project Site. **(1.0 mb)**

Appendix 7 (Air Quality Background Information)

- Air quality and Greenhouse Gas Emissions and life-cycle worksheet. **(0.2 mb)**

Appendix 8 (Greenhouse Gas Background)

- ***Appendix 8A: First Solar Greenhouse Gas and Climate Change Report.*** Analysis and estimate of the greenhouse gases emissions inventory that would result from the Topaz Solar Farm Project. **(0.4 mb)**
- ***Appendix 8B: Sarnia Air Temperature Analysis.*** Sarnia Solar Power Plant Air Temperature Variation Analysis for the Topaz Solar Farm Project. **(0.3 mb)**

Appendix 9 (Biological Resources and Jurisdictional Waters)

- ***Appendix 9A: Applicant Prepared Studies.*** Detailed analyses as shown below: **(160 mb)**
 - Topaz Final Biological Report July 29, 2010
 - Appendix A
 - Surveys - Volume 1
 - Blunt-nosed Leopard Lizard – January 2010
 - Blunt-nosed Leopard Lizard – January 2009
 - Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox – Jan. 2010
 - Surveys - Volume 2
 - Surveys - Volume 3
 - Memorandum 1 – Nesting Birds
 - Memorandum 2 – Kangaroo Rat Survey
 - Memorandum 3 – Botanical Data
 - Memorandum 4 – Drainage Impacts
 - Memorandum 5 – Mountain Plover
 - Memorandum 6 – Wetland and Drainage Measurements
 - Investigation of the Presence of Wetlands and Other Waters

San Joaquin Kit Fox Genetic
San Joaquin Kit Fox Mitigation Plan

- **Appendix 9B: Habitat Connectivity Planning in the Carrizo Plain.** A study presenting how the Carrizo Plain provides habitat and movement opportunities for wildlife and table indicating species-specific model inputs (prepared for the EIR Team). **(3.8 mb)**
- **Appendix 9C: Applicable Regulations, Plans, and Standards.** Applicable Regulations, Plans, and Standards for biological resources. **(0.1 mb)**

Appendix 10 (Cultural Resources Background Information)

- Report on the cultural resource surveys conducted in the Topaz Solar Farm Project region (prepared by Applicant's consultant). **(3.7 mb)**

Appendix 11 (Geological/Geotechnical Background Information)

- Report based on a geotechnical exploration in California Valley, San Luis Obispo County to evaluate the feasibility of solar power development from a geotechnical perspective (prepared by Applicant's consultant). **(18.6 mb)**
- **Geotechnical Engineering Report**
- **Appendix A (Maps and Boring Logs)**
- **Appendix B (Percolation Test Results)**
- **Appendix C (Laboratory Test Results)**
- **Appendix D (Geologic Map, Fault Map, Flood Map)**
- **Appendix E (Soil Corrosivity Testing)**

Appendix 12 (Environmental Data Resources Report)

- Radius search of environmental data for the Topaz Solar Farm Project. **(1.2 mb)**

Appendix 13 (Policy Consistency)

- Policy analysis table for applicable land use plans, ordinances, regulations, and standards (prepared by the EIR Team). **(0.2 mb)**

Appendix 14 (Noise Background Information)

- Assessment of noise composites from stationary sources and other equipment used during construction and operation (prepared by the EIR Team). **(0.2 mb)**

Appendix 15 (Socioeconomic and Fiscal Impacts)

- Analysis of the socioeconomic and fiscal impacts of the California Valley Solar Ranch and Topaz Solar Farm Projects on San Luis Obispo County (prepared by the EIR Team). **(0.3 mb)**

Appendix 16 (Transportation and Circulation)

- **Appendix 16A: Topaz Solar Farm Transportation Impact Study, County of San Luis Obispo, CA.** Transportation assessment for the Topaz Solar Farm Project (prepared by the EIR Team). **(2.6 mb)**
- **Appendix 16B: Truck Management Plan.** Topaz Truck Management Plan for the Topaz Solar Farm Project (prepared by Applicant consultant). **(2.6 mb)**

- **Appendix 16C: Memorandum – Truck Management Plan.** Additional Clarification of Truck Management Plan. **(0.2 mb)**

Appendix 17 (Water Resources)

- **Appendix 17A: SB 610 Water Supply Assessment.** Pursuant to the requirements of Section 10910 of the State Water Code, as amended by Senate Bill No. 610, Chapter 643 (2001). **(0.2 mb)**
- **Appendix 17B:** Groundwater Supply Assessment of the northern Carrizo Plain (prepared by Applicant's consultant). **(2.8 mb)**

Appendix 18 (Mitigation Monitoring and Reporting Plan)

- The Mitigation Monitoring and Reporting Plan, as required by CEQA and the County's Land Use Ordinance, has been prepared for the Topaz Solar Farm Project to track the implementation of all mitigation measures identified for the project. **(0.7 mb)**

B. Project Description

B.1 Introduction

Section B describes the Topaz Solar Farm Project (“Topaz” or “Proposed Project”) proposed by Topaz Solar Farms, LLC, a wholly owned subsidiary of First Solar, Inc. (the Applicant). The Applicant proposes to construct and operate a 550 megawatt (MW) photovoltaic (PV) solar power plant (Topaz) in the Carrizo Plains, an unincorporated portion of eastern San Luis Obispo County, adjacent to Highway 58 and east of Bitterwater Road. The energy generated by the Proposed Project would be sold to Pacific Gas & Electric (PG&E) under a long-term contract in support of the requirement that it provide its customers with 20 percent of its electricity from renewable sources, as mandated by California’s Renewables Portfolio Standard (RPS).

The Proposed Project would be installed over an approximate 4,000- to 4,100-acre (six-square-mile) site that would be located within one of two study areas:

- **Study Area A** is comprised of approximately 7,800 acres and avoids all lands under the Land Conservation Act of 1965 (Williamson Act). If the Proposed Project (Option A – Southern Option) is located within Study Area A, the Proposed Project site (fenced area) would be approximately 4,100 acres.
- **Study Area B** is comprised of approximately 6,300 acres and includes approximately 1,795 acres of land currently under Williamson Act contract. If the Proposed Project (Option B – Northern Option) is located within Study Area B, the Proposed Project site (fenced area) would be approximately 4,000 acres, including 1,212 acres of lands under Williamson Act contract (approximately 30 percent of the Proposed Project site).

Both Study Area A and Study Area B are being analyzed in this EIR as alternative locations for the Proposed Project, but the Proposed Project would only project options, and only one option would be permitted in one of these locations, if approved by the County. Each study area is comprised of land that is primarily used for grazing and dry farming agriculture. The study areas are larger than what would be needed to ultimately accommodate the Proposed Project to allow some flexibility in the final project design. The final Proposed Project site would accommodate solar arrays, as well as an electric substation, learning center, and maintenance facilities. In addition, as discussed later in this description, the project would also require an interconnection into the transmission grid that would be constructed by PG&E (e.g. switching station) and permitted by the California Public Utilities Commission (CPUC).

The Applicant has applied to the County of San Luis Obispo (County) for a Conditional Use Permit (CUP) to allow a solar power plant as a permitted use on the site. Because of its responsibility for issuing this permit, the County is the lead agency under the California Environmental Quality Act (CEQA) and is responsible for preparation of this EIR.

Key components of the Proposed Project (Options A and B) include:

- Installation of up to approximately nine million PV solar modules within approximately ~~460~~⁴³⁷ arrays, and associated electrical equipment (e.g. Power Conversion Stations [PCS], PV Combining Switchgear [PVCS] houses);
- Direct conversion of sunlight to electricity without the use of water for power generation;
- PV arrays that are approximately five and a half feet in height (the distance from the ground to the top of the PV module table may vary depending on the topography);
- Each array would be approximately 1.3 ~~MW_{AC}~~^{MW_{AC}}, would occupy approximately seven acres, and would be equipped with a PCS, which includes two inverters and one transformer;

- Restoration of portions of the main on-site drainage to Soda Lake to help control off-site sediment flow;
- Electrical substation and switching station;
- Monitoring and Maintenance (M&M) facility (11,250 square feet [sq. ft.]);
- Solar Energy Learning Center (900 sq. ft.);
- Placement of most medium-voltage feeder lines underground;
- Approximately 8 to 12 miles (depending on the option selected) of above ground medium-voltage (34.5 kV) collector lines;
- Construction of approximately 14 to 22 miles (depending on the Option selected) of on-site access roads utilizing existing agricultural roads to the extent feasible;
- Minimal demand for water usage during plant operation, with no water necessary for module washing and water use only for sanitary purposes;
- A leach field and septic system located adjacent to the M&M facility to support the domestic sanitary needs of employees and visitors during operation;
- Four temporary construction staging areas of approximately 10 acres each that would accommodate temporary construction offices, parking, material laydown, and storage area; and
- Perimeter fencing consisting of six-foot-high chain link with three strands of barbed wire on top and small openings approximately every 100 yards to allow for kit fox passage.

The Proposed Project would be interconnected into PG&E's existing Morro Bay-Midway 230 kilovolt (kV) transmission line, which generally runs in an east-to-west direction, north of Highway 58, crossing through the Proposed Project site. In order to accommodate the interconnection of a group of generation projects in the region, including the Proposed Project's final 150 MW, the reconductoring of the 230 kV transmission lines between the PG&E Switching Station and the Midway Substation would be required. The CPUC is responsible for reviewing and permitting PG&E's anticipated transmission line upgrades. The upgrades are considered a related action to the Proposed Project and the impacts of this action have been evaluated as presented in Appendix 4 of this EIR. PG&E would provide electrical service for construction, as well as for monitoring and maintenance activities during Proposed Project operation. See Section B.4.1.8 for more information on transmission facilities.

At this time the above ground medium-voltage collector lines, noted above, may not be in compliance with the County's Land Use Ordinance Section 22.32.060 (B). This section requires undergrounding of all overhead distribution lines that are on the project site and that are on the low voltage side of the step-up transformer in the project substation. If it is determined that these collector lines are not in compliance, then the Applicant is requesting a waiver of Section 22.32.060 (B).

Table B-1 lists the general permits/approvals required by the County and the CPUC. Refer to Table A-1 in the Introduction (Section A) for a comprehensive list of the permits and approvals required prior to construction.

Table B-1. County and CPUC Permits/Approvals

Proposed Project Components	Permitting Agency	Permit/Approval	Location of Impact Analysis
Applicant: Topaz Solar Farms LLC. (Proposed Project)			
Solar arrays, collection lines and poles, buildings, roads, fencing, substation, and land use	County	CUP ¹	EIR, Section C
Legalize and reconfigure lot lines	County	Parcel Map or Tract Map	EIR, Section C

Table B-1. County and CPUC Permits/Approvals

Proposed Project Components	Permitting Agency	Permit/Approval	Location of Impact Analysis
Applicant: PG&E (Reasonably Foreseeable Project)²			
Upgrades to existing 230 kV transmission line (new conductor wires, replacement of some towers in existing corridor, loop lines, two new towers and four steel poles to connect project)	CPUC	General Order 131-D, or Permit to Construct, or Certification of Public Convenience and Necessity ³	EIR, Appendix 4
Solar Switching Station (within project boundary)	CPUC	General Order 95	EIR, Appendix 4

Notes:

- ¹ The CUP would include consideration of a waiver of the County's Land Use Ordinance Section 22.32.060 (B). The County would also make a decision on the cancellation of the Williamson Act Lands if Option B – Northern Option is identified as the preferred option.
- ² To interconnect the project 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 part of CAISO's Tariff approved by the Federal Energy Regulatory Commission.
- ³ The necessary approval/permit will be determined after the County's environmental review is completed, depending on final project scope and CPUC guidance.

The remainder of this section provides details on the Proposed Project and includes figures that show the location and layout of key project components. Appendix 2 includes additional figures that supplement the information presented in this project description. The project description is organized as follows:

- Section B.2 presents the Applicant's site selection criteria and the Proposed Project objectives
- Section B.3 details the Proposed Project site characteristics
- Section B.4 describes the Proposed Project components
- Section B.5 explains the Proposed Project construction and installation process
- Section B.6 discusses Proposed Project operations and maintenance
- Section B.7 describes Proposed Project decommissioning
- Section B.8 presents Applicant Proposed Measures.

B.2 Project Objectives

B.2.1 Background

Section 15124 of the CEQA Guidelines requires that a clearly written statement of objectives be presented in an EIR to help lead agencies develop a reasonable range of alternatives and to aid the decision makers in preparing findings or a statement of overriding considerations, if necessary.

In its application to San Luis Obispo County, First Solar states its goal is to construct and operate a renewable energy project that will provide clean solar energy, which uses Advanced PV technology, combined with an efficient site design that minimally impacts the land and ensures that the energy generating potential will be maximized while minimizing potential disruptions to the project site and surrounding environment. In January 2009, a long-term Power Purchase Agreement (PPA) between PG&E and the Applicant was approved by the California Public Utilities Commission (CPUC). When completed, the Proposed Project is expected to deliver on average over one million megawatt hours (MWh) per year over the term of the PPA, which would contribute toward PG&E's requirement to reach 20 percent renewable energy delivery by 2010, as mandated by California's Renewables Portfolio Standard (Senate Bill 1078, known as RPS). Since that time, under Executive Order S-14-08, California has established a further goal of reaching a 33 percent RPS by 2020.

The net annual energy output for the entire 550 MW that will be provided to the PG&E system is estimated at over one-million megawatt-hours (MWh) per year (Topaz Solar Farm, LLC., 2009a). In 2008, the average annual energy consumption for a US residential utility customer was 11,040 kWh (11.04 MWh) and the average monthly consumption in California was 587 kWh, which equates to 7,044 kWh or approximately 7.0 MWh per year (USEIA, 2010). Therefore, the Proposed Project (Topaz Solar Farm Project) is expected to provide enough renewable energy to power between 100,000 to 150,000 households.

B.2.2 Site Selection Criteria

In selecting a solar facility site, the following major factors are generally considered:

B.2.2.1 Solar Resource Potential

The solar resource is determined by the amount of solar energy present and by the percentage of available sunlight that can be converted into electricity. Factors that influence the amount of solar energy available include the following:

- Latitude – as one moves southward to lower latitudes with a more direct exposure to the sun solar energy increases
- Elevation – at higher elevations there is less atmosphere to absorb and scatter sunlight, so available solar energy is greater than at lower elevations
- Climate – in drier climates with fewer cloudy or foggy days more solar energy is available
- Haze – in remote areas with little intensive agriculture there is less dust, aerosols, and humidity in the air, which allows more solar energy to reach the ground.

The Carrizo Plain is near the southern end of PG&E's service area, which extends into the northern half of Santa Barbara County. At an elevation of near 2,200 feet in some locations, the Proposed Project area is higher than similar inland valleys, including the San Joaquin Valley. It is protected from coastal fog by the Coastal and La Panza mountain ranges to the west. The Temblor Range to the east protects it from San Joaquin Valley ground fog. The weather is stable, marked by very low rainfall, diverse temperatures, and consistent sunshine. This microclimate is characterized by air that is dry and relatively low in particulate matter, resulting in greater solar intensity at ground level relative to other areas. These factors make the Carrizo Plain the highest solar resource in San Luis Obispo County, as well as in PG&E's service territory. This explains why the Carrizo Plain was the site of the Arco solar photovoltaic power plant in the 1980s, and why the Carrizo Plain is identified as a site for utility-scale solar power generation in the existing San Luis Obispo County General Plan Energy Element.

B.2.2.2 Transmission Access and Availability

Few of the state's existing transmission lines have the available capacity to integrate additional power generation without expensive upgrades. The PG&E Midway–Morro Bay 230 kV transmission line, running in an east-west direction within the Proposed Project site, appears to have the available capacity to carry significant additional power. This line was constructed to carry power from the Morro Bay natural-gas-fired power plant to the Midway Substation. This is one of five major (500 kV and 230 kV) transmission lines connecting the County with the statewide power grid. However, the line now carries only a fraction of its total capacity due to a reduction in the Morro Bay plant's energy production.

B.2.2.3 Suitable Land

An ideal site for a large solar facility would be relatively flat, displacing no high-value land uses. In general, both project study areas have gentle sloping toward the south and south-west (i.e., towards the sun), which would allow the PV ~~panels~~modules to be placed with minimal ground disturbance and to follow the contours of the land. In Study Area B, there is a greater variation in the slopes in the north east portion of the project site. Based on a review of aerial photographs, the fields appear to be fallow; however, in any given year, some fields were recently worked while other fields were inactive for one or more years. For Study Area B, lands within Sections 7, 8, 17 and 18 are all under Williamson Act contract. Study Area A does not contain any lands under Williamson Act contract (California Land Conservation Act of 1965).

B.2.3 First Solar Siting Criteria and Project Objectives

B.2.3.1 First Solar's Siting Criteria

In selecting a solar facility site, the Applicant stated that it considered environmental sensitivity, topography, electrical grid system integration, high solar production potential, and disturbed land availability. The Applicant first evaluated the availability of electric transmission capacity throughout PG&E's service territory. California's transmission grid system poses a number of challenges to the interconnection of a power plant. Many potential locations for the interconnection of a power plant would require lengthy and expensive system upgrades to integrate the new capacity into the transmission system. Accordingly, a primary project objective is to locate a site next to an existing transmission line with unused capacity. PG&E's Morro Bay-Midway transmission line provides a unique opportunity to interconnect the Proposed Project at a point on the system with available electric transmission capacity, avoiding the need for additional land for new transmission line rights-of-way. The Morro Bay-Midway line runs from the coast in San Luis Obispo County, through the Carrizo Plains, and eventually into Kern County in the San Joaquin Valley.

Much of the land near the Morro Bay-Midway line in Kern County, east of Interstate 5, is in highly productive agricultural use, and is divided into relatively small parcels. Many of the properties in western Kern County also contain underground mineral resources that continue to support oil and gas production and the sites are topographically unsuitable for solar development. Moving west along the Morro Bay-Midway line into San Luis Obispo County, it was necessary to avoid environmental resources existing in the Lokern Preserve and the Carrizo Plain National Monument and the highly sensitive areas between the western edge of the Carrizo Plains and the Pacific coast.

Through this search, the Applicant determined that the California Valley area 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. As a result, the Applicant selected the Proposed Project site adjacent to the Morro Bay-Midway transmission line.

Since its initial July 2008 CUP application, the Applicant has listened to agency and stakeholder input and continued to evolve the Topaz Solar Farm Project. The Proposed Project presented in this project description has been updated from ~~that the project~~ presented in the initial Notice of Preparation and the Supplemental NOP (September 2008 and July 14, 2009, respectively). The County issued a second Supplemental NOP (May 2010) that addresses the revised project as described herein. These revisions were incorporated to respond to input received from interested agencies and community members, and ~~as well as present~~ the findings of site analyses that have been completed since earlier application submittals. The Applicant has also acquired options on lands previously considered for the Ausra Carrizo

Energy Solar Farm Project.¹ The acquisition of these lands, which are included within Study Areas A and B, creates the possibility of minimizing or eliminating the use of land subject to Williamson Act contracts. While this land acquisition provides for more space between project facilities to facilitate wildlife movement, it also expands the project footprint onto additional agricultural lands.

The Applicant has presented two options for the Proposed Project. Option A (Southern Option) would be located within Study Area A and would contain properties north and south of Highway 58. Option B (Northern Option) would be located within Study Area B and primarily includes property north of Highway 58, although a smaller portion of land would be used south of Highway 58.

B.2.3.2 First Solar Project Objectives

The Applicant has identified a number of specific project objectives that drove it to select the Carrizo Plain site and to the Proposed Project in San Luis Obispo County. Those objectives are as follows:

- Help San Luis Obispo County comply with its General Plan policies for renewable energy generation;
- Contribute to the renewable energy necessary to achieve compliance with California's RPS;
- Facilitate California and San Luis Obispo County's achievement of emissions reduction targets under AB 32;
- Begin construction before September 30, 2011 and establish 550 MW_{AC} of generating capacity for emission-free photovoltaic (PV) solar electricity;
- Develop a project that is feasible to construct and operate while providing PG&E's customers with a cost-competitive, cleaner alternative to conventionally generated electricity;
- Provide community benefits, such as new property and sales tax revenues for San Luis Obispo County, educational resources through the Proposed Project Solar Learning Center, and the donation of a solar PV system to the Carrisa Plains Elementary School;
- Employ an average of 400 people during the approximately three-year construction period;
- Employ approximately 15 employees during permanent operations;
- Interconnect into the existing PG&E transmission line, avoiding the need for new, high-voltage transmission lines;
- Utilize marginal agricultural lands more efficiently and effectively without having to permanently alter agricultural soils, allowing the potential for the site to return to agriculture or open space after the Proposed Project lifeline;
- Restore a portion of the main ephemeral drainage that has connectivity to Soda Lake to a more natural condition;
- Demonstrate that solar energy can be generated while protecting natural resources and coexisting with wildlife;
- Provide improved habitat onsite and safe passage within and through the site for San Joaquin Kit Fox (Kit Fox);
- Assure long-term protections of habitat areas as needed to offset the direct effects of the project; and
- Generate electricity with minimal water use in an arid environment.

¹ The Application for Certification (AFC) for the Ausra Carrizo Energy Solar Farm proposed solar thermal project was withdrawn from the California Energy Commission (CEC) in November 2009.

B.2.4 Project Objectives

Having taken into consideration the statements by the Applicant regarding site selection and the Proposed Project's purpose, and having considered related County documents, San Luis Obispo County has identified the following project objectives:

- **Construct a 550 MW_{AC} solar energy facility by 2014 to help meet state and federal energy policies.** California legislation has been designed to reduce carbon emissions and generate new in-state energy sources. In 2002, California's Renewable Portfolio Standard (Senate Bill 1078, known as "RPS") mandated each investor-owned utility to deliver 20 percent of its electricity from renewable energy sources by the year 2017. The Energy Action Plan, adopted by the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) in May 2003, accelerated the completion date to 2010. SB 107, passed in 2006, codified that policy. Executive Order S-14-08, signed in November 2008, established a further goal of reaching a 33 percent RPS by 2020. Additionally, in 2006, the State legislature passed the California Global Warming Solutions Act (AB 32), which mandates for the first time ever in the U.S. the reduction of greenhouse gas emissions to 1990 levels by 2020. Topaz Solar Farm LLC has signed a Power Purchase Agreement that defines its commitment to provide 550 MWs of renewable energy to PG&E.
- **Support goals stated in the San Luis Obispo County General Plan, as well as policies in the plan designed to protect San Luis Obispo County's environment and economy.** The first preference in meeting the electricity needs of San Luis Obispo County is to increase energy conservation, and the second preference is for facilities that use renewable energy resources. Given statewide goals related to the use of renewable energy resources, it will be necessary to pursue all levels and scales of solar power installation, including rooftop solar, as well as wind energy and other alternatives.
- **Locate the facility in a high-solar resource area.** The siting of a renewable facility is critical to its success. Average year-round levels of direct normal solar radiation greater than or equal to 5 kilowatt-hours per square meter per day (kWh/m²/day) are generally required for the viability of utility-scale PV systems according to the Environmental Protection Agency (EPA) and the National Renewable Energy Laboratory (NREL), a national laboratory of the U.S. Department of Energy (EPA, 2009).
- **Locate the facility on a site that has local access to utility grade electrical transmission lines that do not require major construction to accommodate the additional energy generated.** California's stated RPS goal is to serve 33 percent of its electric load with renewable energy by 2020; however, the CPUC has identified transmission as a major barrier to achieving this goal. Renewable resources are constrained by location. They are often far from the grid and load centers, requiring extensive and expensive transmission upgrades. The Renewable Energy Transmission Initiative (RETI) is a statewide initiative to help identify the transmission projects needed to accommodate California's renewable energy goals; support future energy policy; and facilitate transmission corridor designation, transmission, generation siting, and permitting. Because of the identified transmission barrier, locating renewable facilities on sites that have access to electrical transmission lines with available capacity is an important component of the viability of a solar facility.
- **Locate the facility on land with compatible topography in a manner that minimizes environmental impacts.** The most efficient large-scale PV requires nearly level land. Additionally, sites should be selected based on an attempt to minimize environmental impacts.

B.3 Solar Project and Site Description

As noted in Section B.1, the Proposed Project would be installed within one of two study areas (Study Area A and Study Area B). This EIR evaluates both of the study areas as project options. The Applicant

identified these study areas, which are in the same general location but include different solar array configurations, based on the site selection criteria described in Section B.2. The information below, and in the remaining sections of this description, apply to both Study Area A and Study Area B unless where otherwise specified.

B.3.1 Site Characteristics

B.3.1.1 Location and Site Description

The Proposed Project would be located adjacent to Highway 58 and east of Bitterwater Road in eastern San Luis Obispo County. Figure B-1 shows the location and configuration of both study areas. Study Area A is located approximately one mile north of California Valley and six miles north of the Carrizo Plain National Monument; approximately 40 miles east of Santa Margarita and Highway 101; and approximately 48 miles west of Buttonwillow and Interstate 5. Study Area B is located approximately two miles north of California Valley and seven miles northwest of the Carrizo Plain National Monument; approximately 40 miles east of Santa Margarita and Highway 101; and 49 miles west of Buttonwillow and Interstate 5. Access to both study areas is from Highway 58 and Bitterwater Road.

In order to allow for some flexibility in the final project design, each of the two study areas is larger than the actual footprint of the Proposed Project, which would comprise approximately 4,000 to 4,100 acres.

Figures B-2 and B-3 illustrate the project study areas for each option and the anticipated configuration of solar arrays within each study area. As illustrated on these figures, “reserve areas” have been identified within and between the solar array groupings. According to the Applicant, these reserve areas are additional available land that has been identified to provide flexibility in the placement of arrays during final design. The reserve areas are within the project footprint and fall within the project study areas.

Each study area is generally characterized by actively-farmed and fallow level terrain and low, rolling hills with meandering ephemeral swales. Some slopes greater than five percent occur in the north and northeast portions of Study Area B and in the south and southwest portions of Study Area A. The entire area has been previously disturbed by dry-land farming and by ranching activities. Typical farming practices consist of a rotational program where fields are farmed for one year then left to grow a volunteer crop for a year. At any one time, some of the lands are plowed bare, some of them are planted, and some lands support volunteer annual grasses and grains. The primary crops grown on the site are wheat and barley. These grains are dry-farmed crops sown in the fall and harvested for grain or cut and baled for forage in the late spring.

B.3.1.2 Existing Zoning and Land Use

Both study areas being considered for the Proposed Project are located within San Luis Obispo County’s Shandon-Carrizo Planning Area. The General Plan identifies the Carrizo Plain as a “unique solar resource,” noting that the only other area in California with greater solar potential is the Mojave Desert (County, 1995). The General Plan land use classification for all parcels within the project study areas is Agriculture. The zoning designation for all lands is also Agriculture (AG), and some parcels are also within the Flood Hazard combining designation. The Agriculture zoning designation allows many uses with a land use permit, including electricity generation. Table B-2 provides information about parcels within each study area.

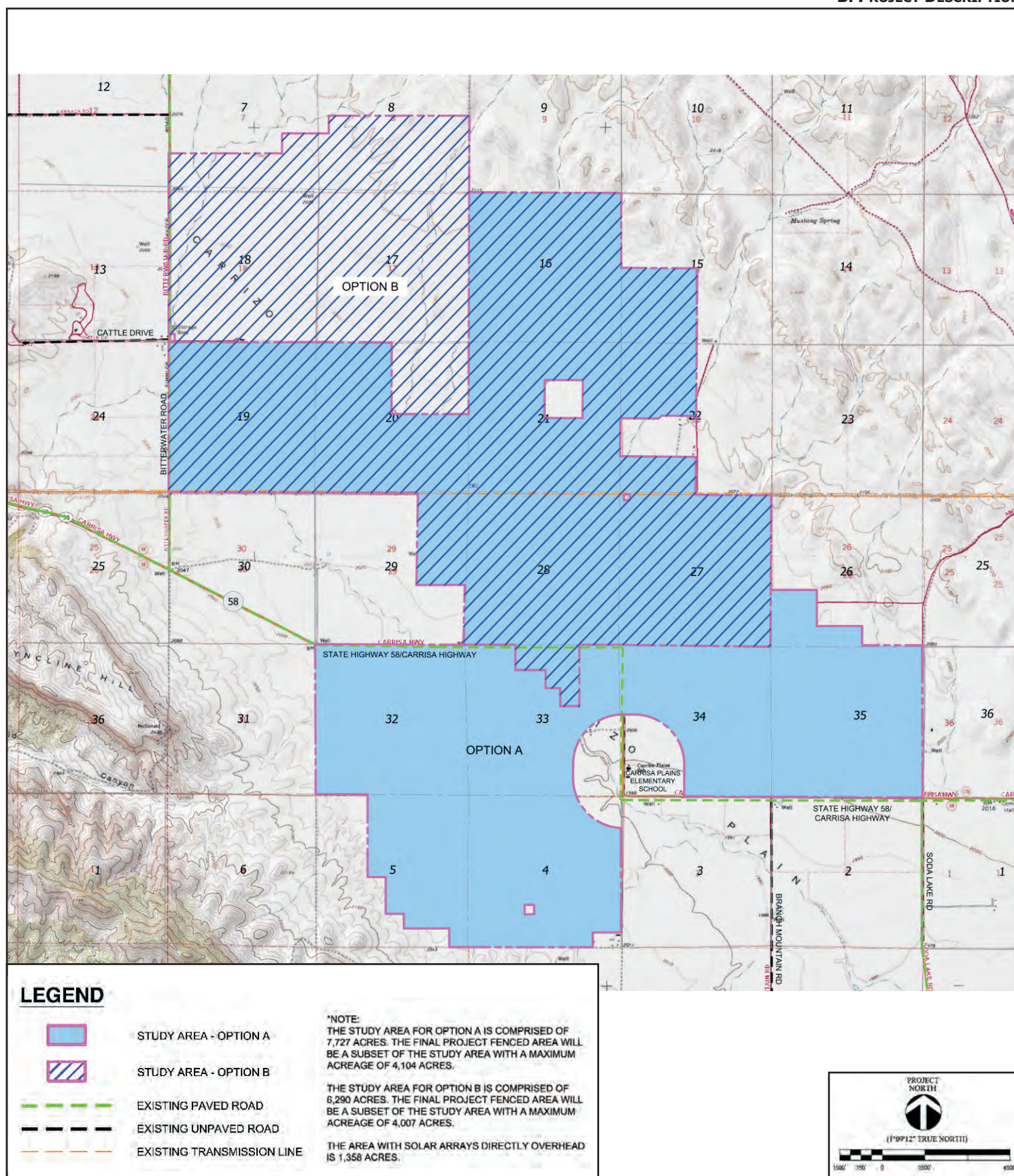


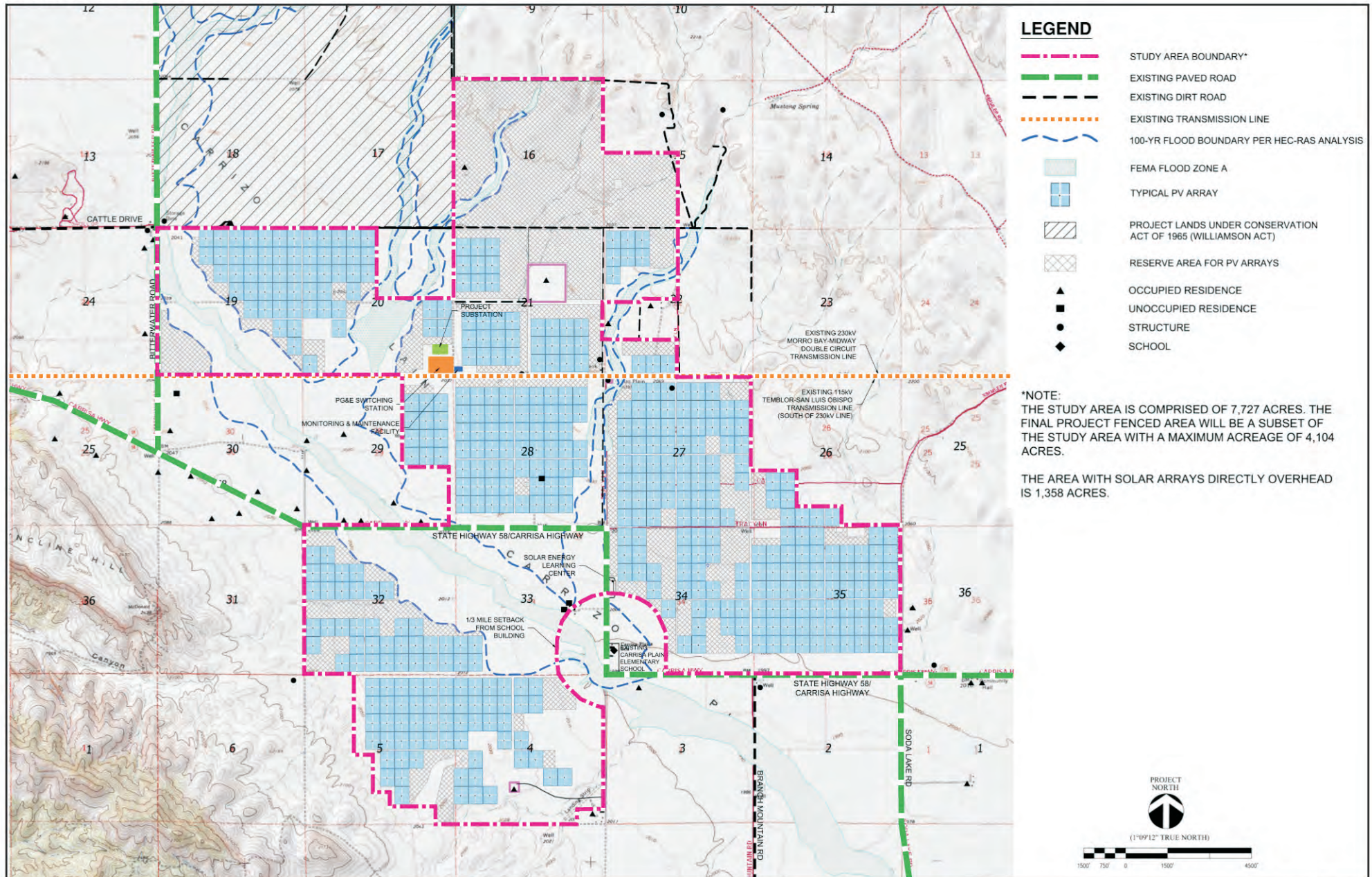
Figure B-1
Location of Option A
and Option B Study Areas



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Topaz Solar Farm Project
B. PROJECT DESCRIPTION

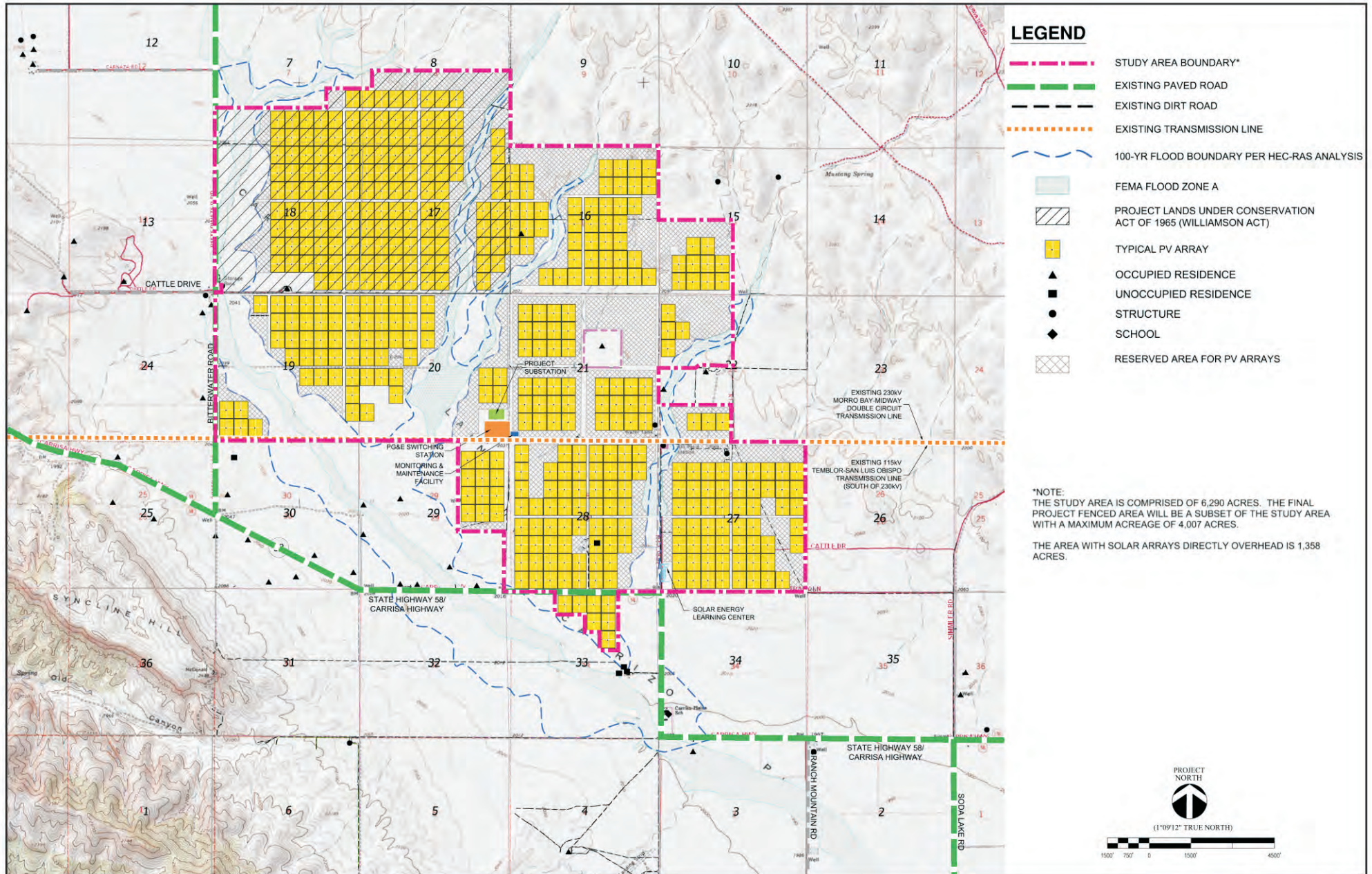


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Figure B-2
**Option A Project Study Area/
 Proposed Project Site**

Topaz Solar Farm Project
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Figure B-3
**Option B Project Study Area/
 Proposed Project Site**

Table B-2 identifies six properties within the project boundary for the Option B Study Area that are under a Williamson Act Contract. As noted on the table, for all of these properties the contracts expire in 2018. Consistent with County policy, the property owners submitted notices of non-renewal in 2008. In order for Option B of the Proposed Project to be constructed before expiration of the contracts, the property owners would be required to file a cancellation request with the County. As of August 2010, these property owners filed a cancellation request with the County. The Applicant has been coordinating with the affected property owners regarding these applications and will be primarily responsible for ensuring that the cancellation process is accomplished prior to the discretionary permit decision on the Proposed Project.

Table B-2. Parcels within Study Area

Assessor Parcel Number	Section (in Township 29 S., Range 18 E., MDBM)	Size (Acres) of Whole Parcel	Study Area Option A	Study Area Option B	Williamson Act Contract Status	Current Use and Structures (if any)
072-011-005	All of Section 7	646.3	NA	178.8	Yes (expires 2/20/2018)	Dry-farmed grain
072-011-006	All of Section 8	657.9	NA	322.6	Yes (expires 2/20/2018)	Dry-farmed grain Rangeland
072-061-036, 037	E ½ of the SW ¼ of Section 15	81.3	81.3	81.3	NA	Rangeland
072-061-027	SW ¼ of SW ¼ of Section 15	40.5	40.5	40.5	NA	Rangeland
072-061-038	SE ¼ of NW ¼ of SW ¼ of Section 15	10.2	10.2	10.2	NA	Rangeland
072-061-039, 040	W ½ of NW ¼ of SW ¼ of Section 15	20.3	20.3	20.3	NA	Rangeland
072-061-041	NE ¼ of NW ¼ of SW ¼ of Section 15	10.2	10.2	10.2	NA	Rangeland
072-051-003	All of Section 16	652.1	652.1	652.1	NA	Rangeland Structures: Residential Building, 2 Ancillary Buildings, Water Tank, Grain Elevator, Storage Building, Grain Silo
072-051-028	N ½ of 17	326.9	NA	326.9	Yes (expires 2/20/2018)	Dry-farmed grain
	N ½ of 18	320.7	NA	320.7	Yes (expires 2/20/2018)	Dry-farmed grain
072-051-027	S ½ of 17	327.5	NA	327.5	Yes (expires 5/6/2018)	Dry-farmed grain
	Portion of S ½ of 18	318.3	NA	318.3	Yes (expires 5/6/2018)	Dry-farmed grain
072-051-007	Southwestern most corner of 18	1.2	NA	0.9	Yes	Dry-farmed grain, Structures
072-051-004	All of Section 19	638.7	638.7	638.7	NA	Dry-farmed grain
072-051-005	All of Section 20	658.6	499.4	658.6	NA	Dry-farmed grain
072-051-008	The NW ¼, Section 21	165	165	165	NA	Dry-farmed grain

Table B-2. Parcels within Study Area

Assessor Parcel Number	Section (in Township 29 S., Range 18 E., MDBM)	Size (Acres) of Whole Parcel	Study Area Option A	Study Area Option B	Williamson Act Contract Status	Current Use and Structures (if any)
072-051-023	The NW ¼ of the NE ¼ of Section 21	41.3	41.3	41.3	NA	Dry-farmed grain
072-051-024	The NE ¼ of the NE ¼ of Section 21	41.4	41.4	41.4	NA	Dry-farmed grain
072-051-025	The SE ¼ of the NE ¼ of Section 21	41.3	41.3	41.3	NA	Dry-farmed grain
072-051-013	The SE ¼ of the SE ¼ of Section 21	41.1	41.1	41.1	NA	Dry-farmed grain Structures: Grain Silo, Grain Elevator, Storage Building, Quonset Hut Building
072-051-017	The NE ¼ of the SW ¼ of Section 21	41.1	41.1	41.1	NA	Dry-farmed grain
072-051-019	The NW ¼ of the SW ¼ of Section 21	41.1	41.1	41.1	NA	Dry-farmed grain
072-051-018	The SW ¼ of the SW ¼ of Section 21	41	41	41	NA	Dry-farmed grain
072-051-020	The NW ¼ of the SE ¼ of Section 21	41.2	41.2	41.2	NA	Rangeland
072-051-021	The NE ¼ of the SE ¼ of Section 21	41.2	41.2	41.2	NA	Dry-farmed grain
072-051-029	The SE ¼ of the SW ¼ and the SW ¼ of the SE ¼ of Section 21	82.1	82.1	82.1	NA	Dry-farmed grain Structures: Old Camp Trailers
072-061-054	The NW ¼ of Section 22	157.8	157.8	157.8	NA	Dry-farmed grain
072-061-031	The SW ¼ of the SW ¼ of Section 22	41.1	41.1	41.1	NA	Dry-farmed grain
072-061-033	The SE ¼ of the SW ¼ of Section 22	41	41	41	NA	Rangeland
072-101-023	All of Section 27*	655.2	654.2	654.2	NA	Dry-farmed grain
072-091-001	All of Section 28	660.3	660.3	660.3	NA	Rangeland
072-301-005	A portion of the East ½ of Section 29	134.3	134.3	134.3	NA	Dry-farmed grain
072-091-010	All of Section 33	661.3	567.1	73.7	NA	Dry-farmed grain
072-091-005	E ½ of NW ¼ of Section 32	80.8	80.8	NA	NA	Dry-farmed grain
072-091-007	W ½ of NW ¼ of Section 32	80.8	80.8	NA	NA	Dry-farmed grain
072-091-009	S ½ and NE ¼ of Section 32	488	488	NA	NA	Dry-farmed grain
072-101-030	Portion of SW ¼ of Section 26	164.2	92.9	NA	NA	Rangeland
072-101-003	Portion of SW ¼ of SE ¼ of Section 26	12.3	12.3	NA	NA	Rangeland

Table B-2. Parcels within Study Area

Assessor Parcel Number	Section (in Township 29 S., Range 18 E., MDBM)	Size (Acres) of Whole Parcel	Study Area Option A	Study Area Option B	Williamson Act Contract Status	Current Use and Structures (if any)
072-101-031	All of Section 34	651.6	517.9	NA	NA	Rangeland
072-101-031	All of Section 35	650.7	650.7	NA	NA	Rangeland
072-131-001	All of Section 4**	664.8	621.2	NA	NA	Cropland, Rangeland, Residential
072-131-002	All of Section 5**	664.9	359.7	NA	NA	Cropland, Rangeland

Note: *Section 27 is owned by PG&E and managed by the Pacific Forest and Watershed Lands Stewardship Council (Stewardship Council), a private, nonprofit foundation that was established in 2004 as part of a PG&E settlement (see <http://www.stewardshipcouncil.org/>). In the 1980s and 1990s, this parcel was the location of the former Arco Solar Plant, and the parcel is currently in dry-farmed grain. The Applicant is working with the Stewardship Council on an exchange of approximately 1,200 acres of privately held land within the boundaries of the Carrizo Plain National Monument for the 655 acres of Stewardship Council land included in the Proposed Project site. The Stewardship Council's mission is to preserve land for public use such as recreation and preservation of open space and historic and cultural resources. In its October 2010 meeting, the Stewardship Council voted to support conditional transfer of these lands as outlined in Attachment B of the minutes from that meeting. Subject to the conditions outlined in its decision, the Stewardship Council supports PG&E seeking the approval of the CPUC and the federal bankruptcy court to amend their respective orders to take the PG&E Carrizo Plain Property out of the Land Conservation Commitment, thereby allowing PG&E to transfer fee ownership of the PG&E Carrizo Plain Property to First Solar unencumbered by a conservation easement.

**Sections 4 and 5 are located in T30S, R18E, not T29S.

Lot Legalization

As of the publication date of this Draft EIR, the Applicant has preliminarily identified some parcels within each study area that may not comply with the requirements of the State Subdivision Map Act or local subdivision requirements as to their formation. Consistent with state and local requirements, the Applicant will apply for and obtain necessary approvals from the County to bring these parcels into compliance with state and local subdivision requirements. Possible means for obtaining compliance are a certificate of compliance under Government Code Section 66499.35 or a parcel map or tract map under Government Code Sections 66425 through 66450 and San Luis Obispo County Code Chapter 21.06. If a map is chosen as the appropriate mechanism to resolve this issue, it is likely to result in fewer overall underlying parcels than the current configuration and with resulting parcels of larger acreage.

Tract Map, Parcel Map and Lot Line Adjustment

While this discussion presents information on applications for a Tract Map, Parcel Map, and Lot Line Adjustment, only the Tract Map Application is being considered at this time. While the Parcel Map and Lot Line Adjustment are no longer being considered, they have been evaluated in this EIR in case they are desired in the future to facilitate transfer of land to the Applicant.

~~To facilitate the transfer of land to the Applicant, two property owners are requesting adjustment to their property boundaries via a Parcel Map and Lot Line Adjustment. The two requests, which have been submitted by the current landowners to the County for processing, are described below.~~

Tract Map (TR 3032). The Applicant has submitted an application for a Tract Map to the County to combine six parcels of 40 acres each and one parcel of 80 acres into one parcel of 320 acres. This Tract Map application would legalize four of the parcels in the southern half of Section 21.

Parcel Map. The Parcel Map application addresses a property owner's request to subdivide a 640-acre parcel into two parcels of 190 acres and 450 acres. The subdivision would allow the property owner to separate the residence and surrounding property (190 acres) from the remaining property (450 acres). ~~Both parcels may that would~~ become part of the Proposed Project (Topaz Solar Farm Project) if Option B is developed.

The parcel was created legally in 1985 as Parcel 12 of Parcel Map COAL 82-201, recorded in Book 36, Page 52 of Parcel Maps. The existing parcel covers the southern portions of Section 17 and 18 of Township 29 South, Range 18 East (APN: 072-051-007 and 027).

The property currently has a single-family residence with the remaining property used as grazing land. On December 12, 2008, the property owner filed a Notice of Non-Renewal to remove the 640-acre property from the Williamson Land Conservation Contract. The current residence is served by an onsite water well. The subdivision request would not change access to the existing residence, which is currently from Bitterwater Road. See Appendix 2, Figure Ap. 2-3 for a location map.

Lot Line Adjustment. A Lot Line Adjustment ~~has also been~~ was filed by the current property owner between two (2) legal parcels of 640 and 320 acres in the Agricultural zone, resulting in two (2) new parcels with the same acreage. Although an internal lot line would be added and one would be removed, the external boundaries and acreage of the two parcels would not change. See Appendix 2, Figure Ap. 2-4 for a map and description of the proposed lot line adjustment. The properties are located in the northern half of Section 19, and all of Section 20 of Township 29 South, Range 18 East (APN: 072-051-004 and 005).

The property is not under a Williamson contract and is currently used as cropland. The parcels were created legally, by COAL 82-201, in 1985.

Creation of Parcel for PG&E Switching Station

PG&E will construct a Switching Station on an approximately 12-acre site in the southeast corner of Section 20, adjacent to the existing Morro Bay to Midway Transmission Line, as shown on Figures B-2 and B-3. The Applicant and PG&E will pursue either the Public Lot Process or a Lot Line Adjustment in order to create a separate parcel for the Switching Station to facilitate the transfer of ownership of the parcel to PG&E.

B.4 Solar Project Components

The solar project components described in this section apply to Option A and Option B, unless otherwise specified.

B.4.1 Permanent Facilities

B.4.1.1 Photovoltaic Arrays

The Proposed Project would involve the installation of ~~460437~~ 1.3 MW_{AC} arrays of PV modules, manufactured by First Solar, with the cumulative capacity to generate 550 MW of power under peak solar conditions. Each 1.3 MW_{AC} array would consist of up to approximately 20,000 PV modules and one PCS. Each PCS would include two inverters in an air-conditioned enclosure and one adjacent transformer. Each array would cover an area of approximately seven acres.

PV modules would be mounted on steel support structures called tables, each holding about 16 modules and measuring approximately 8 feet wide by 16 feet long, as shown on Figure B-4. Tables would be attached at an angle to a bracket on vertical steel posts spaced approximately eight to ten feet center-to-center and driven into the ground to a depth of four to seven feet below grade. Once mounted, the front of each table would be approximately 1.5 feet above grade, while the rear would be approximately 5.5 feet above grade. The distance from the ground to the top of the PV module table may vary depending on the topography.

As illustrated on Figure B-4, a typical array would consist of 36 rows, each containing 30 tables. The arrays would be sectioned into quadrants by two 20-foot-wide access corridors, one running north to south, the other east to west.

The PV modules would be electrically connected by wiring harnesses running along the bottom of each table to combiner boxes that collect power from several rows of modules. The combiner boxes would feed direct current (DC) power from the modules to the PCS via underground cables. The inverters in the PCS would convert the DC electric input into AC (alternating current) electric output, and the isolation transformer would step the current up to 34.5 kV for on-site transmission of the power to the PV combining switchgear (PVCS). Figure B-5 provides an illustration of the layout of the inverters and transformers that make up the PCS.

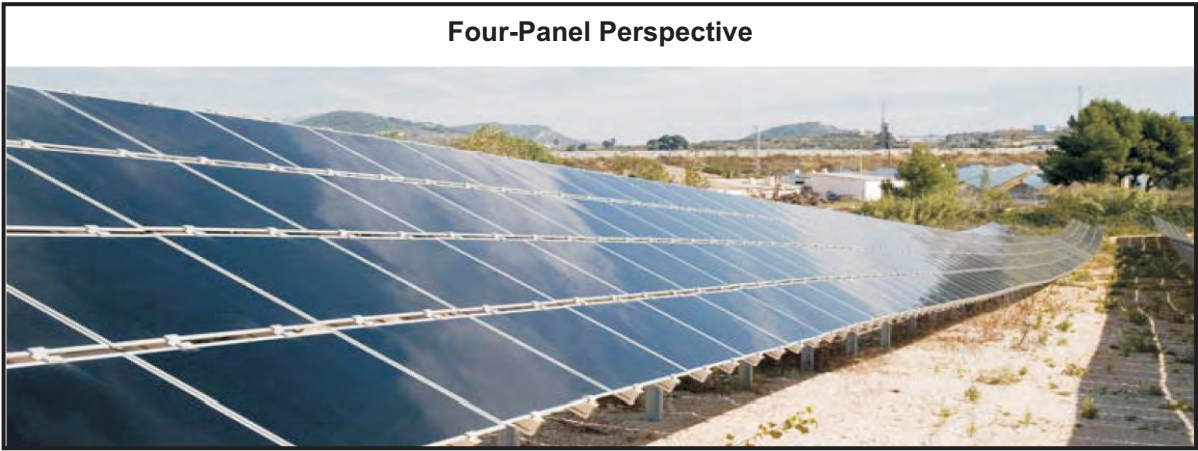
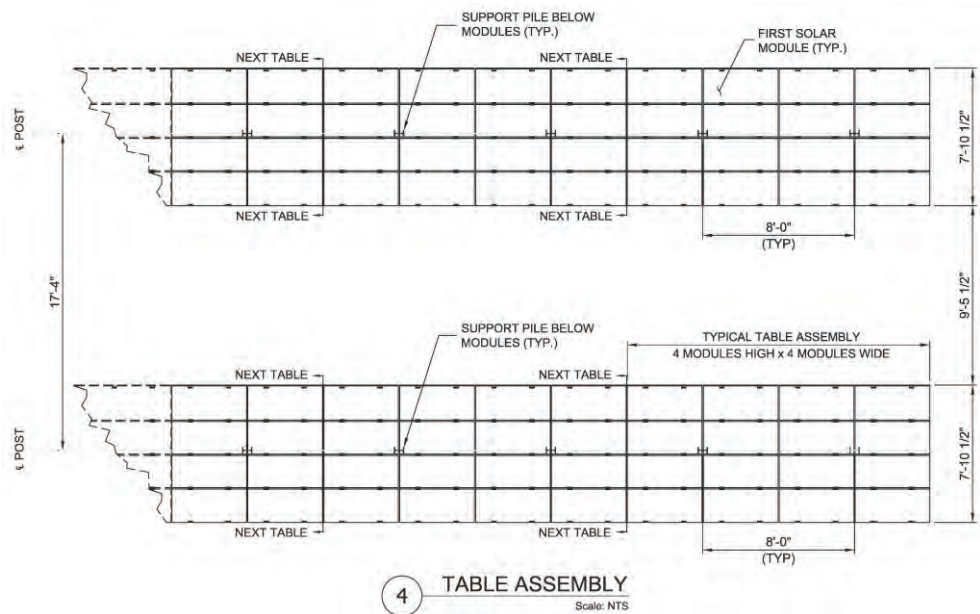
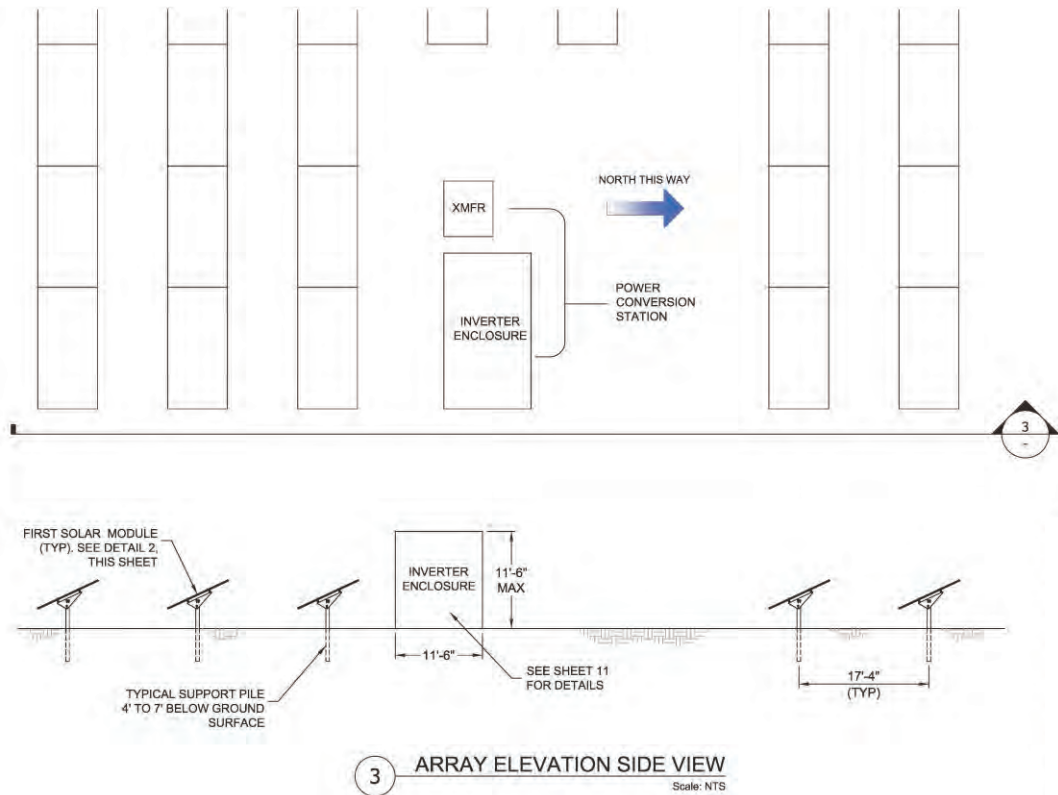
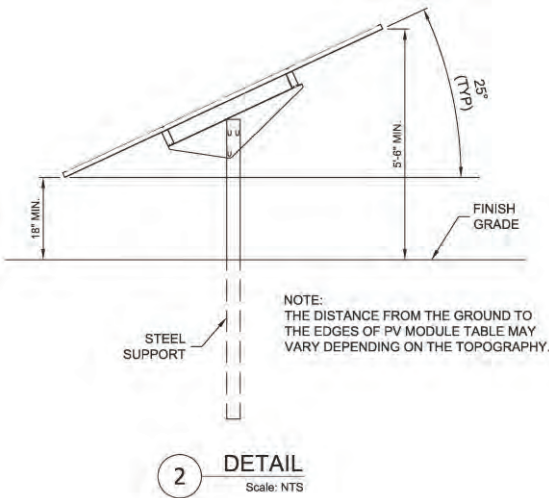
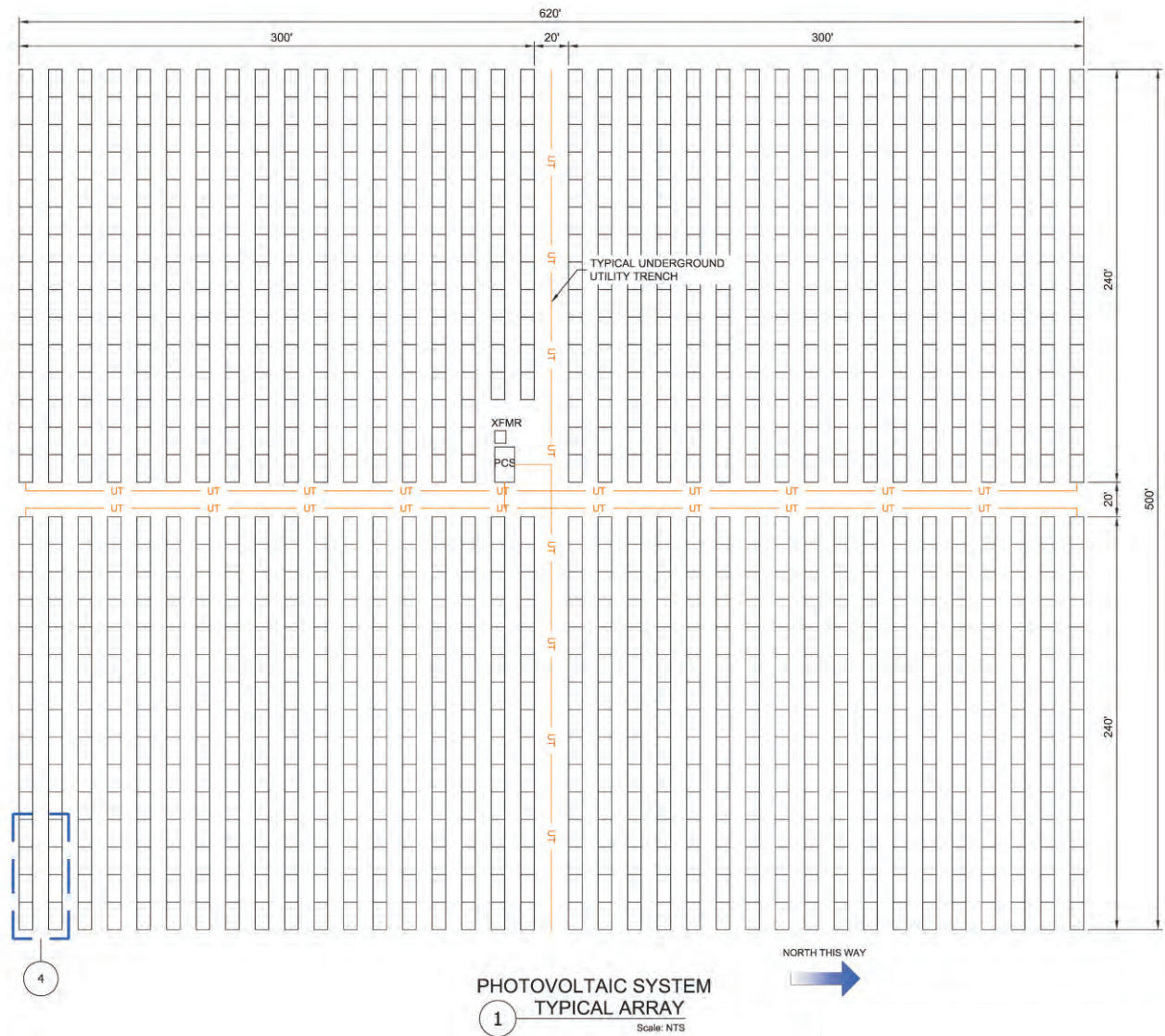
These PV array components could be configured into arrays in multiple ways within the Proposed Project fenced area. One configuration would be the 1.3 MW_{AC} arrays discussed above. Another configuration would be arrays consisting of 56 rows, which would produce approximately 2.52 MW_{AC} of power. The arrays would be sectioned into quadrants by two 20-foot-wide access corridors, one running north to south, the other east to west. Other configurations may be developed prior to obtaining construction permits for the Proposed Project. The Proposed Project components would be the same for each array configuration, and the site layout would contain approximately the same impacted area.

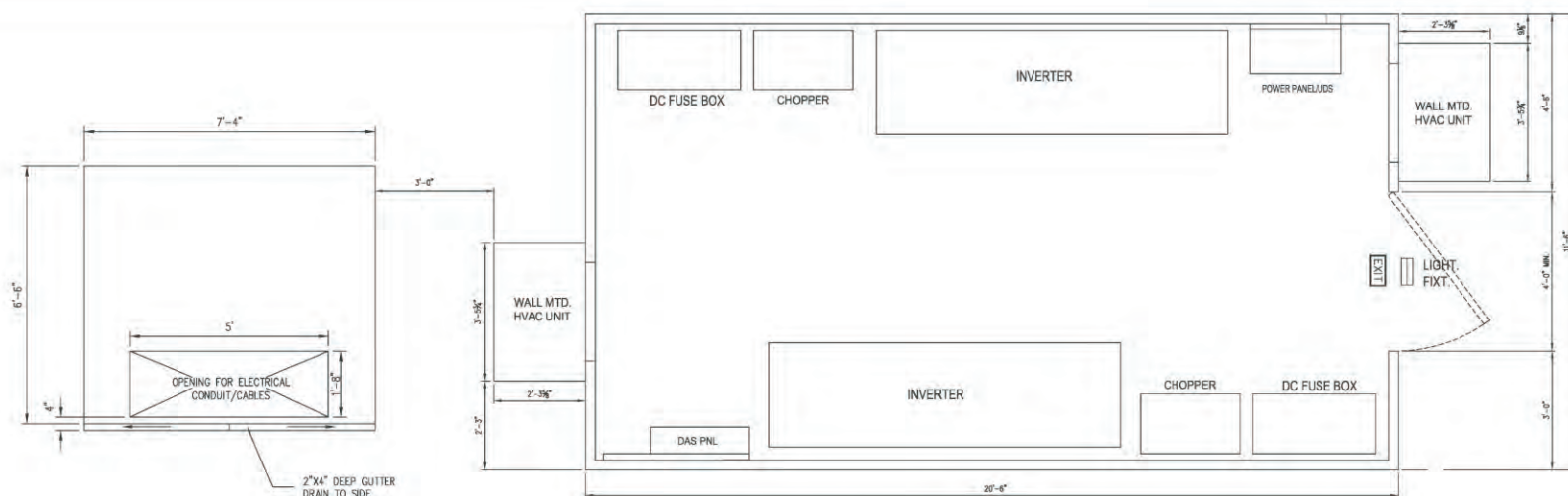
The PVCS would collect the power from groups of multiple arrays (4 to 30 arrays, depending on the location on the Proposed Project site) for transmission to the substation. The PVCS cabinets would be approximately 12 feet in height and would be situated on concrete pads dispersed amongst the arrays, as shown on Figures B-6, B-7, and B-8. Overhead 34.5 kV high-capacity collection system lines, with two to four circuits each, would then connect the power output from the PVCS to the Proposed Project substation. Option A would contain approximately 12 miles of these overhead 34.5 kV lines, and Option B would contain approximately eight miles of these overhead 34.5 kV lines. Wooden poles approximately 43 feet in height would support these overhead lines. The on-site electrical collection system is designed to minimize electrical losses within the Proposed Project site prior to delivery to the Proposed Project substation.

A meteorological station would be installed with the Proposed Project to track weather patterns. The meteorological station would include a supervisory control and data acquisition (SCADA) system to collect data for analysis and system monitoring. The SCADA system involves a network of data loggers and programmable logic controllers (PLCs) at each PCS enclosure. These would in turn be connected to a Wide Area Network (WAN) and monitored onsite in the M&M facility, as well as in a remote Network Operations Center.

Principal materials included in the PV arrays include glass, steel, and various semiconductor metals. First Solar's production process is designed to minimize waste generation and maximize the recyclability and reusability of component materials. At the end of their useful life, many of the Proposed Project materials would be recyclable, including the steel tables, steel posts, wiring, and the PV modules, which would be collected through First Solar's pre-funded recycling program.

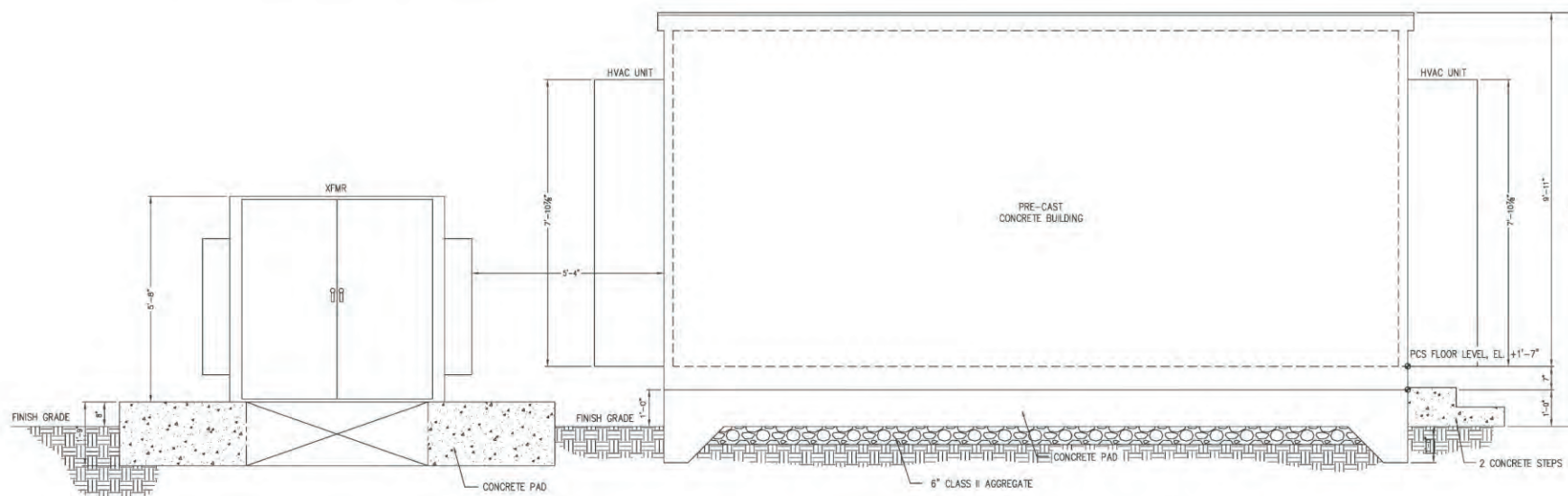
First Solar's thin film PV technology uses the compound cadmium telluride (CdTe) as the semiconductor material enclosed within two sheets of glass. According to First Solar literature on this technology, the PV modules would absorb over 90 percent of the light received. Cadmium telluride is a stable compound of cadmium (Cd) and tellurium (Te). Cadmium, a byproduct of zinc refining, is compounded with tellurium, a byproduct of copper refining, to form the stable compound CdTe. In module manufacturing,





1 TYPICAL TRANSFORMER PAD PLAN
Scale: NONE

2 TYPICAL INVERTER ENCL. EQUIPMENT ARRANGEMENT PLAN
Scale: NONE



3 TYPICAL TRANSFORMER SECTION
Scale: NONE

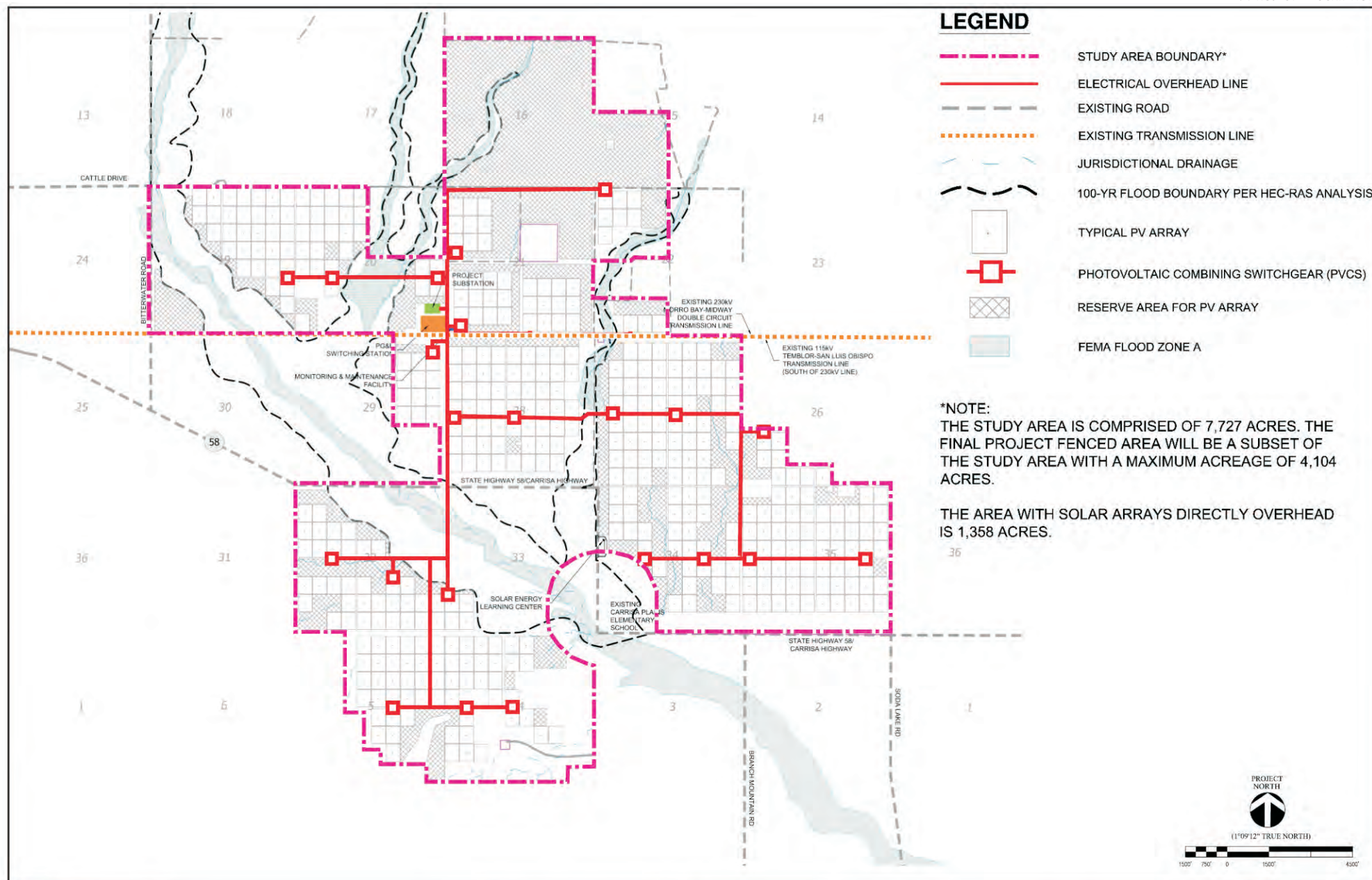
4 TYPICAL INVERTER ENCL. SECTION
Scale: NONE



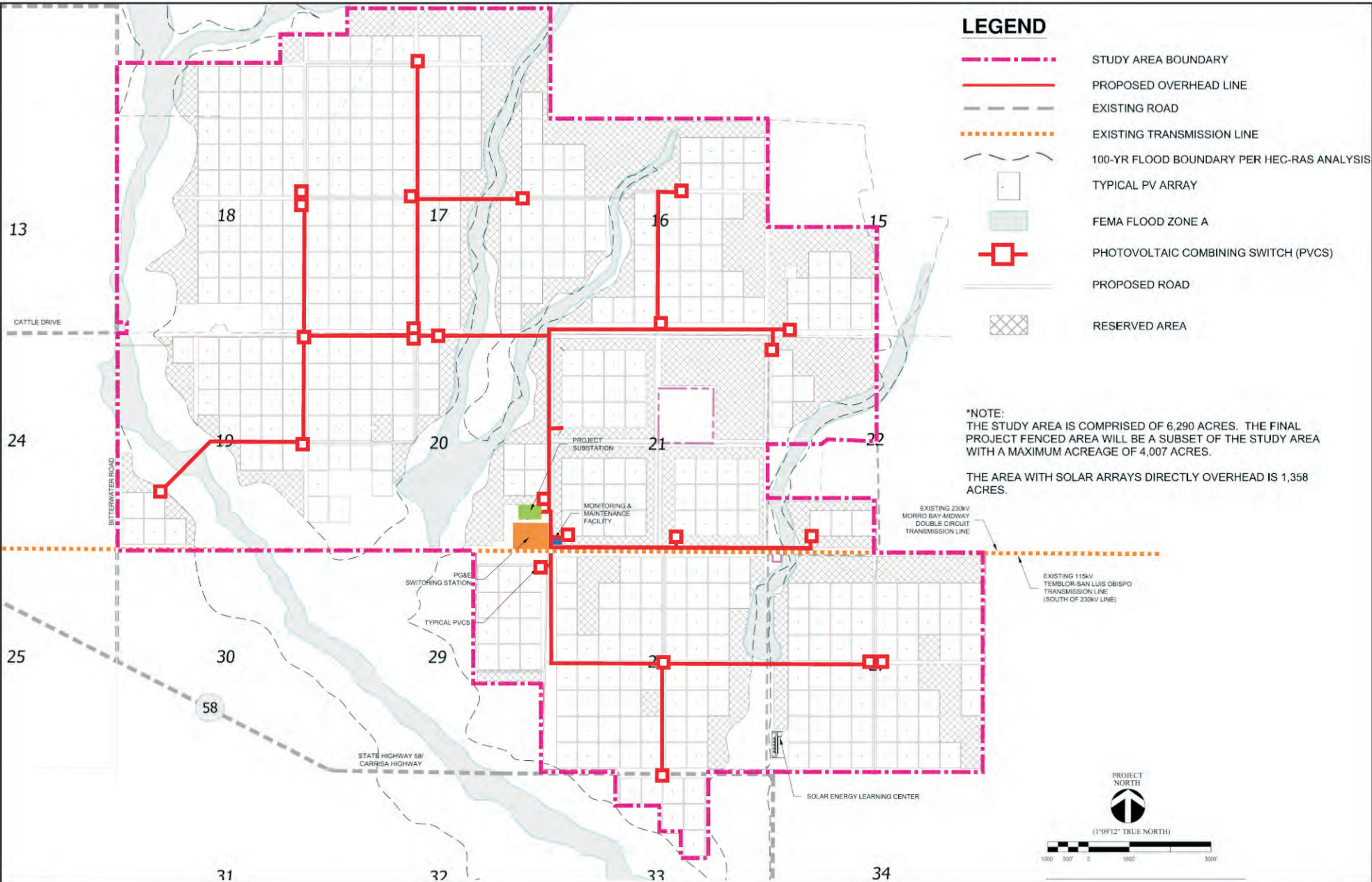
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Figure B-6
Solar Project Components



Topaz Solar Farm Project
B. PROJECT DESCRIPTION



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Figure B-8
Electrical Overhead Line Plan:
Option B

First Solar takes cadmium, sequesters it in the form of CdTe, and then encapsulates it between two protective sheets of glass in a module. Refer to Appendix 3 for more information on First Solar's technology.

B.4.1.2 Monitoring and Maintenance Facilities

An M&M facility for parts storage, security, and project monitoring, approximately 11,250 sq. ft. in size, would be located near the project substation. A specific design for the M&M facility has not yet been selected, but it is anticipated to be a prefabricated building with a floor plan similar to the design shown on Figures B-9 and B-10. The design will be compliant with the Americans with Disabilities Act (ADA). The building would be located on a graded area with adjacent worker parking. Based on the results of preliminary percolation tests, a leach field and septic system would be sited adjacent to the M&M facility to serve the Proposed Project's sewage needs. Foundations for the M&M building and Solar Energy Learning Center would be concrete slabs.

B.4.1.3 Solar Energy Learning Center

As part of the Proposed Project, the Applicant plans to construct and operate a Solar Energy Learning Center (Center) within the project boundary. The Applicant 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 could accommodate a few class field trips per day, as well as 100 to 200 visitors per month. The Center would be advertised to local school districts, community colleges, and universities and would include exhibits and information on solar power designed for both students and general visitors to the area.

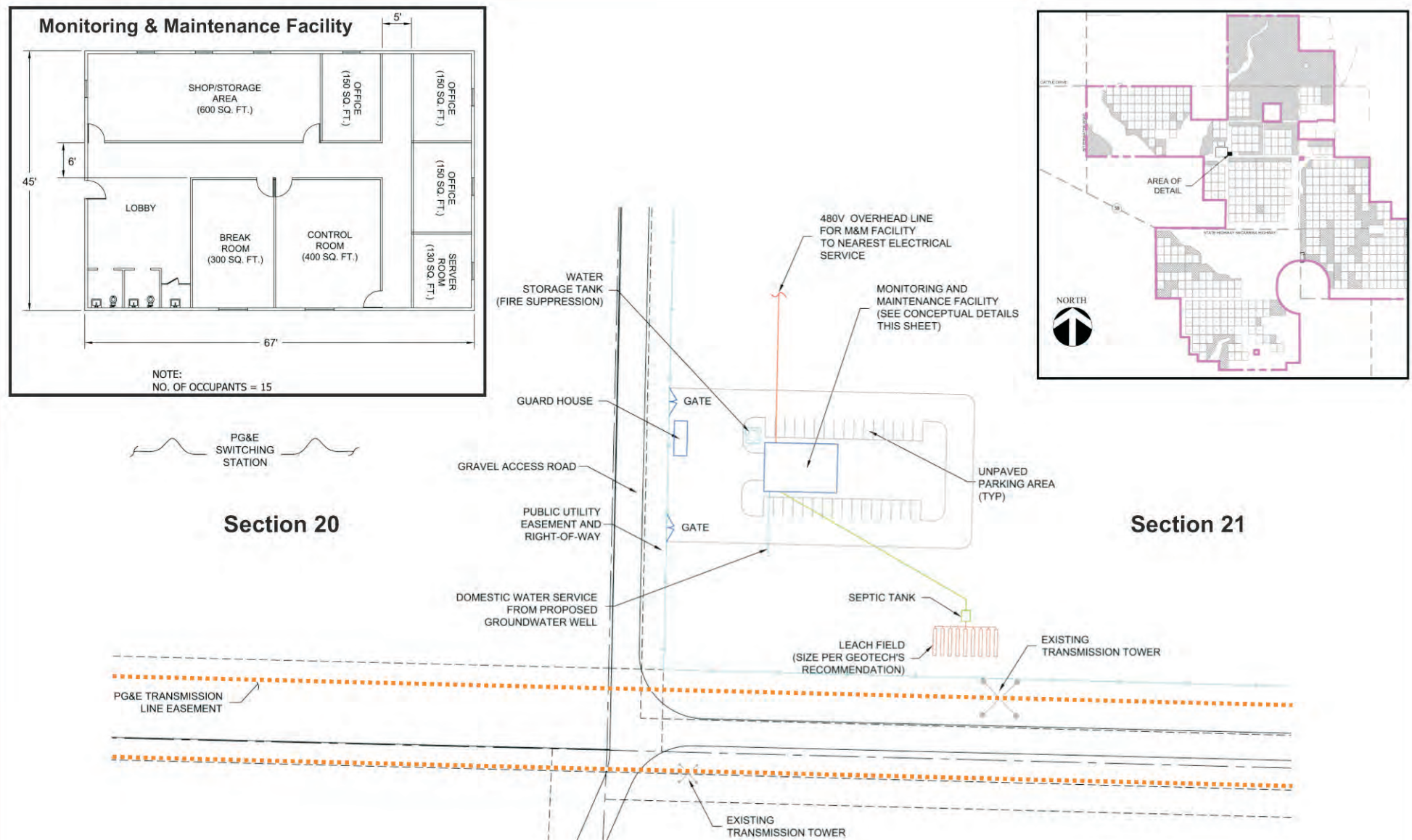
The Center would consist of an ADA-compliant, 30-foot-by-30-foot, enclosed building with restrooms, a scale model of the solar facilities, and exhibits on solar power. The building would have stairs to an observation deck on the roof that would allow visitors a vista of the nearby solar arrays. The Center would be approximately 15 feet in height with a safety railing around the roof deck, which would add an additional five feet in height to the building (for a total height of 20 feet). Figures B-2 and B-3 provide a potential location of the Center within each study area. The final location and design for the Center would be determined before construction through discussions between the Applicant, the County, the Atascadero Unified School District, and other local educators.

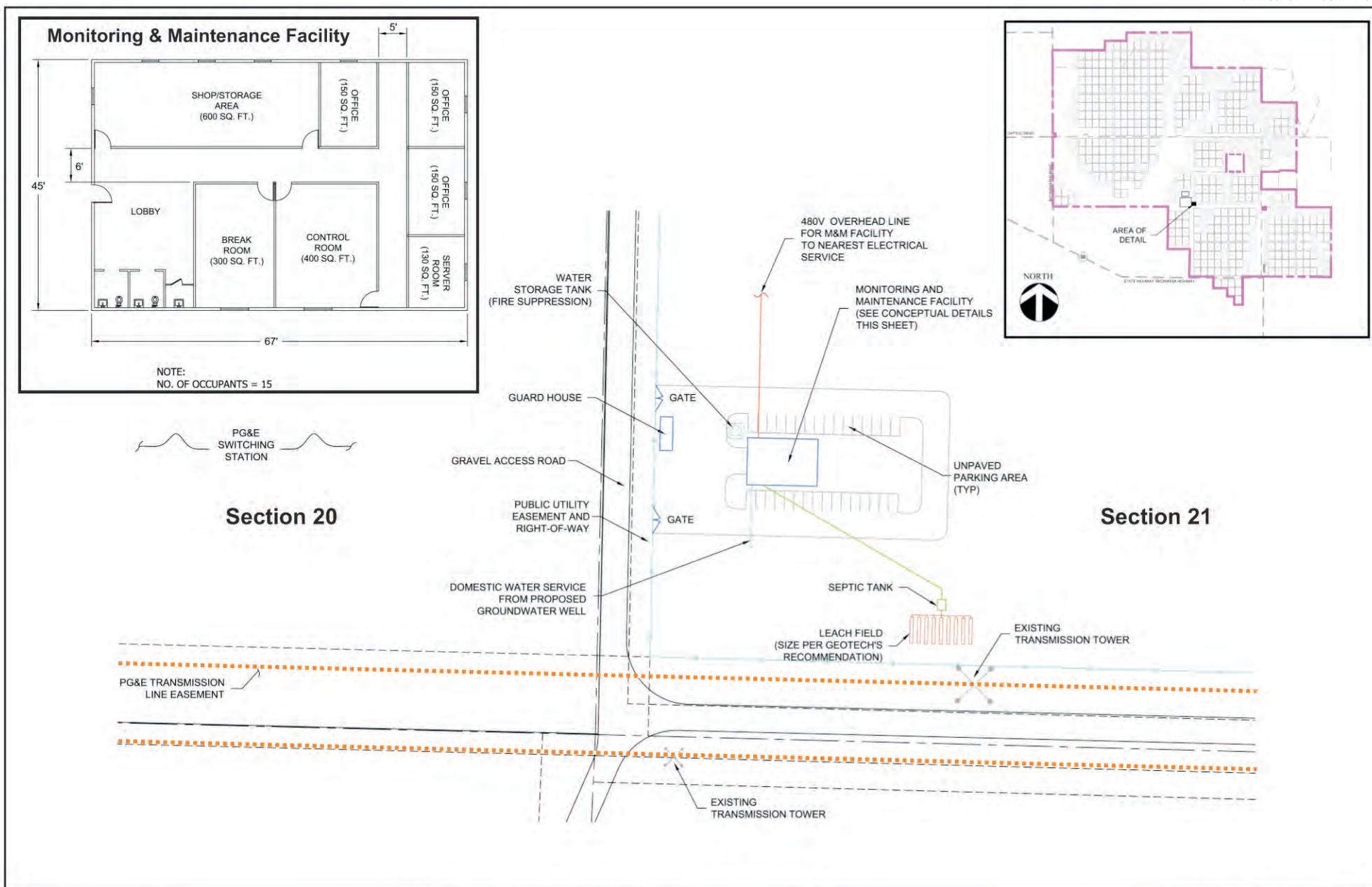
B.4.1.4 Fencing

For security, the Proposed Project site would be fenced with a six-foot-high chain link fence topped with three strands of barbed wire. Perimeter fencing would have small openings (approximately 12 inches in height by four to six inches in width) at the base of the fence approximately every 100 yards, totaling over 600 ground-level openings around the entire Proposed Project site. Gated eight-foot-high chain link fences would be constructed around the substation, the switching station, and the construction staging areas. Perimeter and other proposed fencings would serve to restrict public access and limit public liability, as required by County Municipal Code § 22.32.060(A)(2) and the National Electrical Code. Figures B-11 and B-12 provide the proposed fencing plans for Option A and Option B.

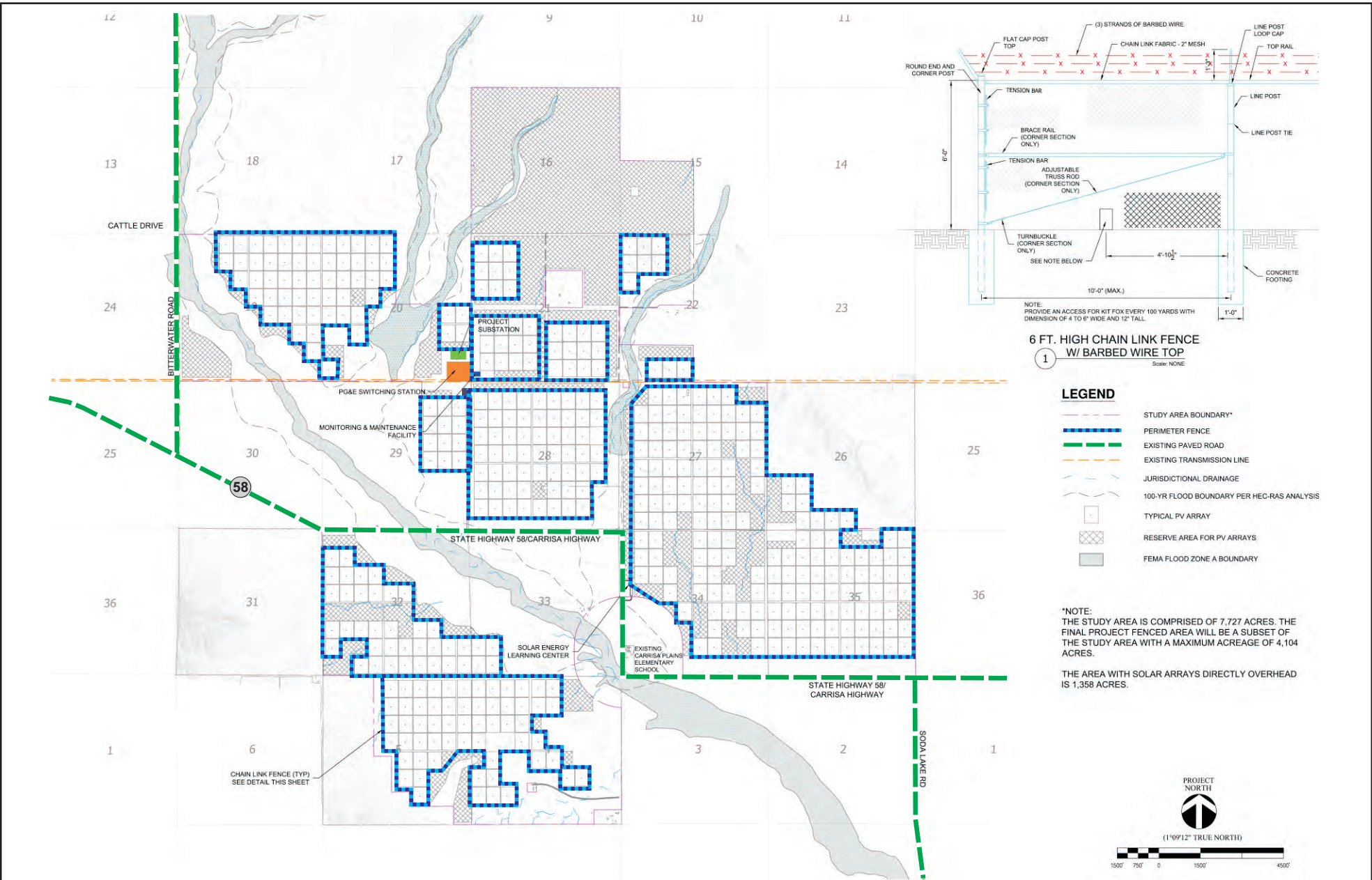
B.4.1.5 Buffer Zones

The minimum buffer zone, proposed by the applicant, for the Proposed Project would be 50 feet between PV arrays and public roads and adjacent private lands. ~~The Proposed Project would also maintain a buffer zone of 100 feet from the centerline of the main drainage. Table B-3~~





Topaz Solar Farm Project
B. PROJECT DESCRIPTION



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Figure B-11
Fence Plan:
Option A Study Area

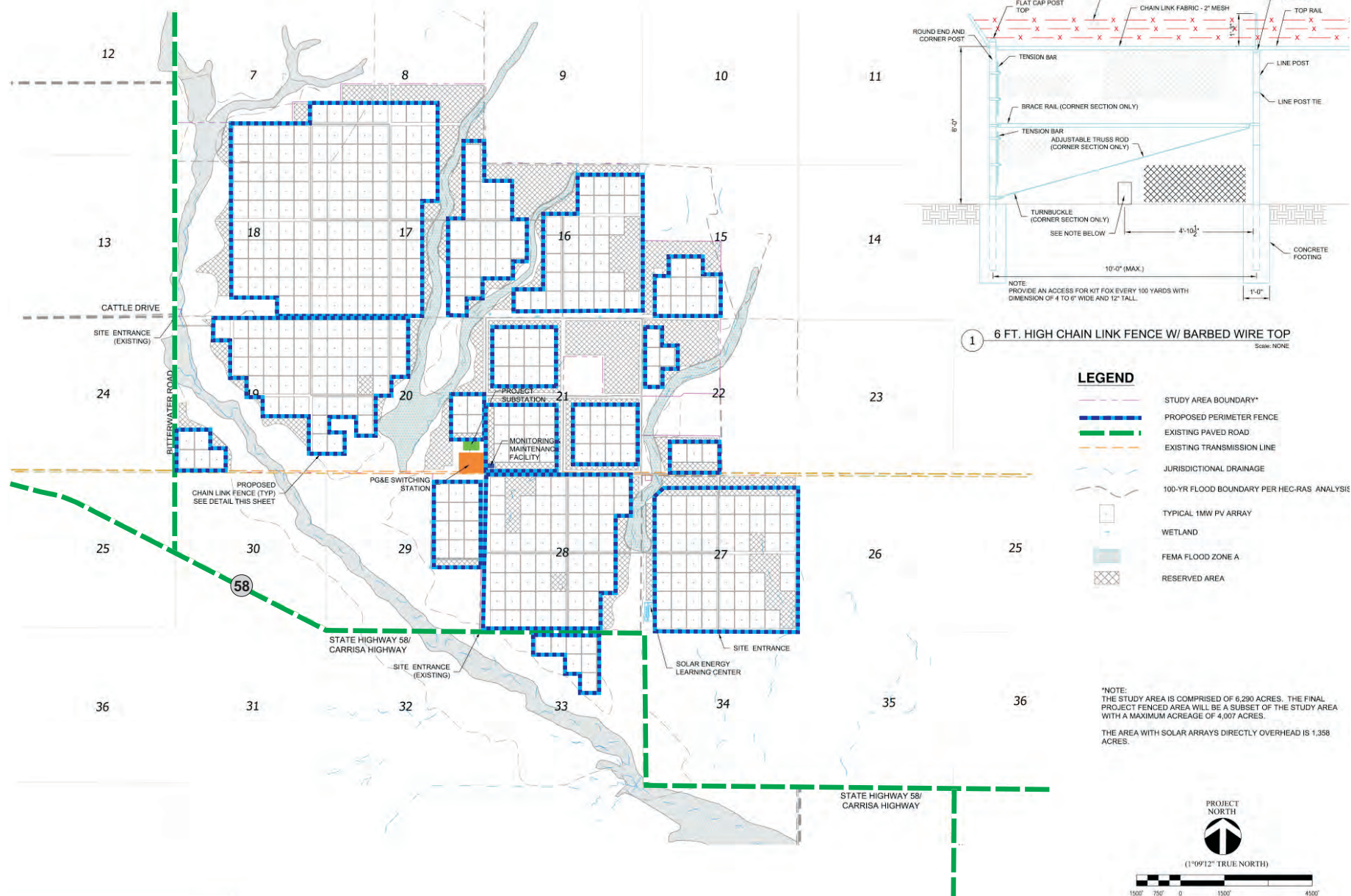


Figure B-12
Fence Plan:
Option B Study Area

presents the buffer zones used in the configuration of the solar arrays for each of the project options. Table B-3 presents the Applicant-proposed minimum buffer zones for specific locations within each project option.

Table B-3. Buffer Zones for the Topaz Project	
Location	Width (closest point)
Right of Way and/or Property Line Setback – Site Layout Option A	
Sec 28, from edge of Highway 58 right-of-way	530 ft
Sec 32, from edge of Highway 58 right-of-way	689 ft
Sec 34, from eastern edge of Highway 58 right-of-way	409 ft
Sec 34, from northern edge of Highway 58 right-of-way	761 ft
Sec 35, from edge of Highway 58 right-of-way	775 ft
Sec 21, from southern boundary of 40-acre residential parcel in Sec 21	609 ft
Sec 21, from western boundary of 40-acre residential parcel in Sec 21	1,052 ft
Sec 21, from western boundary of 40-acre residential parcel in Sec 22	506 ft
Sec 22, from northern boundary of 40-acre residential parcel in Sec 22	644 ft
Sec 22, from southern boundary of 40-acre residential parcel in Sec 22	570 ft
Sec 19, from eastern edge of Bitterwater Road right-of-way	113 ft
Sec 19, from southern boundary of residential fenceline in Sec 18	80 ft
Sec 34, from eastern boundary of school	2,141 ft
Right of Way and/or Property Line Setback – Site Layout Option B	
Sec 21, from northern boundary of 40-acre residential parcel	1,613 ft
Sec 21, from southern boundary of 40-acre residential parcel in Sec 21	370 ft
Sec 21, from western boundary of 40-acre residential parcel in Sec 21	306 ft
Sec 21, from eastern boundary of 40-acre residential parcel	1,434 ft
Sec 28, from northern edge of Highway 58 right-of-way	119 ft
Sec 33, from southern edge of Highway 58 right-of-way	69 ft
Sec 22, from northern boundary of 40-acre residential parcel in Sec 22	394 ft
Sec 21, from western boundary of 40-acre residential parcel in Sec 22	202 ft
Sec 22, from southern boundary of 40-acre residential parcel in Sec 22	291 ft
Sec 19, from southern boundary of residential fenceline in Sec 18	119 ft
Sec 19, from eastern edge of Bitterwater Road right-of-way	113 ft

To keep the Proposed Project's water consumption to a minimum, the Applicant would not plant landscape screening. The Applicant would plant a vegetated understory in the areas covered by the solar arrays that would mimic annual grassland vegetation. This vegetation would require only minimal, if any, initial irrigation, and would be installed to provide habitat, prevent erosion, and discourage the growth of invasive plant species.

The Proposed Project would establish a 50-foot buffer around each of the ephemeral wetland depressions and a 250-foot buffer around vernal pool wetlands that have been identified as actual or potential habitat for federally listed endangered fairy shrimp. Section C.6 (Biological Resources) also identifies additional species-specific buffers.

B.4.1.6 Drainage Improvements

Both project study areas include ephemeral drainages, which that meet federal “jurisdictional waters” criteria and may be are subject to U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA) (referred to herein as jurisdictional drainages). Most of the ephemeral drainages that extend across the project area are historically interconnected and flow during significant rainfall events toward the main drainage, which drains to Soda Lake, a shallow, ephemeral alkali lake in the Carrizo Plain National Monument approximately 10 miles southeast of the point where the main drainage leaves the Site (Huffman-Broadway Group, 2010). Study Area A includes 31 Ephemeral Drainages, totaling approximately 15 acres over 67,437 linear feet. Study Area B includes 12 Ephemeral Drainages, totaling approximately 10 acres over 37,743 linear feet. These “jurisdictional” drainages have been denuded and modified by past farming activities. ~~As a part of the Proposed Project, the Applicant would restore portions of these drainages with the objective of improving existing water quality and habitat functions. Restoration components may include removal of accumulated sediment, bank stabilization, planting of vegetation, sediment control measures, establishing protective habitat buffers, placing a conservation easement over the restored drainages and buffers, and funding an endowment that will provide for long-term management.~~

In addition, jurisdictional wetlands are present within each study area, as shown on Figures B-2 and B-3. Study Area A includes approximately three acres of wetland habitat and Study Area B includes less than one acre of wetland habitat. Both Option A and Option B have been designed to avoid these areas. In addition, the project would establish a 100-foot buffer around each of these isolated wetland areas and a 250-foot buffer around wetlands and vernal pools that have been identified as habitat for federally endangered fairy shrimp.

Other than permitted “fill” locations for placement of PV module support posts, road crossings, trenching, poles for overhead collection system lines, fence posts, and restoration work, the Proposed Project design would avoid direct earth moving and fill placement impacts to the main drainage ~~federal jurisdictional drainages in Study areas A and B. Given the linear nature of the ephemeral drainages throughout the site, impacts to these “other waters of the U.S.” were found to be unavoidable in designing the project layout. According to the Applicant, field indicators and observed surface water flow during the rainy season indicate that the main drainage has a physical connection to Soda Lake. Therefore, a buffer of at least 100 feet would be established on each side of the main drainage centerline to avoid impacts. The direct impact of earthmoving and fill placement activities would also be avoided in the other “jurisdictional” drainages, which occur in the project study areas except for locations of permitted road crossings, trenching, poles for overhead collection system lines, and fence posts.~~

The existing farm access dirt roads within the project study areas travel directly through the low swales. For the Proposed Project, the “jurisdictional” drainage crossings would include the installation of at-grade articulated concrete blanket crossings ~~fords~~ designed to match the contours of the existing drainage and designed to ensure that the volume, velocity, quality of storm water runoff, and up- and down-slope drainage configuration would be maintained within the historical range of conditions. The historical water levels would be based ~~on the~~ derived from the hydrologic and topographic studies prepared by the Applicant (see Section C.15 Water Resources and Appendix 13). In addition, these studies determined boundaries of the 100-year flood zones, and these were considered in the Proposed Project design in order to ensure the Proposed Project would maintain existing watershed and hydraulic conditions ~~which are avoided by Proposed Project arrays.~~ Specific storm water control measures would be outlined in the Storm Water Pollution Prevention Plan (SWPPP) for construction activities.

The Applicant proposes to compensate for the loss of jurisdictional ephemeral drainage habitat through in-kind habitat restoration of a portion of the main drainage at a minimum ratio of 2:1. This would result in reestablishing impacted ephemeral drainages by rebuilding a former portion of an aquatic resource (i.e. the main drainage), resulting in a gain in aquatic resource area and functions. The re-established drainage area would be revegetated with native vegetation typical of drainages within the project area. The re-established habitat would provide improved functions compared to those of the impacted drainages. Implementation compensatory mitigation in the main drainage would expand its flood storage and desynchronization functions and would reduce flood damage by attenuating floodwaters following significant precipitation events. The main drainage would be protected from surrounding upland land use activities by an average 100-foot upland buffer. The mitigation area and buffer would be protected from future development by a recorded conservation easement and a non-wasting endowment fund would be established for long-term management.

B.4.1.7 Water Tank

Permanent water storage tanks would be installed at a well or wells located near the proposed M&M facility and Solar Energy Learning Center. These permanent tanks would be sized to meet the expected daily demand of approximately 4,015 gallons. These tanks would be available to local fire protection services for emergency use. If deemed necessary, an on-site water treatment system (e.g., a package unit) would be installed to meet the Proposed Project's water needs.

B.4.1.8 Transmission Facilities

This section describes the transmission facilities that would interconnect the Proposed Project with the PG&E transmission system located directly adjacent to both Proposed Project study areas. The final design would be completed by PG&E, who would own and operate a portion of the transmission facilities. With the exception of the project substation, the facilities discussed below would be permitted by the CPUC (see Table B-1). The substation is part of the Proposed Project and would be permitted by the County.

Proposed Project Substation

The Proposed Project substation would collect the output of the medium-voltage collection system and transform it from 34.5 kV up to 230 kV. It would occupy approximately 4.5 acres. The substation would be immediately adjacent to the 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 substation site would be graded and compacted to an approximately level grade. Several cement pads would be constructed as foundations for electrical equipment and the remaining area would be graveled. Electrical transformers, switchgear, dead end line structures, and related facilities would be present. There would also be trenching within the substation for ground grid installation, buried power cables, and control cables. In addition, an eight foot-high chain link fence would be constructed around the substation. The project substation would be permitted by the County.

Interconnection to Transmission Grid

Electricity generated by the Proposed Project would be delivered to PG&E's high-voltage transmission grid. The Proposed Project would be interconnected with PG&E's transmission grid by looping the two circuits of the Morro Bay-Midway 230 kV line into a new PG&E 230 kV switching station. The corridor containing the existing Morro Bay-Midway 230 kV line generally runs in an east to west direction, north of Highway 58, crossing through the Proposed Project area.

A conceptual diagram showing the proposed interconnection is shown on Figure B-134. This diagram shows the 230 kV double-circuit tower line that begins at Morro Bay and extends approximately 81 miles to Midway Substation near Buttonwillow, California. To interconnect the Proposed Project, both circuits would be looped from the transmission corridor into the new PG&E 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.

PG&E Switching Station (Solar Switching Station). The Proposed Project would be interconnected with PG&E transmission lines using a three-bay, six-position breaker and a half configuration switching station. Two positions of this switching station would be used to connect the Proposed Project 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 switching station would be approximately 6.3 acres and would be enclosed by a separate fence. The PG&E switching station would be permitted by the CPUC.

Interconnection Configuration

PG&E's Solar Switching Station would be located adjacent to the existing PG&E Morro Bay-Midway 230 kV transmission line, and the project substation (Topaz Solar Farm, LLC.) would be located just north of the switching station.

Structures. Two new 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 PG&E's switching station. It is expected that the two lattice structures would be located within or adjacent to the existing PG&E transmission line right-of-way. The four steel poles would be located on either side of the new PG&E switching station to position the transmission conductors for proper ingress and egress to the station. Additional structures would be installed for the connections from the 34/230 kV transformers to the PG&E switching station. These structures would be located within the switching station and project substation or within the buffer area adjacent to the switching station. The PG&E switching station would contain nine 230 kV gas insulated circuit breakers. Three additional 230 kV gas insulated circuit breakers would be installed in the Proposed Project substation.

Figure B-142 shows a double-circuit lattice tower structure to which the conductors are attached. The structure height above grade is 100 to 125 feet but may vary depending on configuration of the site terrain. The foundations for the transmission line structures would consist of single concrete piers reinforced as necessary to withstand design loads.

Conductors. The selection of conductors for looping PG&E's 230 kV lines into the PG&E switching station would be based on both matching the rating of the existing circuits and providing additional capacity to accommodate future improvement of these lines. The existing transmission line is strung with 1,113 MCM all aluminum conductors. The new conductors would be of equal or higher capacity.

Figure B-134.
Connection to Existing Transmission System

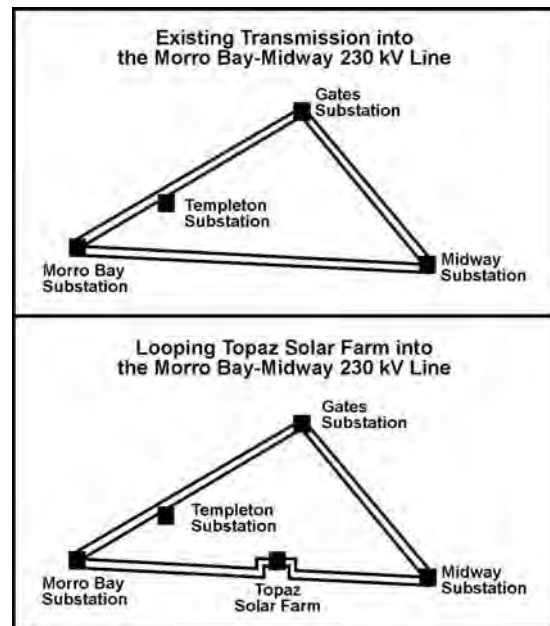
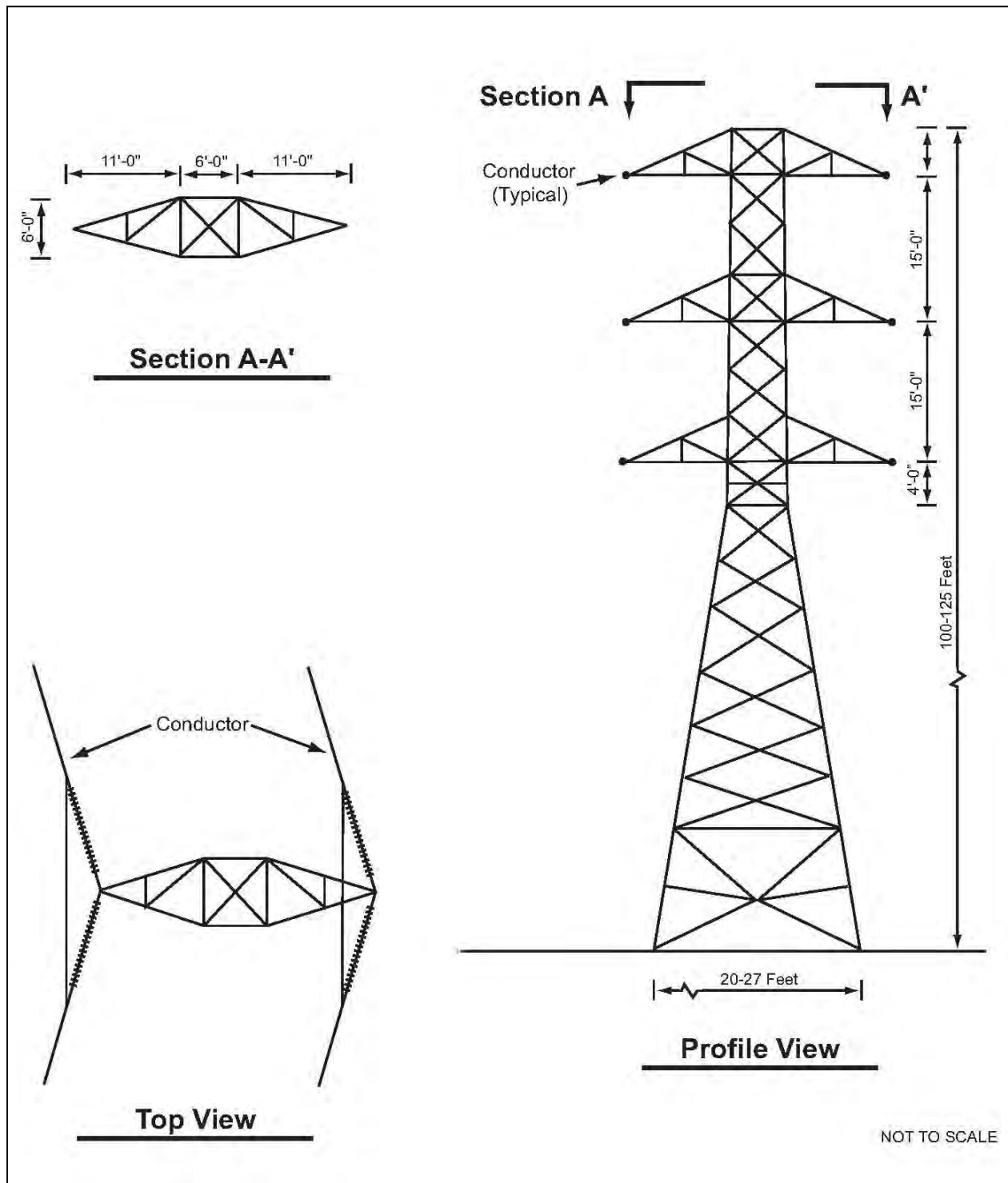


Figure B-142. Double-Circuit Lattice Tower Structure*



*Preliminary and subject to change based on CPUC requirements, final engineering, and other factors.

Foundations. Foundations for the transmission line structures would consist of single concrete piers reinforced as necessary to withstand design loads. These would be formed by augering a hole of appropriate diameter and depth, placing a cage of reinforcing steel in the augered hole, and filling the hole with high-strength concrete to the appropriate elevation. Single-circuit tower structures may be direct-buried rather than installed on foundations.

Construction of Interconnection Facilities

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. Construction of the transmission facilities would be scheduled to occur after the PG&E switching station has been completed to allow each transmission circuit to be placed back in service immediately after it is interconnected to the new switching station.

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.

Transmission System Upgrades Beyond Point of First Interconnection

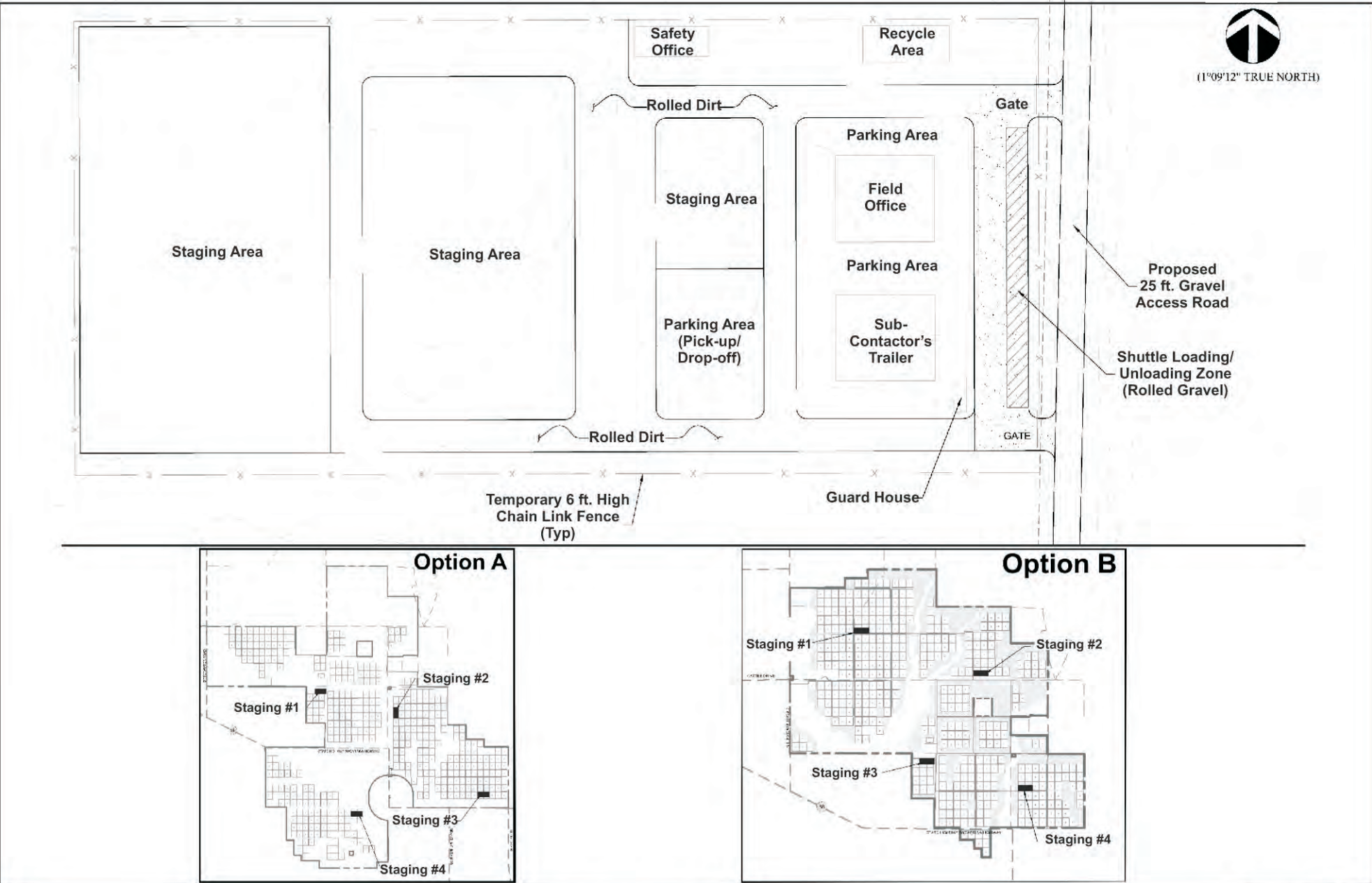
PG&E and the California Independent System Operator (CAISO) have completed interconnection studies for the first 400 MW of Proposed Project capacity. These studies confirmed that at least this capacity produced by the Proposed Project would be deliverable via the existing transmission line. The work beyond the interconnection switching station would involve telecommunications and controls work within existing PG&E facilities to interconnect this 400 MW.

For the remaining 150 MW of Proposed Project capacity, the CAISO determined that network upgrades would be required to accommodate the interconnection of a group of generation projects in the region, including the Project's remaining 150 MW. This upgrade would be the reconductoring of the 230 kV transmission lines between the PG&E Switching Station and the Midway Substation.

The impacts of any network upgrades deemed necessary by the CAISO for long-term transmission system reliability have been evaluated and are presented in Appendix 4 of this EIR. The CPUC is responsible for reviewing and permitting PG&E's anticipated transmission line upgrades and construction of the Solar Switching Station, and will consider the evaluation presented in Appendix 4 in its decision-making process.

B.4.2 Temporary Facilities

Both Option A and Option B would include four separate construction staging areas of approximately 10 acres each, which would be fenced for security. The staging areas would include construction offices, a first aid station, worker parking, truck and shuttle loading and unloading areas, and laydown areas. Temporary portable toilet facilities, bottled water, and wells would serve the sanitary needs during the construction process. There would also be up to four separate parking areas of approximately five acres each located adjacent to construction access roads. The parking areas would be located near Proposed Project entrances in order to minimize the distance construction employees and visitors have to drive within the Proposed Project site upon arrival. These temporary staging areas and parking areas would be located as needed to support construction efforts, and may be moved during the construction process. There would be no more than four construction staging areas and four parking areas at any given time. The staging and parking areas would be decommissioned upon completion of construction, and PV arrays would be installed in their place. Figure B-135 illustrates the general layout and typical locations of these construction staging areas.



Source: First Solar, Inc., July, 2010.

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Figure B-15
Preliminary Construction Staging Plan

B.5 Solar Project Construction

The Proposed Project would be constructed over a total of approximately three years, divided into two basic ongoing activities: (i) site preparation and (ii) construction and installation of the solar modules and electrical components. The solar project construction process described in this section applies to both Option A and Option B, except where otherwise specified.

B.5.1 Site Preparation

Site preparation involves improvement of onsite construction access roads with gravel or other road stabilization material, installation of drainage crossings, setup of construction staging areas, storm-water management work, preparation of land areas for array installation, and other activities needed before installation of the solar arrays can begin. This work would involve trimming of vegetation, agricultural rolling of PV array areas, selected compacting and grading, and setup of modular offices and other needed facilities. Site preparation would occur for each two to 20 MW area at a time in order to minimize ground disturbance.

Initial activities include clearing and fencing of the substation location and adjacent switching station area. The four temporary construction staging areas would then be cleared and fenced, and the construction entrances would be improved. One existing occupied residence and two existing unoccupied residences within Study Area A, and one existing occupied residence and one existing unoccupied residence within Study Area B would be acquired by the Applicant.² These residences would either be demolished or utilized as temporary facilities. Several unoccupied structures are also located within the study areas. In the event that any structure is demolished, all required permits would be secured and all demolition materials would be recycled or disposed of in a licensed landfill. In addition, there are three occupied residences surrounded by Study Area A and one occupied residence that would be immediately north of the solar ~~panels~~modules (for a total of four occupied residences) in Study Area A, and three occupied residences surrounded by Study Area B that are expected to remain during project construction and operation.³ Project components have been set back from these residences as indicated in Table B.3, Buffer Zones for the Topaz Project.

The PV arrays, as illustrated in Figure B-4, require a relatively level and stable surface for safe and effective installation. Topographic, geotechnical, and hydrologic studies were used to determine the necessary grading and compaction. On the majority of the Proposed Project site, the ground under the PV arrays would not require grading. The Applicant has conducted a site preparation test to determine the appropriate steps for preparing the ground beneath the PV arrays. As determined by the site preparation test, the existing vegetation would remain and would be trimmed as close to the ground as possible by mowing or grazing. Next, an agricultural tool, such as a harrow or cultipacker, would be used to loosen and smooth the top one to three inches of soil. Finally, a smooth steel drum roller, or similar equipment, would be used to bring the top four to six inches of soil to a compaction value of approximately 80 percent (the existing soil at the Proposed Project site ranges from 61 to 77 percent compaction value). Beneath the compacted surface of the soil, the soil would remain at the existing level of

² The unoccupied residence in the E ½ of Section 33, Township 29 S, Range 18 E, MDBM would be acquired for Option A. The unoccupied residence in the SE ¼ of Section 28, Township 29 S, Range 18 E, MDBM, would be acquired for Options A and B. The currently occupied residence in the NW ¼ of the SW ¼ of Section 16, Township 29 S, Range 18 E, MDBM would be acquired for Options A and B.

³ The residence located in the E ½ of the SW ¼ of Section 4, Township 30 S, Range 18 E MDBM is expected to remain and would be surrounded by Study Area A. The residence located in the SW ¼ of the SE ¼ of Section 18, Township 30 S, Range 18 E, MDBM is expected to remain and would be surrounded by Study Area B, and immediately north of the panels in Study Area A. The residences located in the SW ¼ of the NE ¼ of Section 21 and the NW ¼ of the SW ¼ of Section 22, Township 29 S, Range 18 E, MDBM, are expected to remain and would be surrounded by both Study Areas A and B.

compaction, allowing small mammal dens and burrows to remain. Depending on the moisture level of the soil at the beginning of construction, some water may need to be added to the soil one to two days before compaction occurs.

The majority of both the Option A and Option B project sites would not require grading, but some portions of the Proposed Project sites have slopes that are too steep to accommodate the PV arrays. The design criteria for the Proposed Project require excessive slopes to be graded and reduced to be no greater than three percent. In order to accomplish this slope level, two different grading methodologies would be implemented, continuous nominal grading and pocket grading. ~~These~~^{is} grading methodologies ~~maintains~~ watershed features, allowing drainages to enter and exit the Proposed Project site in historic locations and meander through the Proposed Project site on a natural course. Appendices 11 and 17, the Preliminary Grading Plans and Hydrology Reports, provide a preliminary example of how this grading criteria may be implemented and include the approximate acreage and percentage of graded area proposed for each option. Final Grading and Drainage Plans will be prepared prior to Project construction.

In addition to the slope-related grading described above, grading and compacting is proposed for the construction staging areas, the transformer and inverter enclosures, the Proposed Project substation and switching station, the access roads, the Solar Energy Learning Center, and the M&M facility. There would be approximately 14 miles under Option A and 22 miles under Option B of on-site construction access roads utilizing existing agricultural roads to the extent feasible. These roads would be improved and treated with gravel or other road stabilization material. This treatment of dirt roads was selected to reduce the need to use water to control dust on roads during construction.

Trenching would occur within each array to bury the electrical cables. The trenches would be approximately two feet in width and four feet deep, and each array would have approximately 2,000 to 2,500 linear feet of trenches, depending on the array's proximity to the PVCS. Minimal ground disturbance may occur within the trenched corridors to restore them after soil has been replaced in the trenches, so that the corridor can conform to the existing surface contours.

B.5.2 Construction and Installation

The construction and installation phase involves installation of the PV solar modules and all the necessary electrical equipment to make the Proposed Project operational. In addition, preparation of the ground under the arrays and improvement of the construction access roads would continue throughout the majority of the construction process. For array installation, first, vertical support posts are driven into the ground. These would hold the support structures (tables) on which PV modules would be mounted. Trenches are dug for the underground AC (alternating current) and DC (direct current) cabling, and the foundations for the inverter enclosures and transformers are prepared. While cables are being laid and combiner boxes are being installed, the PV tables are erected. Prefabricated tilt brackets attach steel structure tables to the vertical posts. Brackets attach the PV modules to the tables. Wire harnesses connect the PV modules to the electrical collection system. Underground cables and overhead circuits connect the PCS's to the onsite AC electric infrastructure and ultimately to the Proposed Project substation.

It is expected that a separate crew would build the Proposed Project substation and the connection to the existing transmission line in the switching station. During the final system validation and commissioning process, the SCADA and monitoring systems are brought online, the equipment is tested, and operational readiness is verified. The Proposed Project would be brought online and connected to the grid as each subsequent block (approximately 2-20 MW each) is completed.

The construction workforce is estimated to be 400 employees on average for the approximately three-year construction period, with a peak of approximately 500 employees. The construction workforce would be recruited from within San Luis Obispo County to the extent practicable. As described below in Site Access and Transportation, shuttle buses would bring the construction workforce to the Proposed Project site from the surrounding communities.

Typical construction work schedules are expected to be from 7:00am to 5:00pm, Monday through Friday. In the event that construction work takes place outside these typical hours, activities would comply with County standards for construction noise levels. Select tasks must be performed after dark for safety reasons. At night, when there is no solar resource and no energy is being produced, employees would conduct final electrical terminations. The Proposed Project is expected to use restricted nighttime lighting during construction, and such uses would be limited to task-specific lighting. In addition, 24-hour onsite security would be provided.

Construction waste would be disposed of in accordance with local, State, and federal regulations. Any modules damaged or broken during construction are considered retrograde material and would be returned to a First Solar manufacturing facility, where they would be recycled into new modules or other new products.

A safety and compliance director would be employed by the Applicant and would be assigned to the Proposed Project to ensure that construction and operation activities would follow all OSHA and CalOSHA requirements. A site-specific Health and Safety Plan would be developed, identifying the roles and responsibilities of every employee with respect to safety on the Proposed Project.

In order to limit the potential for wildfire on the Proposed Project site, vegetation would be managed in efforts to minimize vegetative fuel buildup. The Proposed Project would have a fire prevention plan in compliance with applicable County regulations.

During construction, the Proposed Project site would be under continual surveillance by the supervising construction staff. Special inspections would be conducted in conformance with the environmental protection measures adopted by the Proposed Project.

Considerable engineering design has been completed for the Proposed Project that has sought to anticipate, prior to the start of construction, problems or issues that could arise. Should unforeseen problems occur, the Proposed Project would identify them as early as possible and work with the County and other agencies to implement any necessary changes to the Proposed Project in a manner that complies with all relevant regulations.

B.5.2.1 Hazardous Products

The quantity of hazardous materials to be stored at the Proposed Project site during construction includes equipment and facilities maintenance chemicals such as those listed in Table B-4. These materials would be stored in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable hazardous materials storage cabinets may be moved with each block of development, as deemed necessary.

Table B-4. Products Present On Site During Construction and Operation

Product	Use	Amount Stored On Site During Construction	Amount Stored On Site During Operation
Diesel Fuel	Vehicles	5,000 gallons	not stored
Gasoline Fuel	Vehicles	5,000 gallons	500 gallons (in a 500-gallon tank)
30W Motor Oil	Vehicles	100 quarts	not stored
Transformer Oil	Transformers	Maximum of 413,000 gallons (750 per transformer)	413,000 gallons inside transformers, 150 gallons back-up
Cadmium ¹ Telluride (CdTe)	Solar Panels	123.0 tons Cadmium Telluride (57.6 tons Cadmium 65.4 tons Tellurium)	123.0 tons Cadmium Telluride (57.6 tons Cadmium 65.4 tons Tellurium)
Cadmium Sulfide (CdS)	Solar Panels	2.45 tons Cadmium Sulfide (1.90 tons Cadmium)	2.45 tons Cadmium Sulfide (1.90 tons Cadmium)

Source: Topaz Solar Farms, LLC, 2009; 2010.

1 Reference to CdTe and CdS has been removed from the table because these compounds are part of a manufactured product and will not be stored onsite separate from the modules.

B.5.2.2 Hazardous Materials Storage and Spill Response Plan

The Hazardous Materials Storage and Spill Response Plan would be implemented during Proposed Project construction for the management of the materials in Table B-4.

Hazardous materials storage Best Management Practices (BMP's) would be used to reduce the risk of spills and other accidental exposure to hazardous materials and waste during construction and operation of the Proposed Project. The hazardous materials storage would not be located immediately adjacent to any drainages. If excess materials must be disposed of, it shall be done in accordance with local, State and federal regulations.

Additional construction-period BMPs would include the following:

- Store only enough products on-site required for the job;
- Products shall be kept in their original containers with the original manufacturer's label and resealed when possible;
- Manufacturer's recommendation for proper disposal shall be followed;
- The Proposed Project superintendent shall do routine inspections to ensure that all material on-site is being stored and disposed of in an appropriate fashion;
- All vehicles leaking oil or fluids would be scheduled for maintenance and would have drip pans under the leak when parked prior to the maintenance event;
- All personnel dealing with hazardous materials shall be properly trained in the use and disposal of these materials in accordance with local, State and federal regulations; and
- Material safety data sheets shall be kept on-site during construction and operation of the solar farm.

A site-specific spill response plan would be developed prior to construction and operation of the Proposed Project, and would require that personnel be made aware of procedures for spill cleanup and procedures to report a spill. Large quantities of hazardous materials would not be used or stored on-site during construction or operation of the Proposed Project. Spill cleanup materials and equipment appropriate to the type and quantity of hazardous materials expected would be located on-site and personnel would be made aware of their location. Key employees would be trained in spill response procedures. Spill response materials would include, but are not limited to, brooms, dust pans, mops, rags, gloves, absorbent pads/pillows/socks, sand/absorbent litter, sawdust, and plastic and metal containers.

B.5.2.3 Water

During the approximately three-year construction period, water would be needed for site preparation, compaction of building pads, road preparation, and dust control. In calculating the water requirements, the Applicant considered the local soil conditions and has allowed for the possibility that three consecutive dry (low rainfall) years would occur during the Project's three-year construction period. Table B-5 provides the water-demand requirements for the Proposed Project. As shown in Table B-5, Option B would require more water for soil preparation and dust mitigation than Option A because of Option B's larger grading requirement due to rougher existing topography.

Table B-5. Water Demand During Construction

	Daily Demand (gallons per day)		Annual Demand (acre-feet/year)		
	Average	Peak	Year 1	Year 2	Year 3
Option A	170,500	550,000	191	191	48
Option B	243,700	810,000	273	273	69

Source: Topaz Solar Farms, LLC. 2010.

One temporary dust mitigation water storage basin may be located within each phase of construction, and up to five water storage basins may be operational at any given time. These would provide water trucks with the necessary access to sufficient water for dust mitigation. The basins would be lined with PVC, and would be 80 feet by 80 feet in surface area.

The Applicant has identified several existing wells in the Proposed Project study area that have historically produced 40 gallons per minute (gpm) or more. Subject to well analysis, the Proposed Project would use two existing wells, one capped well, and two new wells during construction. Pumps would be installed within each well to provide sufficient water for dust control.

The well pumps would be activated as frequently as necessary to keep the basins filled, up to 24 hours per day. Well pumps would be turned off once it is determined that water is no longer needed in a basin, and any remaining water in the basin would be distributed across the surface of the site, primarily on roadways to provide dust control. The basins would be removed and the ground restored after construction is complete in each portion of the Proposed Project Site.

B.5.2.4 Erosion Control Measures

The Applicant is currently conducting a vegetation site test to study various approaches to prevent soil erosion and provide dust control on the Proposed Project site. Throughout the site preparation and construction periods, the Proposed Project would implement appropriate erosion control measures during the rainy season. These measures would include silt fences for erosion control along the downstream edge of groups of arrays and fiber rolls along roads and easements. Refer to Appendix 2 for figures that show a typical implementation of these erosion control measures.

The Proposed Project plans to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ. As part of expected obligations under the General Permit, the Applicant would prepare and implement a construction SWPPP (Storm Water Pollution Prevention Plan) prior to the commencement of soil disturbance activities associated with Proposed Project construction.

B.5.2.5 Site Access and Transportation

A large portion of the traffic generated by the Proposed Project would occur during construction for employee commuting and the delivery of components and equipment. The main access to the Proposed Project site for construction vehicles and delivery trucks is from Interstate 5 via Highway 58 westbound. This route was evaluated by the Applicant with input from Caltrans and the San Luis Obispo County

Department of Public Works and was selected in order to maximize safety and minimize congestion. The Applicant has proposed the Topaz Truck Management Plan (TTMP), which is included as Appendix 16B to this EIR.

Shuttle buses would be used to transport workers to the Proposed Project site from Park-and-Ride lots in the nearby towns. Each bus would transport approximately 20 workers to the site via either Highway 58, or Highways 41 and 46 and Bitterwater Road, depending on the pick-up location. The majority of the craft labor construction employees would be required to report to shuttle pick-up locations at the beginning of their shift. Requiring employee use of the shuttles should ensure that the majority of the workforce would not drive personal vehicles to the Proposed Project site. Employees who live in communities, such as California Valley, located much closer to the Proposed Project site than to the shuttle pick-up locations may be allowed to drive personal vehicles to the construction site. In addition, management-level employees and specialized employees working unique shifts would need to commute via personal vehicles. The Applicant would limit parking for personal vehicles to only accommodate employees that live nearby and those management-level and specialized employees not taking the shuttles. It is expected that there would be 55 employees commuting via personal vehicles per day on average and 85 employees commuting via personal vehicles per day at peak. In addition, visitors to the site would be accommodated by a visitor parking area.

Table B-6 describes the estimated number of daily traffic trips to and from the Proposed Project site in each category during construction.

Table B-6. Estimated Construction Traffic

Purpose	Average Daily Roundtrips (Approximate average over 27 months) ¹	Peak Daily Roundtrips (500 workers)
Employee Trips	78 ²	114 ³
Trucks Delivering Road Aggregate ⁴ (25-ton trucks)	3.5 (Option A) 6.7 (Option B)	40
Total Roundtrips not Subject to TTMP	81.5 (Option A) 84.7 (Option B)	154
On-Road Construction Vehicles ⁵	<1	
Off-Road Construction Vehicles & Equipment ⁶	<1	
Deliveries (Including PV modules and other construction materials)	20	
Substation and Switching Station Equipment Deliveries (approx. 20 total deliveries) ⁷	<1	
Total Roundtrips Subject to TTMP	<23	35
Total	104.5 (Option A) 107.7 (Option B)	189

Source: Topaz Solar Farms, LLC, 2010.

¹ The total duration of on-site project construction-related activities is estimated to be up to 36 months. The construction period involving deliveries of materials and equipment required for construction will last 27 to 30 months (the Project Construction Period). Limited construction logistics preparation and commissioning activities may take place at the project site before and after the Project Construction Period, but will not have noticeable traffic impacts on the surrounding community. If the Project Construction Period lasts for longer than 27 months, the number of average roundtrips per day would be slightly lower, but the peak would remain the same.

² 400 workers: 20 shuttle buses of up to 20 people each, 55 workers driving individual vehicles, and 3 bus roundtrips to transport shuttle drivers away from and back to the site.

³ 500 workers: 25 shuttle buses of up to 20 people each, 85 workers driving individual vehicles, and 4 bus roundtrips to transport shuttle drivers away from and back to the site.

- ⁴ Aggregate will be sourced near the Project site, so the trucks delivering road aggregate are not expected to be subject to the TTMP. Subject to availability and suitability, aggregate for the Project can be supplied by the Twisselman aggregate mine. In total, approximately 2,100 roundtrips would be required to deliver the 40,000 cubic yards of gravel required to improve the onsite construction access roads in Option A, and 4,000 roundtrips will be required to deliver the 75,000 cubic yards of gravel in Option B. The frequency of these truck trips would be distributed as necessary to improve the roads as each group of arrays is installed.
- ⁵ Includes vehicles such as pick-up trucks and dump trucks that can drive on their own to the site. In general, these vehicles would arrive within the first few months of construction and leave at the end of the Project construction period.
- ⁶ Includes vehicles and equipment such as small backhoes and ATV vehicles that are brought in by truck. In general, these vehicles would require two roundtrips by flatbed delivery trucks – one roundtrip near the beginning of construction, and one near the end.
- ⁷ A total of 5-10 of these would require pilot vehicles. This number excludes equipment deliveries for the PG&E switching station.

Upon reaching the Proposed Project site, delivery trucks would be directed to enter the site at least one mile east of the Carrisa Plains Elementary School in order to avoid driving on the segment of Highway 58 adjacent to the school. This site access location would reduce noise and air emissions impacts on the School from the delivery trucks. The trucks would use the system of onsite construction access roads, improved with gravel or other road stabilization material, to deliver their goods near the current stage of construction. An estimated 40,000 cubic yards of aggregate for Option A and 75,000 cubic yards of aggregate for Option B would be imported during the site preparation period to improve the construction access roads. If gravel is selected as the road stabilization material, it is expected to be supplied by nearby mines (subject to availability), including the Navajo Creek mine, located approximately 10 miles west of the Proposed Project site, and the Twisselman surface mine being permitted with the California Valley Solar Ranch project, located approximately five miles east of the Proposed Project site.

An estimated maximum of 238 vehicles used for construction would be brought to the Proposed Project site at the beginning of the construction process, and would remain onsite throughout construction. These vehicles would generally not be used on public roads, and would be stored on-site while not in use. Table B-7 lists the type and number of construction vehicles expected to be in used on the Proposed Project site during the approximately three-year construction period. When construction begins, the most appropriate equipment available would be identified and used. A Construction Activity Management Plan (CAMP) will be prepared based on the actual construction fleet and will be submitted to the San Luis Obispo County Air Pollution Control District (APCD) for review and approval prior to the start of construction. Table B-7 provides a typical list of construction equipment based on experience at other PV construction projects.

Table B-7. Construction Equipment and Vehicles Located and Stored Onsite

Quantity	Equipment	Purpose	Duration (months)	Transportation to Project Site	Approximate Horsepower
SITE PREPARATION AND CLEARING/LEVELING					
4	Water Truck	Dust Control/Compaction	30	Self Transport	189
4	Graders	Road/Staging Prep	15	Delivered (1 per Flatbed Truck)	174
4	Paddle Scrapers	Road/Staging Prep	15	Delivered (1 per Flatbed Truck)	313
4	Rollers	Road/Staging Prep	15	Delivered (1 per Flatbed Truck)	95
4	Farm Roller	Field Preparation	15	Delivered (1 per Flatbed Truck)	95

Table B-7. Construction Equipment and Vehicles Located and Stored Onsite

Quantity	Equipment	Purpose	Duration (months)	Transportation to Project Site	Approximate Horsepower
UNDERGROUND WORK (BORING, TRENCHING, INSTALLING CONDUIT)					
20	Small Backhoe	Excavation/Backfill	20	Delivered (1 per Flatbed Truck)	108
32	Small Sheepsfoot Roller	Compaction	20	Delivered (1 per Flatbed Truck)	95
20	5 CY Dump Truck	Excavation/Backfill	20	Self Transport	
SYSTEM INSTALLATION					
32	4x4 Forklift	Material Staging	30	Delivered (1 per Flatbed Truck)	100
64	ATV Vehicles (such as John Deere Gator)	Material Staging/Transportation	30	Delivered (4 per Flatbed Truck)	30
10	Truck-Mounted Pile Driver	Post Installation	27	Self Transport	40
40	Pick-up Trucks	Material Staging/Transportation	30	Self Transport	

Source: Topaz Solar Farms, LLC, 2010

B.5.2.6 Construction Noise

Construction of the Proposed Project would involve temporary use of construction equipment during site preparation, grading activities, construction of the operations building, and assemblage of PV module arrays, which includes driving foundation support posts (similar to steel posts used in highway guard rails) for the array tables.

The primary source of noise during construction would be from driving steel module support posts. During post driving tests on another First Solar construction site in August, 2009, noise meter readings were approximately 103 decibels (dB) at about seven feet from the post driver and 66 dB at about 100 feet from the post driver.

The Proposed Project would comply with San Luis Obispo County Code Section 22.10.120 noise standards, which generally restrict construction noise impacts on neighboring residential properties before 7:00 am and after 9:00 pm on weekdays and before 8:00 am and after 5:00 pm on Saturdays and Sundays, as described in Table B-8.

Delivery trucks and construction equipment would generally arrive at the Proposed Project site during the primary construction working hours, 7:00 am to 5:00 pm, Monday through Friday. Some trips may occur outside of these hours, but these deliveries would be timed to comply with County noise standards.

Table B-8. Maximum Allowed Exterior Noise Levels Associated with Construction

Sound Levels	Restricted Daytime Hours	
	7am–9pm weekdays 8am–5pm weekends	Nighttime 10pm–7am
Hourly Equivalent Sound Level (Leq, dB)	50	45
Maximum level, dB	70	65

Source: San Luis Obispo County Code Section 22.10.120.

B.6 Solar Project Operation and Maintenance

The entire Proposed Project is expected to be operational in mid 2014 and would require 15 permanent employees. The Proposed Project has a minimum expected lifetime of 30 years or more, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. The Solar Project Operation and Maintenance description in this section applies to Option A and Option B.

The Proposed Project would operate continuously, seven days a week, during daylight hours (approximately 6 am to 8:30 pm in the summer and 7 am to 5 pm in the winter). While the Proposed Project would largely be self-sufficient upon completion of construction, periodic monitoring and maintenance activities would be required. Key elements of the M&M plan include monitoring and reporting the performance of the Proposed Project, conducting preventative and corrective maintenance, receiving students and other visitors, and maintaining the security of the Proposed Project. In addition, once operational, the Proposed Project would be subject to a long-term monitoring and maintenance agreement.

The PV arrays are designed to withstand earthquakes and ground movement. Any realignment of the modules and structures would be handled on an as-needed basis.

B.6.1 Electrical Maintenance and Fire Safety

As with all electrical installations, there is electrical fault risk. However, an engineering review of all electrical components would be completed in accordance with all relevant requirements. The Proposed Project would be regularly monitored to ensure proper power output. Regular on-site inspections and maintenance would also be performed to ensure proper vegetation management.

B.6.2 Traffic

The Proposed Project would employ a permanent workforce of approximately 15 people. Only limited deliveries would be necessary for replacement PV modules and equipment during operation, and it is expected that there would be seven deliveries per day at peak. Table B-9 details the expected daily traffic to the Proposed Project site during operations.

Table B-9. Daily Vehicle Trips During Project Operation

Purpose	Operations Traffic
Employees (daily roundtrips)	15 vehicles
Deliveries (daily roundtrips)	7 vehicles

Source: Topaz Solar Farms, LLC, 2009.

B.6.3 Lighting

For security and maintenance purposes, shielded lights would be installed at the M&M facility, the Proposed Project substation, and the PG&E switching station. Temporary, shielded, portable, task-specific lights would be used as needed in the construction staging areas. In addition, there would be lights located in each inverter enclosure that would be turned on by a local switch when maintenance of the inverter occurs at night. There would be no lights around the Proposed Project perimeter in order to minimize the Proposed Project's visual impact on surrounding development and roads. All exterior lights would be shielded to minimize their impact to the night sky and neighbors. Appendix 2 provides information on the lighting plan for each project option.

B.6.4 Water

During Proposed Project operation, the annual demand for water would be approximately 4,015 gallons per day or up to 4.5 acre-feet per year. Water would be used primarily for sanitary uses by M&M staff. Water would also be needed for visitors to the Solar Energy Learning Center, equipment and vehicle cleaning and maintenance at the M&M facility, access road repair, and other potential uses. The Proposed Project would not use water for electricity generation or for cleaning modules.

B.6.5 Wastewater

This Proposed Project would include an on-site septic system. A Waste Discharge Permit would not be required from the Regional Water Quality Control Board because the Proposed Project would not be exceeding 2,500 gallons per day of sewage, and the septic system would be permitted by the San Luis Obispo County Planning and Building Department. Anticipated peak flow is 1,500 gallons into portable sanitation facilities per day during construction and 135 gallons into the leach field per day during Proposed Project operation.

All wastewater during Proposed Project operations and a portion of wastewater during construction would be handled by the onsite septic system. The results of the soil percolation tests conducted in the vicinity of the proposed M&M facility demonstrate that an on-site septic system and leach field is most likely feasible in this location. Additional testing would be performed in accordance with the County's specific test procedure prior to final leach field design.

B.6.6 Noise

The Proposed Project would employ passive solar power generation through the use of fix-mounted PV solar modules. The PV modules do not require heat transfer fluids or mechanical equipment, and do not generate noise. Each PV array occupies approximately seven acres, and is equipped with a PCS (Power Conversion Station), which includes two inverters and one transformer. The PCS serves to convert DC to AC at each array. The Applicant states that the maximum allowable noise ratings at the source for equipment at the Proposed Project are: 80 dBA for inverters within the enclosure, 65 dBA for transformers, 75 dBA for the exhaust fan mounted on each inverter enclosure, and 79 dBA for the heating, ventilation, and two air-conditioning (HVAC) systems mounted on each inverter enclosure. The Applicant states the above equipment would be set far enough from the property line to be able to meet the County's Noise Element thresholds. The traffic noise from the 15 employees is not expected to be significant. The nearest sensitive noise receptor would be separated by approximately 380 feet in Option A and 400 feet in Option B between the residential fence line and the nearest PCS.

The PCS would operate only during daytime hours when the Proposed Project is generating power. The Proposed Project would comply with San Luis Obispo County Code Section 22.10.120 noise standards, which generally restrict noise impacts on neighboring residential properties as described in Table B-10.

Table B-10. Maximum Allowed Exterior Noise Levels Standards

Sound Levels	Daytime 7am–10pm	Nighttime 10pm–7am
Hourly Equivalent Sound Level (Leq, dB)	50	45
Maximum level, dB	70	65

Source: San Luis Obispo County Code Section 22.10.120.

B.6.7 Power/Communication

The Proposed Project's M&M facility would consume a small amount of power during the nighttime while the Proposed Project is not in operation. This power would be supplied by PG&E from the existing electrical distribution system in the area. The Proposed Project would not require any additional power sources for standby or emergency power supply.

For transmission of operational data and to support any employees working on-site, the Proposed Project would utilize existing wired or wireless telecommunications facilities. In the event that these facilities are not available in the Proposed Project vicinity, the Proposed Project would supplement with small aperture (less than one meter) satellite communication gear.

B.6.8 Heat

It is expected that the heat at the surface of the modules would primarily be transferred to the surrounding air. Air is a very poor conductor of heat, and it is expected that the temperature of the air surrounding the modules would be considerably cooler than the temperature of the module surface. In addition, the area beneath the PV modules would be shaded for a majority of each day, and is expected to be cooler than the temperature under existing site conditions. It is difficult to determine the exact temperature around the PV modules, as it would depend on wind, weather conditions, and other environmental factors.

The Applicant has conducted testing at an existing solar farm utilizing First Solar modules and has provided temperature data in and around the solar farm. According to the Applicant study, the testing determined that there was no statistically significant mean temperature difference between the monitoring stations located within the solar farm and the monitoring stations located outside the solar farm boundary.

In areas of urban development, temperatures are often higher than in comparable undeveloped land. This has several causes, including greater heat absorption (lower albedo), smog, and direct energy import in the form of fuel and electricity. The PV modules also have lower albedo than unaffected land, but they do not emit smog and export energy rather than import it.

B.6.9 Vegetation Management and Maintenance

The Proposed Project's biological consultants are currently undertaking testing at a site within the project study area to evaluate vegetation types which can support the relevant local wildlife populations, and not interfere with ongoing Proposed Project operations.

Under each PV module, a portion of the soil would not receive direct rainfall, and would be drier than the adjacent exposed soil. Moisture may migrate laterally due to wicking action of the soil, but an area of high moisture concentration is unlikely to occur under the PV modules.

Shading under the modules may reduce evapotranspiration for local plants and lower light conditions may result in the shaded vegetation growing taller than vegetation exposed to direct sunshine throughout the day. There would be a vegetation management plan implemented to control the height of vegetation and to control any invasive exotics. This plan would be established based on the Applicant's biological consultants' findings at the vegetation test site.

B.7 Solar Project Decommissioning

The Solar Project Decommissioning described in this Section applies to Option A and Option B. The Proposed Project has a minimum expected lifetime of 30 years or more, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. If the Proposed Project concludes operations, much of the wire, steel, and modules of which the system is comprised are recyclable materials, and would be recycled to the extent feasible. The Proposed Project components would be deconstructed and recycled or disposed of, and the Proposed Project site could be converted to other uses in accordance with applicable land use regulations.

First Solar has established a Collection and Recycling Program to promote the collection and recycling of modules and to minimize the potential for modules to be disposed of as municipal waste. The program enables substantially all components of the modules, including the glass and the encapsulated semiconductor material, to be treated and processed into new modules or other products.

First Solar has pre-funded all packaging, transportation, and recycling costs. Some key elements of the First Solar recycling Program include:

- **Funding:** With the sale of each module, First Solar sets aside the funds required for the collection and recycling in a restricted account controlled by a third-party insurance company;
- **Registration:** The site location of each module installation is registered with First Solar;
- **Notice:** Individual modules are labeled with Web site and telephone contact information in six languages, along with instructions for the user to return the product free of charge;
- **Collection:** First Solar manages the logistics of collecting each module and provides packaging and transportation to the recycling center;
- **Recycling:** All recycling processes are monitored to ensure compliance with local regulations regarding health, safety, and waste management; and
- **Improvement:** Results of the program are audited for continuous improvement.

B.8 Applicant Proposed Measures

The Applicant proposes to implement specific measures during construction and operation of the Proposed Project to reduce environmental impacts and to ensure consistency with applicable rules and regulations in both Study Area A and Study Area B. The Applicant Proposed Measures (APMs) identified on Table B-11, are considered part of the Proposed Project and are considered in the evaluation of environmental impacts presented in Section C of this EIR. San Luis Obispo County's decision on the Proposed Project would be based on the Applicant adhering to the project as described herein, the APMs described in this section, and any adopted mitigation measures identified in this EIR.

In addition to the APMs identified below, the Applicant also identified seven proposed mitigation measures to reduce impacts to biological resources and to make recommendations on species-specific mitigation ratios. These measures are identified in the biological report (see Appendix 9) prepared for the project.

Table B-11. Applicant Proposed Measures

APM Number	Proposed Measure by Issue Area
AESTHETICS	
APM Aes-1	PV arrays will be set back a minimum of 50 feet from paved roads, drainages, and adjacent properties. <u>Setback distances will be greater in specific locations, as specified in Table B-3.</u>
APM Aes-2	Exterior lighting within the PV arrays or on the Proposed Project perimeter will not be allowed. For security and maintenance purposes, shielded lights will be installed at the M&M facility, the substation, and the switching station. The Applicant will use temporary, shielded, portable, task-specific lights as needed, particularly in the construction staging areas. In addition, there will be lights located in each inverter enclosure that will be turned on by a local switch when <u>infrequent</u> maintenance of the inverter occurs at night.
AIR QUALITY	
APM Air-1	The Applicant will use shuttle buses to transport the majority of the proposed 400 construction workers to the project site from Park-n-Ride lots in neighboring communities and towns.
APM Air-2	Dust control will be provided in accordance with San Luis Obispo County Air Pollution Control District (APCD) requirements during project construction. Most roads will be treated with gravel or other road stabilization material, and disturbed areas will be sprayed with water regularly.
APM Air-3	The Applicant will maintain all construction equipment in proper tune according to manufacturer's specifications.
APM Air-4	The Applicant will fuel all off-road and portable diesel powered equipment with Air Resources Board (ARB) certified motor vehicle diesel fuel.

Table B-11. Applicant Proposed Measures

APM Number	Proposed Measure by Issue Area
APM Air-5	The Applicant will use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with State off-road regulation.
APM Air-6	The Applicant will require that all on- and off-road diesel equipment shall not idle for more than five minutes. Signs shall be posted in the designated queuing areas and/or job sites to remind drivers and operators of the five-minute idling limit. On very cold mornings, there will be an exemption to this requirement for equipment that needs up to 15 minutes to warm to operating temperature.
APM Air-7	The Applicant will not locate staging and queuing areas within 1,000 feet of sensitive receptors.
APM Air-8	The Applicant will prepare and implement a Construction Activity Management Plan (CAMP) and submit it to the APCD for review and approval prior to the start of construction.
BIOLOGICAL RESOURCES	
San Joaquin Kit Fox Mitigation and Monitoring Plan (Althouse and Meade, Inc., July 2010)	
APM Bio-1	The Applicant will incorporate measures to allow the Kit Fox access to and passage through the project site by constructing fences around the project perimeter that would have small openings (approximately 12 inches by four to six inches) in the base of the fence approximately every 100 yards.
APM Bio-2	The low end of the PV modules will be a minimum of 18 inches from the ground in order to allow for permeability and lines of sight for the Kit Fox.
APM Bio-3	Off-site lands that are provided as habitat mitigation will be restored to annual grassland or maintained as annual grassland, included in a conservation easement, and managed to promote kit fox and other native species. This will be achieved either through: (a) fee purchase or dedication with a conservation easement, along with Enhancement and Endowment Funds, or (b) the payment of an "in lieu fee" to achieve the same.
APM Bio-4	A three-stage survey protocol and protection program will be utilized to prevent injury or death of kit fox during project construction.
APM Bio-5	The Proposed Project includes on-site habitat enhancements including establishment and maintenance of natural vegetation and artificial dens. The goal is to provide accessible and appropriate habitat attractive to kit fox. Enhancements utilized would be based on successful enhancement programs currently in place in other communities and habitat areas, as detailed in the section "Examples of Habitat Enhancement Programs" on page 27 of the San Joaquin Kit Fox Mitigation and Monitoring Plan.
APM Bio-6	The Applicant will install at least 14 artificial dens (two per square mile) and 28 artificial escape dens (four per square mile) within the solar array fences at appropriate locations as determined by the project biologist. Artificial den placement will be more than 25 feet from any of the Proposed Project components.
APM Bio-7	The Applicant will install artificial escape dens on the outside of the Proposed Project perimeter fences approximately every 1,000 feet to provide permanent refuge locations.
APM Bio-8	Management practices will avoid the use of rodenticides.
APM Bio-9	A monitoring program will determine if kit fox take up residence and re-establish use of the Proposed Project site at levels equivalent to or better than existing use.
APM Bio-10	The Proposed Project site will be made available for research projects approved by the US Fish and Wildlife Service (USFWS) if approved by First Solar in advance and accompanied by necessary protections and indemnities.
APM Bio-11	Worker education programs regarding kit fox identification, life history, habits, population status, protection measures, and penalties for unauthorized take of kit fox will be provided for all construction and operational employees.
APM Bio-12	Public education material will be provided to all Proposed Project guests and visitors. Signage will be placed at the Solar Energy Learning Center and the Monitoring and Maintenance building to provide education regarding kit fox and other rare species.
APM Bio-13	Pets will not be allowed on the Proposed Project site.
APM Bio-14	During construction, survey and monitoring measures will be conducted that meet the standard San Joaquin kit fox CEQA mitigation measures approved by the County of San Luis Obispo, the USFWS, and the California Department of Fish and Game (CDFG) for projects in San Luis Obispo County.
APM Bio-15	Mowing or weed whipping within 25 feet of active dens will be prohibited. However, grazing will be allowed within 25 feet of dens.

Table B-11. Applicant Proposed Measures

APM Number	Proposed Measure by Issue Area
APM Bio-16	Adaptive management of den sites and fence passages will be conducted when new information concerning kit fox use of the Proposed Project site is obtained. Recommendations regarding management methods will be incorporated into the annual monitoring report
APM Bio-17	A qualified kit fox biologist will submit annual monitoring reports to the County, the CDFG, and the USFWS. Any kit fox located within fenced solar array areas will be reported to CDFG, USFWS, and the County within one week of sighting. Monitoring reports will include date of all site visits, survey methods, survey results, and recommendations.
Final Biological Report for the Topaz Solar Farm (Althouse and Meade, Inc., July 2010)	
APM Bio-18	Construction activities will be adjusted to avoid active kit fox and badger dens, nesting birds and other seasonally sensitive resources.
APM Bio-19	Vegetate the ground within the Proposed Project to promote a natural habitat to support potential kit fox prey. Vegetation managed with grazing or other methods (subject to further testing to confirm feasibility).
APM Bio-20	Avoid construction within estimated 100-year flood boundary to create wildlife movement corridors through the Proposed Project site.
APM Bio-21	In addition to fencing removal within solar array areas, cross-fencing and wildlife wire fencing would be removed, where feasible, from 100-year flood boundary movement corridors within the Proposed Project to promote wildlife passage through the project site.
APM Bio-22	Avoid ephemeral wetland depressions. Establish a 25-foot setback to protect wetland hydrologic regimes and allow seasonal wildlife access to the pools.
APM Bio-23	Avoid vernal pools. Establish a 50-foot setback to protect vernal pool hydrologic regimes and allow seasonal wildlife access to the pools.
APM Bio-24	Avoid federally listed fairy shrimp pools. Establish a 250-foot setback to protect vernal pool hydrologic regimes. (The total area protected by the proposed 250-foot setbacks will result in the provision of approximately 4.5 acres of protected upland wildlife habitat surrounding the protected vernal pools.)
California Annual Grassland	
APM Bio-25	Development of a vegetation management plan that would specify grazing standards, residual vegetation quantities, and land management practices compatible with facility management and wildlife use.
Vernal Pool	
APM Bio-26	Vernal pools will be protected during construction by installation of orange fencing placed at the setback boundary between the vernal pool and project areas. Note that the setback for vernal pools that contain listed fairy shrimp is 250 feet.
Ephemeral Wetland Depression and Natural Non-Wetland Pool	
APM Bio-27	Ephemeral wetland depressions will be protected during construction by installation of orange fencing placed at the setback boundary between the ephemeral wetland depression and project areas. Note that the setback for ephemeral wetland depressions that contain listed fairy shrimp is 250 feet.
Nesting Birds	
APM Bio-28	Within one week of ground disturbance activities, if work occurs between March 15 and August 15, nesting bird surveys shall be conducted. If surveys do not locate nesting birds, construction activities may be conducted. If nesting birds are located, no construction activities shall occur within 100 feet of nests until chicks are fledged. A pre-construction survey report shall be submitted to the lead agency immediately upon completion of the survey. The report shall detail appropriate fencing or flagging of the buffer zone and make recommendations on additional monitoring requirements. A map of the Project site and nest locations shall be included with the report. The project biologist conducting the nesting survey shall have the authority to reduce or increase the recommended buffer depending upon site conditions.
Special Status Plants	
APM Bio-29	The design of the Proposed Project, for both Options A and B, as shown in Figures B-2 and B-3, has avoided many of the rare or sensitive plant occurrences that were identified in rare plant surveys conducted for the Project. BR Map 12, in the Final Biological Report for the Topaz Solar Farm (Althouse and Meade, Inc., July 2010), portrays the plant occurrences that have been avoided. These are defined herein as the "Avoided Plants".
APM Bio-30	Avoided Plants within 100 feet of proposed project facilities should be protected with orange construction fencing placed between the occurrence and construction activities.

Table B-11. Applicant Proposed Measures

APM Number	Proposed Measure by Issue Area
APM Bio-31	Temporary access routes (located off of the main gravel access roads) that are used during construction will be planned to avoid Avoided Plants.
Special Status Birds	
APM Bio-32	Occupied nests of special status bird species shall be mapped using GPS or survey equipment. Work shall not be allowed within the 100 foot buffer while the nest is in use. The buffer zone shall be delineated on the ground with orange construction fencing where it overlaps work areas.
APM Bio-33	Occupied nests of special status bird species that are within 100 feet of project work areas shall be monitored at least every two weeks through the nesting season to document nest success and check for project compliance with buffer zones. Once nests are deemed inactive and/or chicks have fledged and are no longer dependant on the nest, work may commence in these areas.
Burrowing Owl	
APM Bio-34	Pre-construction surveys for burrowing owls shall be conducted not more than 30 days prior to any work that affects previously undisturbed grassland habitat containing burrows. The pre-construction surveys shall be conducted in a manner sufficient to determine no burrowing owls are present in the work areas, including a 250-foot buffer surrounding the work areas. Pre-construction surveys shall be conducted throughout the year, when work is proposed, to account for breeding, wintering, and transient owls.
Special Status Small Mammals	
APM Bio-35	A biological monitor shall be present during construction activities in all areas identified as potential habitat for special status mammals that have not previously been disturbed by construction. The monitor shall be qualified to capture and relocate any special status species that are found during construction. The monitor shall have the authority to stop work, if special status species are encountered, for any duration necessary to capture and relocate the animals.
Tule elk and pronghorn antelope	
APM Bio-36	Wildlife movement corridors are proposed through the Project arrays. Proposed pathways are over one mile in width in places. Minimum pathway width is approximately 500 feet. Pronghorn and elk could move through the pathways.
APM Bio-37	Fencing at existing crossing sites along Highway 58 and fences within the pathways in the Proposed Project site would be eliminated or made antelope-friendly to facilitate passage.
HAZARDS AND HAZARDOUS MATERIALS	
APM Haz-1	Any First Solar modules damaged or broken during construction will be recycled into new modules or other products. <u>The PV modules will be inspected and handled per First Solar's Broken PV Module Detection and Handling Plan or equivalent plan as approved by the County, throughout the project's life. Any additional construction waste generated will be removed in accordance with applicable requirements.</u>
APM Haz-2	Vegetation will be managed in an effort to minimize potential for vegetative fuel buildup. A Fire Protection Plan in compliance with County regulations will be prepared and implemented for the project.
APM Haz-3	The Applicant will prepare and implement a Hazardous Materials Storage and Spill Response Plan to address management of hazardous materials during construction.
HYDROLOGY AND WATER QUALITY	
APM WQ-1	<u>The Applicant will restore a portions of the main ephemeral drainages that has connectivity to Soda Lake. The with the objective would be to of improving existing water quality and habitat functions.</u> Restoration components may include removal of accumulated sediment, bank stabilization, planting of vegetation, sediment control measures, establishing protective habitat buffers, placing a conservation easement over the restored drainages and buffers, and funding an endowment that will provide for long-term management.
APM WQ-2	Erosion control measures will be implemented during project construction activities to prevent the flow of sediment downstream.
APM WQ-3	The Applicant will not wash <u>panels/modules</u> in order to minimize water usage during project operation.
LAND USE AND PLANNING/AGRICULTURE	
APM LU-1	If Option B is selected, the Applicant will work with San Luis Obispo County Department of Planning and Building, the County Department of Agriculture, and the California Department of Conservation to cancel Williamson Act contracts, or to identify an alternate Williamson Act solution.

Table B-11. Applicant Proposed Measures

APM Number	Proposed Measure by Issue Area
NOISE	
APM Noi-1	The Applicant will comply with County noise standards during construction and operation of the project.
PUBLIC SERVICES	
APM PS-1	Twenty-four-hour onsite security would be provided to limit the need for outside emergency response services.
APM PS-2	A Health and Safety Plan will be prepared and implemented for the project. The Applicant will assign a safety and compliance director to ensure that construction and operation of the solar facility is carried out consistent with OSHA and CalOSHA requirements.
TRANSPORTATION AND TRAFFIC	
APM Tra-1	The Applicant will implement the proposed Topaz Truck Management Plan (TTMP) in order to maximize safety and minimize congestion on the main access route to the Project site: Highway 58 westbound from Interstate 5. The Applicant will obtain the necessary permits from Caltrans for the implementation of the (TTMP).
APM Tra-2	The Applicant will require the use of shuttle buses to transport the majority of the proposed 400 construction workers to the project site from Park-in-Ride lots in neighboring communities and towns.
WASTEWATER	
APM Was-1	The Applicant will perform additional testing in accordance with the County's specific test procedure prior to final leach field design.

Source: Topaz Solar Farms, LLC, 2010.

FINAL Environmental Impact Report

for the

Topaz Solar Farm Project

*Conditional Use Permit (DRC 2008-00009)
State Clearinghouse No. 2008091026*

VOLUME I Environmental Analysis

Prepared for:



**County of
San Luis Obispo**

Department of Planning and Building
San Luis Obispo, California 93408

Prepared by:

March 2011

Aspen
Environmental Group



D. Cumulative Scenario and Methodology

Section D presents the cumulative scenario used to determine the cumulative impacts associated with the Proposed Project. To document the process used to determine cumulative impacts, this section provides the CEQA requirements, projects identified and applicable to the cumulative analysis, and the methodology used in the cumulative assessment. The analysis of cumulative impacts is presented by issue area in Section C of this report.

D.1 CEQA Requirements

Under the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the environmental impact report (“EIR”) together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.” 14 Cal Code Regs §15130(a)(1). ~~CEQA Pub. Res. Code §21000 et seq., an~~ An EIR must discuss cumulative impacts if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable.” 14 Cal Code Regs §15130(a). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” 14 Cal Code Regs ~~§15164~~ §15130(b)(1). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

Cumulative impacts analysis should highlight past actions that are closely related either in time or location to the project being considered, catalogue past projects and discuss how they have harmed the environment, and discuss past actions even if they were undertaken by another agency or another person. Both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.” 14 Cal Code Regs §15130(b).

The analysis must be in sufficient detail to be useful to the decision maker in deciding whether, or how, to alter the program to lessen cumulative impacts. Most of the projects listed in the cumulative projects table (Table D-1) have, are, or will be required to undergo their own independent environmental review under CEQA. Significant adverse impacts of the cumulative projects would be required to be reduced, avoided, or minimized through the application and implementation of mitigation measures. The net effect of these mitigation measures is assumed to be a general lessening of the potential for a contribution to cumulative impacts.

There are two commonly used approaches, or methodologies, for establishing the cumulative impact setting or scenario. One approach is to use a “list of past, present, and probable future projects producing related or cumulative impacts.” 14 Cal Code Regs §15130(b)(1)(A). The other is to use a “summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.” 14 Cal Code Regs §15130(b)(1)(B).

This EIR uses the list approach to provide a tangible understanding and context for analyzing the potential cumulative effects of a project. General plans and other planning documents were used as additional reference points in establishing the cumulative scenario for the analysis.

D.2 Cumulative Development Scenario

D.2.1 Proposed Development in the Carrizo Plain Area

Reasonably foreseeable projects that could contribute to the cumulative effects scenario are listed in Table D-1. The table indicates the project name and project type, as well as its location and status. Collectively, these projects represent known and anticipated activities that may occur in the project vicinity that have the potential to contribute to a cumulative impact on the environment. However, many projects in the cumulative effects scenario are limited in their geographic extent and would result in minor construction plans and renovations. Other projects in Table D-1, such as the solar projects, are expansive in nature and would have the potential to create cumulative impacts despite the distance to the Proposed Project.

Table D-1. Cumulative Project List

Project	Location	Type	Status
Aggregate Surface Mine	Approximately 4.75 miles east of the Proposed Project on 23.2 acres and north of the CVSR site.	Mine	Existing 9.6-acre ranch borrow pit; Expansion under environmental review by the County (Twisselman CUP; DRC2009-00004).
Pacific Gas & Electric Company (PG&E) Morro Bay–Midway 230 kV transmission line reconductoring	34-mile reconductoring upgrade between a new Solar Switching Station at the point of interconnection of the Proposed Project and the existing PG&E Midway Substation; reconductoring primarily includes the stringing of additional lines on the existing transmission towers and would include replacement of several of those towers to handle the additional weight.	Utility	PG&E anticipates filing an application with the California Public Utilities Commission (CPUC) after environmental review of the Topaz and CVSR Projects is complete. Construction is anticipated to begin in March 2011 and would take approximately 20 months. (please refer to Appendix 4 for a detailed discussion)
California Valley Solar Ranch Project (Sunpower)	Approximately 4.75 miles east of the Proposed Project; up to 2,000 acres	Solar photovoltaic (PV) utility (250 MW)	<u>Final EIR released January 2011</u> Under environmental review by the County. Construction estimated to take 3 years.
Panoche Valley Solar Farm (Solargen)	Approximately 100 miles north of the Proposed Project within the Panoche Valley; on 4,700 acres.	Solar PV utility (420 MW)	<u>Under environmental review</u> Approved by San Benito County in October 2010. Construction estimated to take 5 years.
20 Mobile Homes	Numerous locations within a 5-mile radius of the Proposed Project.	Residential	Applications received, extended; finalized, and permits issued by the County.
1 Mobile Home	Located on the Proposed Project Site within Section 4 of Township 30 South, Range 18 East.	Residential	Application finalized.
5 Single Family Dwelling	Numerous locations within a 5-mile radius of the Proposed Project.	Residential	Applications held, finalized, and permits issued by the County.
2 Minor Use Permits	Clover Dale Trail, California Valley	Residential	Approved and accepted by the County.
State Highway 46 Corridor Improvement Project	Widen State Highway 46 from a two-lane to a four-lane expressway from Geneseo Road in Paso Robles to Interstate 5 in phases over an extended multi-year period.	Transportation	Management Plan indicates that \$67.7 million has been allocated for widening Highway 46 from Geneseo Road east to Almond Drive and the project is expected to begin construction in 2011. The remaining segments within San Luis Obispo County are in design stages;

Table D-1. Cumulative Project List

Project	Location	Type	Status
Ag Cluster Subdivision	9689 Carissa Highway (Highway 58), Located on Sections 4 and 5 of Township 30 South, Range 18 East, overlapping with the southern portion of the Proposed Project site.(Option A)	Cropland, Rangeland, Residential	however, construction is not scheduled to begin for more than 5 years. Request for an agricultural cluster subdivision that would result in the subdivision of an existing 1,280 acre parcel into seven parcels ranging from 2.5 acres to 13.8 acres totaling 31.4 acres (2.5 percent of the site area), and one open space parcel of approximately 1,248 acres with a 2.5 acre building envelope.

Source: County Department of Planning and Building, 2009.

The Agricultural Cluster Subdivision listed on Table D-1 is a request for a minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 acre parcel into eight parcels. Seven parcels would range from 2.5 acres to 13.8 acres totaling 31.4 acres (2.5 percent of the site area), and one open space parcel of approximately 1,248 acres with a 2.5 acre building envelope. The applicant would retain the future right to request the following development on the protected agricultural parcel: up to one additional primary dwelling unit, accessory structures and farm support housing on a building site up to 2.5 acres of the open space parcel. This project is currently under review by the County.

This agricultural cluster project would be located on Sections 4 and 5 of Township 30 South, Range 18 East. These two sections have also been identified as part of the Topaz Study Area A. The location of the cluster has been proposed in the far northwestern area of Section 4. Solar panels have not been planned for this area but the remaining areas of Section 4 and 5 would include solar arrays. While the County is processing these projects simultaneously (Topaz project and the agricultural cluster project), the expectation is that only one project would be developed on these sections. In addition, if Option B – Northern Option is identified as the preferred project then the agricultural cluster project could proceed if approved by the County.

Table D-1 also identifies a mobile home project proposed on Section 4, Township 30 South, Range 18 East. Depending on the location within Section 4 for the placement of the mobile home, this project may not move forward if Option A – Southern Option is identified as the preferred project or it may be removed if it has already been constructed.

The PG&E Morro Bay-Midway 230 kV transmission line reconductoring project is included as a cumulative project in Table D-1. This project is identified as a cumulative project to allow flexibility in the project decision. If for instance, a reduced project (400 MW or less) is selected as the preferred option then upgrades to the existing 230 kV transmission line would not be needed to accommodate the Proposed Project. As noted in Section A.5 (Transmission Interconnection), the Applicant has secured 400 MW of capacity on the existing transmission line. However, reconductoring may still occur if the nearby California Valley Solar Ranch Project is approved. The Proposed Project would generate 550 MW of electricity and as proposed would require upgrades (reconductoring) to the transmission line to accommodate the additional 150 MW of capacity. Therefore, reconductoring of the existing transmission line has been considered in the issue specific cumulative analysis in Section C and addressed in Appendix 4 of this EIR.

D.2.2 Solar Projects Affecting Similar Resources

A large number of renewable energy projects have been proposed on federally managed land, State land, and private land throughout California. As of March 2010, there were 244 renewable energy projects proposed in California in various stages of the environmental review process or under construction. As of March 2010, 49 of these projects, representing approximately 11,120 MW, were planning on requesting American Recovery and Reinvestment Act funds from the federal government (CEC, 2010). The solar projects that are most likely to combine with the Proposed Project to create cumulative impacts are described in detail below.

In addition to the Proposed Project, one other large solar project has been proposed in the Carrizo Plain, the **California Valley Solar Ranch** (CVSR; Sunpower). In January 2009, Sunpower submitted an application to San Luis Obispo County for a Conditional Use Permit (DRC2008-00097) for the 250 MW CVSR Project. The westernmost boundary of this facility would be approximately 4.75 miles east of the eastern boundary of the Topaz site and would consist of solar arrays that would cover nearly 1,900 acres, as well as an electric substation, maintenance facilities, public viewing areas, and an approximately 2.8-mile 230 kV transmission line. The CVSR Project is expected to be fully operational by the end of 2012. The County of San Luis Obispo released the California Valley Solar Ranch Draft EIR in August 2010 and the Final EIR in January 2011.

In applications dated August 2009 (updated in December 2009 and February 2010), Solargen Energy, Inc. requested permits from San Benito County to construct and operate the **Panoche Valley Solar Farm**, a 420 MW solar PV plant located along Little Panoche Road in the Panoche Valley, in southeastern San Benito County (San Benito County, 2010). The project site consists of approximately 4,885 acres, located approximately 100 miles north of the Proposed Project. As with the Carrizo Plain, the Panoche Valley, part of the Ciervo-Panoche Natural Area of western Fresno and eastern San Benito Counties, is one of the three core populations for the San Joaquin kit fox. For this reason, the Panoche Valley Solar Farm has been included in the cumulative analysis for the resource areas where appropriate. The County of San Benito released the Draft EIR for the Panoche Valley Solar Farm in June 2010, and the Final EIR was certified and the project approved in October 2010.

D.3 Cumulative Impact Methodology

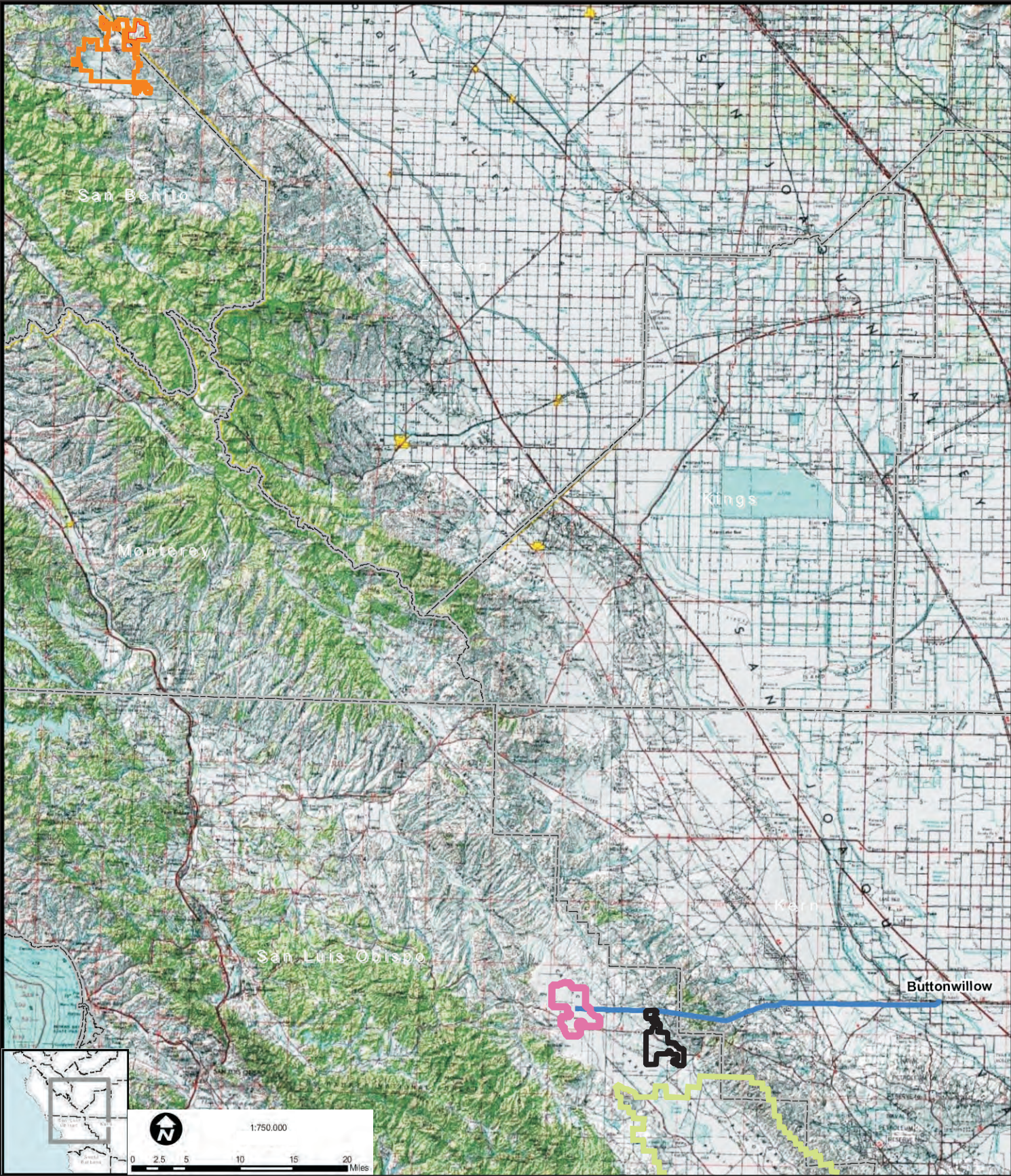
The area within which a cumulative effect can occur varies by resource. For example, air quality impacts tend to disperse over a large area, while traffic impacts are typically more localized. For this reason, the geographic scope for the analysis of cumulative impacts must be identified for each resource area.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the Proposed Project and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the Proposed Project.

In addition, each project (see Table D-1 and Figure D-1), has its own implementation schedule, which may or may not coincide or overlap with the Proposed Project's schedule. This is a consideration for short-term impacts from the Topaz Project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Topaz Project. Because the majority of the projects identified above would include only minor construction and renovation if any, the cumulative analysis presented here focuses primarily on the

cumulative impacts of the Proposed Project with the additional solar project and PG&E Morro Bay–Midway 230 kV transmission line reconductoring.¹

¹ Appendix 4 to this EIR includes a detailed description and environmental analysis of the proposed PG&E upgrades that would be required to the Morro Bay–Midway 230 kV transmission line as a result of the Proposed Project.



- PG&E Carrizo-Midway 230 kV Transmission Line
- California Valley Solar Project
- Topaz Solar Project
- Panoche Valley Solar Farm
- Carrizo Plain National Monument

Figure D-1
Cumulative Solar Energy Projects

E. Alternatives

This section describes the CEQA requirements related to alternatives (Section E.1) and describes the process used to define alternatives to the Proposed Project (Section E.2). It then describes six solar field alternatives to the Proposed Project (Section E.3) and presents impact analysis by discipline for each of these alternatives. Section E.4 describes the alternatives that were considered, but eliminated from detailed evaluation. Section E.5 presents the No Project Alternative, as required by CEQA.

Section E.6 presents a comparison of alternatives retained for analysis, as outlined in Section E.3, and identifies the Environmentally Superior Alternative, also required by CEQA.

All of the alternatives evaluated in this section have been developed to meet the principal objectives of the Proposed Project, as summarized in Section E.1.1 (Consistency with Project Objectives). As such, these alternatives represent potential replacements to both Options A and B. The on-site alternatives evaluated in Section E.3 (Alternatives Retained for Analysis) use combined reconfigurations of the Proposed Project's overall study area boundaries for Options A and B; the remaining off-site alternatives addressed in Section E.3 are also alternatives to both Options A and B and have been selected for evaluation due to their ability to meet the Proposed Project's primary objectives while potentially reducing some adverse environmental impacts.

E.1 CEQA Requirements for Alternatives

An important aspect of EIR preparation is the identification and assessment of reasonable alternatives that have the potential to avoid or minimize the impacts of a proposed project. The State CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6[e]) and selection of a range of reasonable alternatives (Section 15126.6[d]). The EIR must adequately assess these alternatives to allow for a comparative analysis for consideration by decision makers. The State CEQA Guidelines (Section 15126.6[a]) require that:

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

As a frame of reference, summaries of the Proposed Project's objectives, CEQA's definition of "feasibility" and the significant environmental effects that would occur due to implementation of the Proposed Project are provided in the following sections.

E.1.1 Consistency with Project Objectives

As referenced above, State CEQA Guidelines Section 15126.6(a) requires consideration of "a range of reasonable alternatives" to a project, or to the location of a project, that could accomplish "most of the basic objectives of the project." As set forth in Section B.2.4 (Project Objectives), San Luis Obispo County has identified the following basic objectives for the Proposed Project:

- Construct a 550 MW_{AC} solar energy facility by 2014 to help meet state and federal energy policies
- Support goals stated in the San Luis Obispo County General Plan, as well as policies in the plan designed to protect San Luis Obispo County's environment and economy
- Locate the facility in a high-solar resource area

- Locate the facility on a site that has local access to utility grade electrical transmission lines that do not require major construction to accommodate the additional energy generated
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts.

The determination of whether to eliminate or retain alternatives in this EIR was based on each alternative's ability to meet these objectives, keeping in mind the lead agency requirement to consider alternatives "capable of substantially reducing or eliminating any significant environmental effects, even if these alternatives substantially impede the attainment of the project objectives, and are more costly."

E.1.2 Feasibility

The State CEQA Guidelines (Section 15364) define feasibility as:

. . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

The alternatives screening analysis is largely governed by what CEQA terms the "rule of reason," meaning that the analysis should remain focused, not on every possible eventuality, but rather on the alternatives necessary to permit a reasoned choice. Furthermore, of the alternatives identified, an EIR is expected to fully analyze those alternatives that are potentially feasible, while still meeting most of project's objectives.

According to the State CEQA Guidelines (Section 15126.6[f][1]), among the factors that may be taken into account when addressing the potential feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or other regulatory limitations, jurisdictional boundaries, and a proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR. For the screening analysis, the feasibility of potential alternatives was assessed taking the following factors into consideration:

- **Economic Feasibility.** Is the alternative so costly that implementation would be prohibitive? The State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (Guidelines Section 16126.6[b]). The Court of Appeals added in *Goleta Valley v. Board of Supervisors* (2nd Dist. 1988, 197 Cal.App.3d, p. 1181 [see also *Kings County Farm Bureau v. City of Hanford* {5th Dist. 1990} 221 Cal.App.3d 692, 736 {270 Cal. Rptr. 650}]): "[t]he fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with project."
- **Legal Feasibility.** Does the alternative have the potential to avoid lands that have legal protection that may prohibit or substantially limit the feasibility of permitting a solar power project? Lands that are afforded legal protections that would prohibit the construction of the project, or require an act of Congress for permitting, are considered less feasible locations for the project. These land use designations include wilderness areas, wilderness study areas, restricted military bases, airports and Native American reservations. Information on potential legal constraints of each alternative has been compiled from laws, regulations, and local jurisdictions, as well as a review of federal, State, and local agency land management plans and policies.
- **Regulatory Feasibility.** Do regulatory restrictions substantially limit the likelihood of successful permitting of a solar power project? Is the alternative consistent with applicable standards for solar generation system design, operation and maintenance?

- **Social Feasibility.** Would the alternative cause significant damage to the socioeconomic structure of the community and be inconsistent with important community values and needs? Similar to the environmental feasibility, above, this subject is primarily considered as a significant environmental effect.
- **Technical Feasibility.** Is the alternative feasible from a technological perspective, considering available technology? Are there any construction, operation or maintenance constraints that cannot be overcome?

E.1.3 Potential to Eliminate Significant Environmental Effects

A key CEQA requirement for an alternative is that it must have the potential to “avoid or substantially lessen any of the significant effects of the project” (State CEQA Guidelines Section 16126.6[a]). If an alternative is identified that clearly does not have the potential to provide an overall environmental advantage as compared to a project, it is usually eliminated from further consideration. The significant environmental effects of the Proposed Project are defined in the Executive Summary, Impact Summary Table for Class I (significant and unavoidable adverse impacts). The significant and unavoidable adverse impacts include the following:

- **Aesthetics:** the Proposed Project would contrast with existing setting
- **Agricultural Resources:** the Proposed Project would temporarily and permanently limit the type of agricultural operations that could occur on the site
- **Biological Resources:** the Proposed Project would cumulatively contribute to adverse impacts to special status species and wildlife connectivity corridors for the San Joaquin kit fox
- **Land Use:** The proposed project would temporarily and permanently disrupt, displace and divide existing land uses
- **Noise:** the Proposed Project would result in adverse impacts to rural residences during construction and contribute to cumulatively significant impacts
- **Transportation and Circulation:** the Proposed Project would increase congestion and cause travel delays to local and areawide roadways and cumulatively contribute to adverse transportation and circulation impacts.

E.2 Alternatives Evaluation Process

E.2.1 Introduction

The range of alternatives considered in this analysis were identified through consideration of:

- Alternatives identified during the public and agency scoping process
- Alternatives identified by the EIR Team as a result of its independent review of the Proposed Project's impacts
- Alternatives identified during the California Energy Commission's (CEC) analysis of the previously proposed Ausra Carrizo Energy Solar Farm.

E.2.2 Alternatives Suggested During the Proposed Project's Scoping Process

Table E-1 lists the alternatives that were suggested during the Proposed Project's public and agency scoping process, and the resolution of each alternative suggested in this EIR.

Table E-1 Alternatives Suggested During Scoping

Alternative Suggested	Response
Consideration of a reduced project size and/or scale was suggested to reduce the conversion of agriculture lands to electricity production.	Alternative retained for analysis; addressed in Sections E.3.4, E.3.5 and E.3.6. Additional alternatives eliminated; addressed in Section E.4.2.
Consideration of distributed (rooftop or parking lot) solar photovoltaics (PV) alternative. The Southern California Edison's 250 MW solar PV was highlighted as an example of how a distributed solar PV alternative could be feasible. Commenters acknowledged that there may not be sufficient rooftop space in San Luis Obispo County for a rooftop solar PV alternative, but noted that to achieve the project objectives an alternative need not be limited to the San Luis Obispo County.	Alternative eliminated; addressed in Section E.4.3.
Consideration of alternatives located on disturbed oil field lands, disturbed and unusable agriculture lands, lands closer to developed areas, or disturbed lands on the other side of the Temblor range was requested. Use of withdrawn agriculture lands that may be contaminated with selenium or other contaminants was suggested as a means of reducing impacts to habitat and prime agriculture lands.	Alternative retained for analysis, addressed in Section E.3.8 5 . Additional alternatives eliminated; addressed in Section E.4.2.
The Agriculture Department and North County Watch requested that alternative technologies be compared on a MW per acre basis with the goal of reducing the conversion of farmland for energy production.	Alternative eliminated; addressed in Section E.4.4.
Concern regarding transmission line losses was expressed, and suggestions included putting projects closer to load needs and quantifying the loss of energy over transmission lines.	Alternative eliminated; addressed in Section E.4.3.
Consideration of alternative locations in the Westlands Water District in Kings and Fresno Counties was requested.	Alternative retained for analysis; addressed in Section E.3.8 5 .
Consideration of alternative locations that are further away from the Carrisa Plain Elementary School to reduce noise and air quality impacts was requested.	Alternative retained for analysis; addressed in Sections E.3.1 through E.3.6.
Consideration of alternative locations that are further away from residential uses was requested.	Alternative retained for analysis; addressed in Sections E.3.1 through E.3.6.
Consideration of a "No Project" alternative.	Alternative retained for analysis; addressed in Section E.5.

E.2.3 Alternatives Identified by the EIR Team

Based on the impacts identified in the Draft EIR, the County, and the EIR Team sought to develop alternatives to proposed Options A and B that could reduce the impacts. Within the Draft EIR, two of the alternatives involved placement of the Proposed Project at a new location (the Westlands CREZ and Alternative 7 North Carrizo Plains); and the remaining five or ~~four~~ alternatives contained within the Draft EIR involved reconfiguration of the project within the boundaries of its study area. In total, the Draft EIR evaluated seven ~~six~~ alternatives, identified by the EIR Team including:

- Alternative 1 Increased Setbacks (North/South)
- Alternative 2 Increased Setbacks (North)
- Alternative 3 Increased Setbacks (No WA Lands)
- Alternative 4 Reduced MW (No WA Lands)
- Alternative 5 Reduced MW (Biology)

- Alternative 6 Westlands CREZ
- Alternative 7 North Carrizo Plain.

As part of its review and consideration of the on-site alternatives evaluated in the Draft EIR, the Applicant, in its written comments to the County, presented a new alternative, referred to as Alternative 3A. The Applicant requested that this alternative be analyzed as part of the Proposed Project's Final EIR. However, subsequent to its submittal of Alternative 3A, the Applicant, County staff and the EIR Team engaged in meetings with the US Fish and Wildlife Service and California Department of Fish and Game (CDFG) to discuss Alternative 3A, as well as other alternatives identified by the County Department of Agriculture/Weights and Measures and CDFG. Based upon the concerns and concepts expressed at these meetings, the Applicant further refined Alternative 3A and resubmitted it to the County on February 1, 2011 for consideration as "Alternative 3B." Following the February 1st submittal, the Applicant refined Alternative 3B to setback some of the solar module arrays located in Section 5 of T30S, R18E to avoid native grassland habitat in this section, which may facilitate wildlife movement. This refinement, known as "Alternative 3B.1" was submitted to the County on February 16, 2011. The final site plan for Alternative 3B.1 is analyzed, along with background information on Alternatives 3A and 3B, in Final EIR Section E.3.4 (Alternative 3B.1 Reduced Acreage [No WA Lands/Biology]). As such, within the context of this Final EIR, there are six onsite alternatives that involve reconfiguration of the Proposed Project within its study area boundaries (Alternatives 1, 2, 3, 3B.1, 4 and 5), as well as two off-site alternatives (Alternatives 6 and 7).

In order to evaluate potential alternative sites, two maps were developed to illustrate the environmental constraints within San Luis Obispo and Kern Counties. These maps are presented as Figure E-1 (San Luis Obispo County Constraints to Solar Project Development) and Figure E-2 (Kern County Constraints Solar Project Development). The purpose of these maps was to identify where there may be agricultural or other disturbed lands, and the extent of San Joaquin kit fox recovery areas, as well as other constraints.

E.2.4 Alternatives Considered in Former Solar Project CEC Proceeding

From October 2007 to November 2009, the CEC evaluated an application submitted by Carrizo Energy, LLC to construct a solar thermal power project, on the Carrizo Plain, known as the Carrizo Energy Solar Farm Project, or Ausra CESF. This project would have used the Compact Linear Fresnel Reflector technology developed by Ausra. The CEC published a Preliminary Staff Assessment (PSA, equivalent to a Draft EIR) in November 2008, as well as portions of the Final Staff Assessment between June and August 2009. Carrizo Energy, LLC withdrew the project from consideration in November 2009. First Solar (Proposed Project Applicant) subsequently acquired options on lands previously considered for the Ausra CESF and has incorporated these lands into the Proposed Project.

The alternative sites considered in the CEC assessment of the Ausra CESF included the sites listed below. Each is briefly described and evaluated in Section E.4, as none of these sites are retained for analysis as alternatives to the Proposed Project.

- | | |
|--|---------------------------------------|
| ▪ Lokern Alternative Site | ▪ Northwest Carrizo Plain Alternative |
| ▪ Harper Lake Alternative Site | ▪ Antelope Plain Alternative Site D |
| ▪ Old Mine Alternative and Daggett-Soppeland Alternative Sites | |

E.3 Alternatives Retained for Analysis

This section describes and evaluates the ~~six~~eight alternatives that meet the CEQA criteria defined in Section E.1 and thus have been retained for the EIR's alternatives analysis. A description of those alternatives that did not meet CEQA's criteria for further evaluation is provided in Section E.4, with an explanation as to why alternatives were eliminated from further consideration. As required by CEQA Section 15126.6 (e), the "No Project Alternative" is discussed in Section E.5 and the "Environmentally Superior Alternative" is addressed in Section E.6.

In order to comply with CEQA's requirements, each alternative that has been developed for this analysis has been evaluated in three ways:

- Does the alternative accomplish all or most of the basic objectives of the Proposed Project?
- Is the alternative potentially feasible (from economic, environmental, legal, social, technological standpoints)?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the Proposed Project)?

The evaluation of these criteria are addressed in detail for each identified alternative in Sections E.3.1 through E.3.7~~8~~.

It is noted that both the County Department of Agriculture/Weights and Measures and the CDFG submitted conceptual on-site project alternatives as part of their comments on the Draft EIR. The County Department of Agriculture/Weights and Measures (please refer to Draft EIR comment A6-28) suggested a hybrid alternative to avoid Williamson Act lands and further protect existing agricultural practices and parcels while also protecting the sensitive biological resources located in Section 20 of T29S, R18E; the suggested alternative involved placing the solar module arrays within a 2,400 acre area located in Sections 16, 19, 20, 21, 28 and 29 of T29S, R18E. The County Department of Agriculture/Weights and Measures noted in its comments that this alternative would avoid 100-year floodplain areas and reduce the creation of remnant agricultural parcels. The CDFG suggested a consolidated 400 MW generating facility located in Sections 7, 8, 17, 18, 19, 20, 21 and 29 of T29S, R18E (please refer to Draft EIR comment A8-22). The CDFG noted in its comment that this alternative would avoid 100-year floodplain areas and vernal pools, and would substantially reduce impacts related to habitat loss and fragmentation.

The reduced generating capacity alternatives suggested by the CDFG and County Department of Agriculture/Weights and Measures were taken under consideration and discussed with the Applicant to address their feasibility. In response to the concerns expressed by these agencies, while maintaining its objective to develop a 550 MW generating facility, the Applicant submitted a consolidated site plan that avoids Williamson Act lands and substantially decreases potential impacts to biological resources, including wildlife movement corridors, native grassland habitat, vernal pools, rare plant populations and fairy shrimp habitat. The Applicant's submitted site plan, referred to as Alternative 3B.1 in the following analysis, addresses the concerns expressed by the Department of Agriculture/Weights and Measures and CDFG and thus is considered to function in lieu of the specific on-site alternatives suggested by these agencies. The analysis of Alternative 3B.1 is found in Final EIR Section E.3.4.

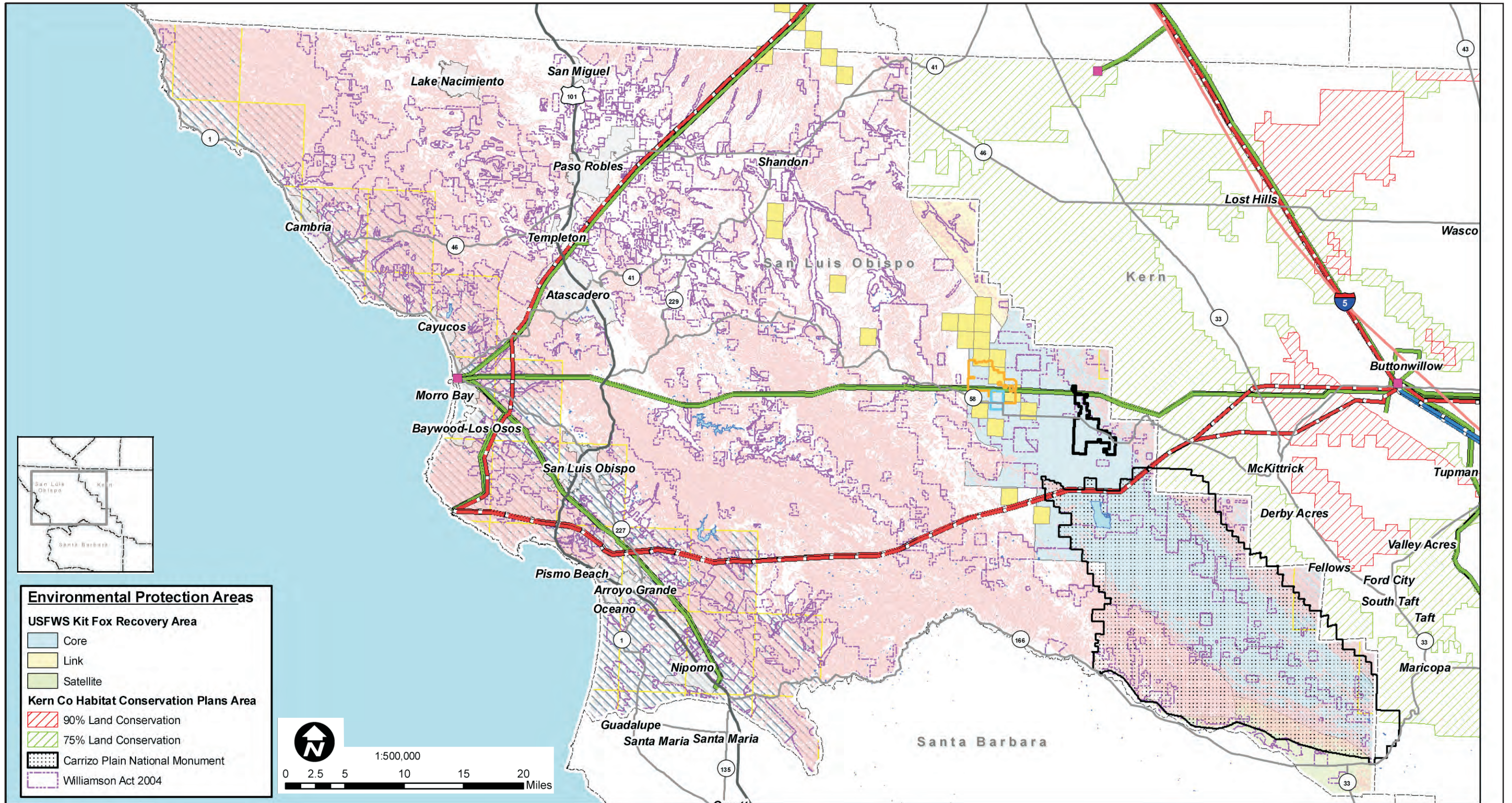
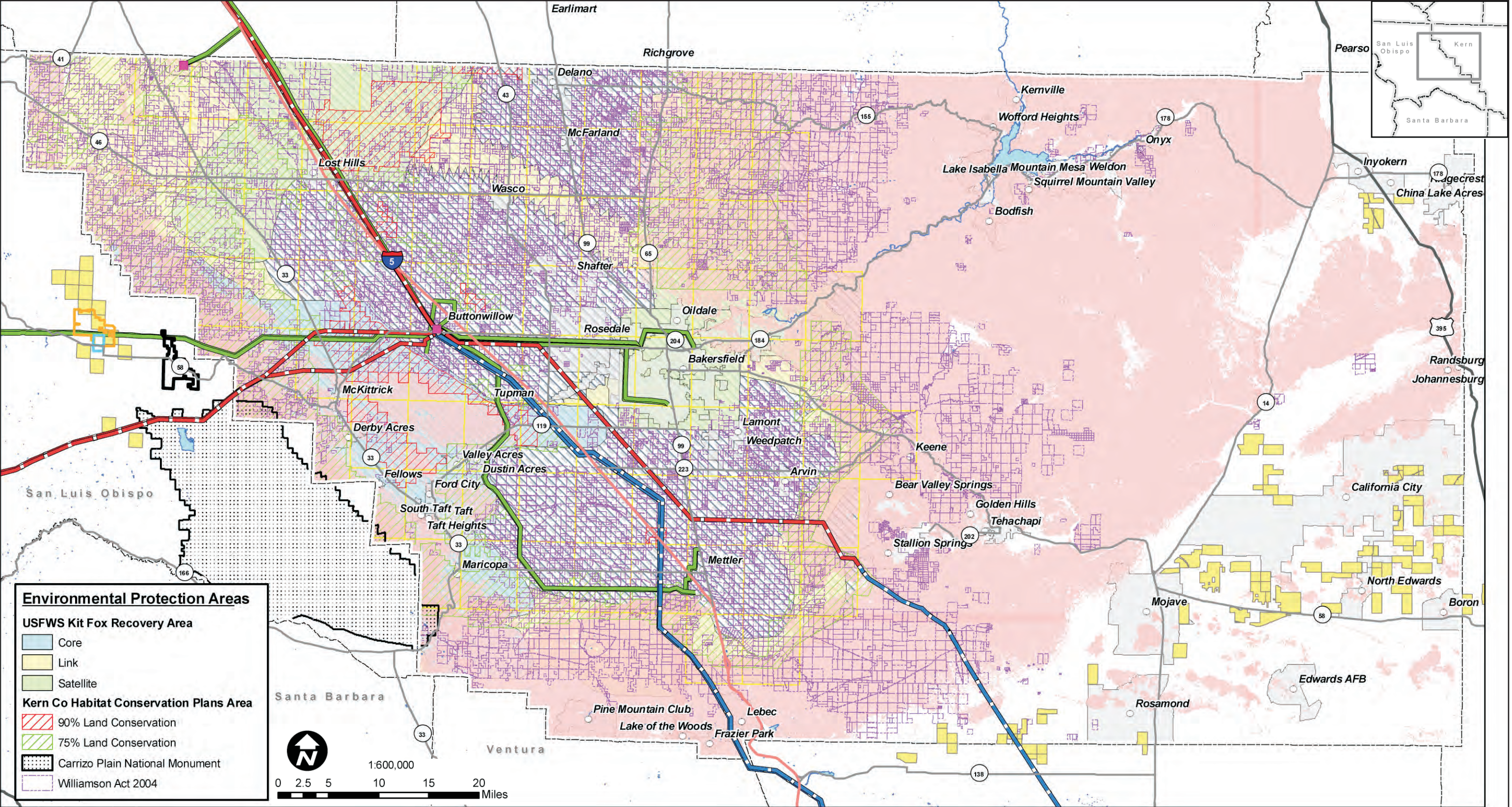


Figure E-1
San Luis Obispo County
Constraints to Solar Project Development





 California Valley Solar Ranch	 RETI Solar Proxy Projects	 PG&E 230KV	 SCE 500KV	 less than 6.00 kWh/m2/day
 Carrizo Energy Solar Farm	 Developed/Urbanized Area	 PG&E 500KV	 Substations	 Slope is >5%
 Topaz Solar Farm				

Figure E-2
Kern County
Constraints to Solar Project Development

E.3.1 Alternative 1 Increased Setbacks (North/South)

This alternative was identified to increase the setback of the project from the highway to reduce visual impacts and increase the setback from the Carissa Plain Elementary School and rural residential homes along Highway 58. Under Option A of the Proposed Project, solar ~~panel~~ module arrays would not be placed in Sections 7, 8, 17, and 18 of T29S, R18E, all of which are designated Williamson Act lands. As proposed, Option A would additionally place solar ~~panel~~ module arrays an estimated 409 to 775 feet (0.08 to 0.15 mile) away from the Highway 58 ~~Right-of-Way~~ (ROW), as outlined in Table B.32 (Buffer Zones for the Topaz Project) of EIR Section B (Project Description).

Under Alternative 1, all of the solar ~~panel~~ module arrays would be placed a minimum of 2,640 feet (one-half mile) away from the north and south boundaries of the Highway 58 ROW; the solar ~~panel~~ module arrays that would be removed from the one-half mile buffer area would be replaced with solar ~~panel~~ module arrays in Section 7, 8, 17, and 18 of T29S, R18E. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

Description

As illustrated in Figure E-3, the "footprint" of the Alternative 1 Increased Setbacks (North/South) would include portions of T29S, R18E Sections 7, 8, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 34, and 35 north of Highway 58; south of Highway 58 this alternative's "footprint" would include parts of Sections 32 and 33 of T29S, R18E, as well as portions of Sections 4 and 5 of T30S, R18E. The solar ~~panel~~ module reserve areas associated with this alternative would be the same as for Option A, except that no reserve areas would be placed within one-half mile of Highway 58, as shown in Figure E-3. Table E-2 provides a comparative summary of the estimated number of solar ~~panel~~ module arrays that would be placed within each section of the study area under each alternative and proposed Options A and B.

As with proposed Options A and B, the Monitoring and Maintenance (M&M) Building, ~~and~~ project substation, and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Option A of the Proposed Project ~~Option A~~. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc., would be similar to Option A of the Proposed Project ~~Option A~~, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~ module array site plan.

Objectives

Alternative 1 would meet most of the basic project objectives, as defined below.

- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **Meets objective** (same as Proposed Project).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project).

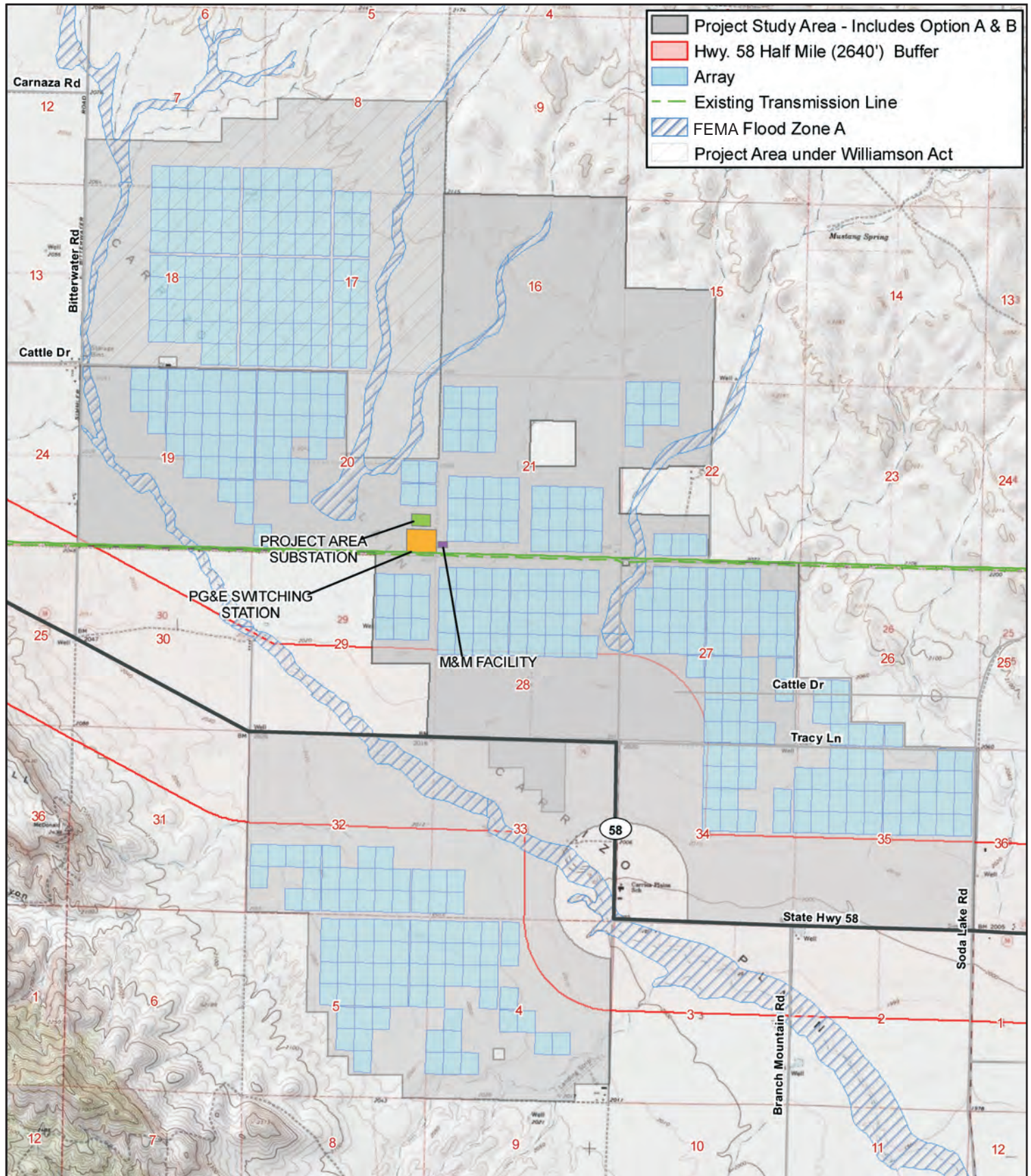


Table E.2. Summary of Solar Panel Module Arrays Configuration By Alternative¹

Alternatives	Location/Estimated Number of Solar Panel Module Arrays by Section				
<i>(Township 29S, Range 18E)</i>	Section 7	Section 8	Section 9	Section 10	Section 11
Proposed Project: Option A (Southern Option)	0	0	---	---	---
Proposed Project: Option B (Northern Option)	13	22	---	---	---
Alternative 1 Increased Setbacks (North/South)	6	4	---	---	---
Alternative 2 Increased Setbacks (North)	0	0	---	---	---
Alternative 3 Increased Setbacks (No WA Lands)	13	22	---	---	---
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	0	0	---	---	---
Alternative 4 Reduced MW (No WA Lands)	0	0	---	---	---
Alternative 5 Reduced MW (Biology)	0	0	---	---	---
<i>(Township 29S, Range 18E)</i>	Section 18	Section 17	Section 16	Section 15	Section 14
Proposed Project: Option A (Southern Option)	0	0	0	0	---
Proposed Project: Option B (Northern Option)	45	62	46	10	---
Alternative 1 Increased Setbacks (North/South)	45	48	0	0	---
Alternative 2 Increased Setbacks (North)	0	0	41	10	---
Alternative 3 Increased Setbacks (No WA Lands)	44	62	46	10	---
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	0	0	0	0	---
Alternative 4 Reduced MW (No WA Lands)	0	0	38	10	---
Alternative 5 Reduced MW (Biology)	45	62	38	10	---
<i>(Township 29S, Range 18E)</i>	Section 19	Section 20	Section 21	Section 22	Section 23
Proposed Project: Option A (Southern Option)	32	27	33	10	---
Proposed Project: Option B (Northern Option)	35	27	36	7	---
Alternative 1 Increased Setbacks (North/South)	32	27	33	10	---
Alternative 2 Increased Setbacks (North)	32	27	33	10	---
Alternative 3 Increased Setbacks (No WA Lands)	35	27	36	7	---
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	56	33	50	0	---
Alternative 4 Reduced MW (No WA Lands)	32	27	33	10	---
Alternative 5 Reduced MW (Biology)	37	27	33	10	---
<i>(Township 29S, Range 18E)</i>	Section 30	Section 29	Section 28	Section 27	Section 26
Proposed Project: Option A (Southern Option)	---	12	59	62	8
Proposed Project: Option B (Northern Option)	---	12	59	56	0
Alternative 1 Increased Setbacks (North/South)	---	9	35	48	8
Alternative 2 Increased Setbacks (North)	---	12	44	54	8
Alternative 3 Increased Setbacks (No WA Lands)	---	12	30	41	4
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	---	15	72	61	0

Table E.2. Summary of Solar Panel Module Arrays Configuration By Alternative¹

Alternatives	Location/Estimated Number of Solar Panel Module Arrays by Section				
Alternative 4 Reduced MW (No WA Lands)	---	12	44	54	8
Alternative 5 Reduced MW (Biology)	---	12	44	0	0
(Township 29S, Range 18E)	Section 31	Section 32	Section 33	Section 34	Section 35
Proposed Project: Option A (Southern Option)	---	35	4	32	64
Proposed Project: Option B (Northern Option)	---	0	7	0	0
Alternative 1 Increased Setbacks (North/South)	---	23	4	13	35
Alternative 2 Increased Setbacks (North)	---	33	4	18	44
Alternative 3 Increased Setbacks (No WA Lands)	---	0	0	13	35
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	---	64	35	36	0
Alternative 4 Reduced MW (No WA Lands)	---	0	0	13	37
Alternative 5 Reduced MW (Biology)	---	0	0	0	0
(Township 30S, Range 18E)	Section 6	Section 5	Section 4	Section 3	Section 2
Proposed Project: Option A (Southern Option)	---	30	29	---	---
Proposed Project: Option B (Northern Option)	---	0	0	---	---
Alternative 1 Increased Setbacks (North/South)	---	30	27	---	---
Alternative 2 Increased Setbacks (North)	---	37	30	---	---
Alternative 3 Increased Setbacks (No WA Lands)	---	0	0	---	---
Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	---	18	22	---	---
Alternative 4 Reduced MW (No WA Lands)	---	0	0	---	---
Alternative 5 Reduced MW (Biology)	---	0	0	---	---

1. The information presented in this table is presented for comparative purposes only and is an estimate based on review of existing maps and information available at the time of publication of this report. The actual number of arrays in each section for each alternative may be different.

- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (reduces aesthetics impacts to a greater degree than the Proposed Project [proposed Option A or B] and reduces impacts to lands under Williamson Act contracts in comparison to proposed Option B).
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar panel module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Impact Analysis by Discipline

Because the overall location and size (e.g., acreage) of this alternative would not change from the Proposed Project, the duration and activities associated with its construction would be anticipated to be nearly identical to Options A and B. Similarly, because there would be no change in its electrical generating output, this alternative's operation and maintenance would be expected to be nearly the same as for the Proposed Project. Consequently, at both regional and localized scales, the impacts associated with the Alternative 1 Increased Setbacks (North/South) would be virtually indistinguishable from the Proposed Project for the following subject areas:

- | | |
|--|--|
| ▪ Air Quality | ▪ Land Use and Recreation |
| ▪ Climate Change/Greenhouse Gas | ▪ Noise |
| ▪ Biological Resources | ▪ Population and Housing |
| ▪ Cultural and Paleontological Resources | ▪ Public Services, Utilities and Service Systems |
| ▪ Geology, Mineral Resources and Soils | ▪ Transportation and Circulation |
| ▪ Hazards and Hazardous Materials | ▪ Water Resources |

The primary subject areas that differentiate this alternative from the Proposed Project relate to aesthetics and agriculture, as discussed below.

Aesthetics

As addressed in Section C.2 (Aesthetics), the project study area is comprised of agricultural uses and open space; it is contained within a distinctive natural landscape characterized by long, open, panoramic views that are considered to have a very high level of visual intactness and aesthetically pleasing qualities. The study area is additionally adjacent to Highway 58, which is a suggested scenic corridor roadway in the County's *Conservation and Open Space Element* from the Santa Margarita urban reserve line to the Kern County line (County, 2010).

Alternative 1 would place all solar panel module arrays a minimum of one-half mile away from sensitive viewers traveling along Highway 58, the Carrisa Plains Elementary School and rural residential homes located adjacent to Highway 58. In comparison to the Proposed Project, unmitigated, Alternative 1 would result in increased setbacks from Highway 58 that range between an approximate 1,865 to 2,571 feet. In comparison to the Proposed Project with application of Mitigation Measure AE-2.1 (Maintain setbacks for public roads [Option A only]), Alternative 1 would still increase project setbacks by an additional 2,240 feet. ~~In comparison to the Proposed Project, t~~The increased setbacks of this alternative would, therefore, be expected to substantially reduce impacts associated with the short-term visibility of construction activities, equipment, and night lighting (Impact AE-1); as well as long-term impacts

related to structure contrast, the industrial character of the project, view blockage, skylining, and glare as seen from major public viewpoints and by local residences (Impact AE-2).

Agriculture

Alternative 1 would place an estimated 103 solar ~~panel~~ module arrays equaling approximately 721 acres in Sections 7, 8, 17, and 18 of T29S, R18E, the majority of which is designated Prime Farmland If Irrigated and falls under Williamson Act contracts. In comparison, Option B would place approximately 142 solar ~~panel~~ module arrays in Sections 7, 8, 17, and 18 of T29S, R18E, resulting in the removal of an estimated 1,212 acres of Williamson Act lands that are designated Prime Farmland If Irrigated. Implementation of Alternative 1 would, therefore, reduce impacts related to conflicts with Williamson Act contracts (Impact AG-3) in comparison to Option B by an estimated 491 acres (or approximately 41 percent). In comparison to Option A, this alternative would increase impacts associated with conflicts with Williamson Act contracts, because Option A does not include the placement of any solar ~~panel~~ module arrays in Sections 7, 8, 17, and 18 of T29S, R18E.

Alternative Conclusions

Alternative 1 Increased Setbacks (North/South) would primarily reduce aesthetic impacts by placing the solar ~~panel~~ module arrays a minimum of one-half mile away from the Highway 58 ROW. This buffer would not be achieved with implementation of either proposed Option A or B. Additionally, in comparison to proposed Option B, this alternative would reduce impacts related to conflicts with Williamson Act contracts by an estimated 41 percent. It would, however, create new impacts associated with conflicts with Williamson Act contracts in comparison to proposed Option A.

Other than impacts connected to aAesthetics and Agriculture, it is noted that this alternative would avoid the placement of solar ~~panel~~ module arrays in Sections 15 and 16 of T29S, R18E. Use of this area would be required for implementation of proposed Option B and the topography of these two sections would require more earthwork and grading for installation of the solar ~~panel~~ module arrays, thereby slightly increasing impacts associated with ground disturbing activities and vegetation removal (Impact BR-1), as well as fugitive dust and exhaust emissions (Impacts AQ-1 and AQ-2). These impacts can, however, be mitigated to a level of less than significant (Class II) with full implementation of the mitigation measures provided in Sections C.4 (Air Quality) and C.6 (Biological Resources). Noise-related impacts to sensitive land uses within this alternative's buffer area would also be reduced, although overall noise-related impacts would remain significant and unavoidable (Class I). In addition, Alternative 1 could potentially conflict with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E. Conflicts with this proposal would also occur if Option A is implemented.

E.3.2 Alternative 2 Increased Setbacks (North)

Alternative 2 includes increased setbacks from Highway 58 and includes solar arrays only north of the highway in order to reduce visual and resource impacts. Similar to Alternative 1, Alternative 2 would result in all solar ~~panel~~ module arrays being placed a minimum of one-half mile away from the Highway 58 ROW as well as the Carrisa Plains Elementary School and rural residential uses adjacent to Highway 58. This alternative would, however, place the solar ~~panel~~ module arrays that are removed within the proposed Option B one-half mile buffer area to Sections 34 and 35 of T29S, R18E. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

Description

As illustrated in Figure E-4, the conceptual site plan for Alternative 2 would include portions of T29S, R18E Sections 7, 8, 15, 16, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 34, and 35 north of Highway 58; no solar ~~panel~~module arrays would be placed south of Highway 58. The solar ~~panel~~module arrays reserve areas associated with this alternative would be the same as for proposed Option B, except that no reserve areas would be allowable within one-half mile of Highway 58 within Sections 27, 28, 29, 33, 34, or 35 of T29S, R 18E. Table E-2 provides a comparative summary of the estimated number of solar ~~panel~~module arrays that would be placed within each section of the study area under each alternative and proposed Options A and B.

As with proposed Options A and B, the M&M Building, ~~and~~ project substation, and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc., would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

Objectives

The Alternative 2 Increased Setbacks (North) would meet most of the Proposed Project's principal objectives, as outlined below.

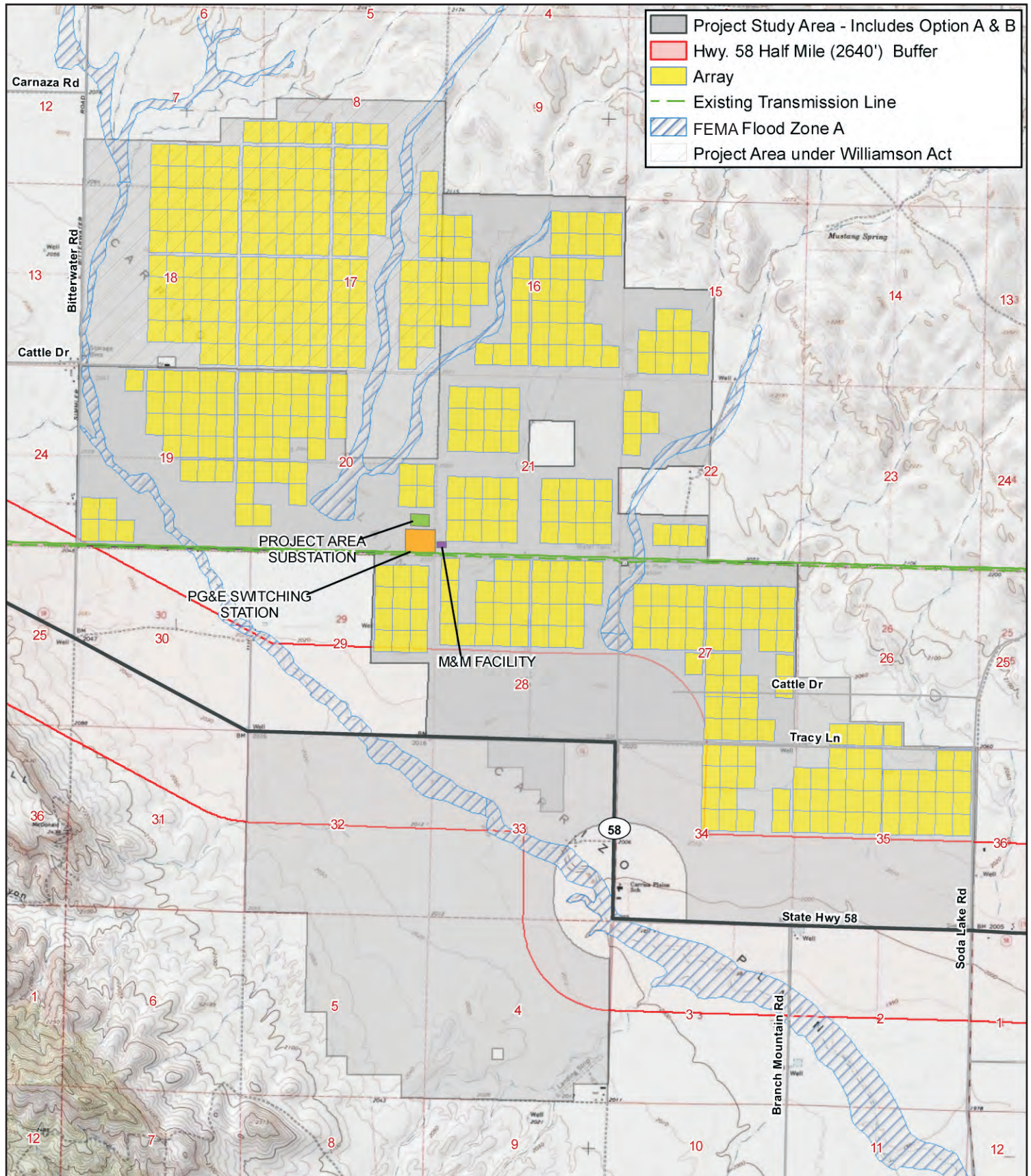
- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **Meets objective** (same as Proposed Project).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project).
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (reduces aesthetics impacts to a greater degree than the Proposed Project [proposed Option A or B] and minimizes noise-related impacts to the two rural residences located in Section 4 of T30S, R18E).
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar ~~panel~~module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Impact Analysis by Discipline

Because the overall location and size (e.g., acreage) of this alternative would not differ substantially from the Proposed Project, the duration and activities associated with its construction would be anticipated to be nearly identical to proposed Options A and B. Similarly, because there would be no



change in its electrical generating output, this alternative's operation and maintenance would be expected to be practically the same as for the Proposed Project. Consequently, at both regional and localized scales, the impacts associated with Alternative 2 would be equivalent to the Proposed Project for the following subject areas:

- Air Quality
- Climate Change/Greenhouse Gas
- Biological Resources
- Cultural and Paleontological Resources
- Geology, Mineral Resources and Soils
- Hazards and Hazardous Materials
- Land Use and Recreation
- Population and Housing
- Public Services, Utilities and Service Systems
- Transportation and Circulation
- Water Resources

Aesthetics

In comparison to proposed Option A, Alternative 2 Increased Setbacks (North) would remove all project-related features south of the Highway 58 ROW, thereby eliminating all Aesthetic impacts in this portion of the study area. In comparison to both Options A and B, this alternative would reduce short-term impacts associated with the visibility of construction activities, equipment, and night lighting (Impact AE-1) and permanent impacts related to structure contrast, the industrial character of the project, view blockage, skylining and glare from major public viewpoints and by local residences (Impact AE-2) by placing the solar panel module arrays further back (a minimum of one-half mile away) from the north side of Highway 58. In comparison to the Proposed Project, unmitigated, Alternative 2 would result in increased setbacks from Highway 58 that range between an approximate 1,865 to 2,571 feet. In comparison to the Proposed Project with application of Mitigation Measure AE-2.6 (Increase setbacks from Highway 58 [Option B only]), Alternative 2 would still increase project setbacks by an additional 2,240 feet. As such, this alternative would substantially reduce the Proposed Project's impacts associated with aesthetics under either proposed Option A or B.

Agriculture

Under Alternative 2, the exact same acreage of lands under Williamson Act contracts would be affected as under proposed Option B. Proposed Option A would not impact any Williamson Act lands and thus, in comparison to Option A, this alternative would increase the impacts associated with this resource (Impact AG-3) in Sections 7, 8, 17, and 18 of T29S, R18E. However, because this alternative would not affect existing agricultural uses south of Highway 58, no temporary or permanent interference with agricultural operations (Impacts AG-1 and AG-2) would occur in this portion of the study area (No Impact).

Noise

Alternative 2 would avoid all lands south of Highway 58. As such, at a localized level this alternative would not substantially disturb sensitive receptors (e.g., the rural residential homes located in Section 4 of T30S, R18E) during construction or operation and maintenance (Impacts NS-1 and NS-4). Noise-related impacts north of Highway 58 outside of the one-half mile buffer would, however, remain the same as for both Options A and B.

Alternative Conclusion

Alternative 2 Increased Setbacks (North) would reduce short- and long-term aesthetic impacts associated with both proposed Options A and B by placing the solar panel module arrays a minimum of one-half mile away from the Highway 58 ROW. This alternative would not, however, reduce any impacts

associated with Williamson Act lands in comparison to proposed Option B. These impacts would be the same as for Option B and greater than those that would occur under Option A. Overall noise-related impacts outside of this alternative's one-half mile buffer area and north of Highway 58 would remain the same as those identified for the Proposed Project (Class I). However, impacts to rural residential homes and the Carrisa Plains Elementary School within this alternative's one-half mile buffer area would be reduced and impacts to the two rural residences in Section 4 of T30S, R18E would be minimized.

As addressed under Alternative 1, the topography of Sections 15 and 16 of T29S, R18E is such that additional earthwork and grading would be necessary for the placement of solar ~~panel~~module arrays. However, under Alternative 2 this area would not be avoided; as such, in comparison to proposed Option A there would be an increase in impacts associated with ground disturbing activities and vegetation removal (Impact BR-1), as well as fugitive dust and exhaust emissions (Impacts AQ-1 and AQ-2). These impacts can, however, be mitigated to a level of less than significant (Class II) with full implementation of the mitigation measures provided in Sections C.4 (Air Quality) and C.6 (Biological Resources). Alternative 2 Increased Setbacks (North) would also avoid potential conflicts with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E.

E.3.3 Alternative 3 Increased Setbacks (No WA Lands)

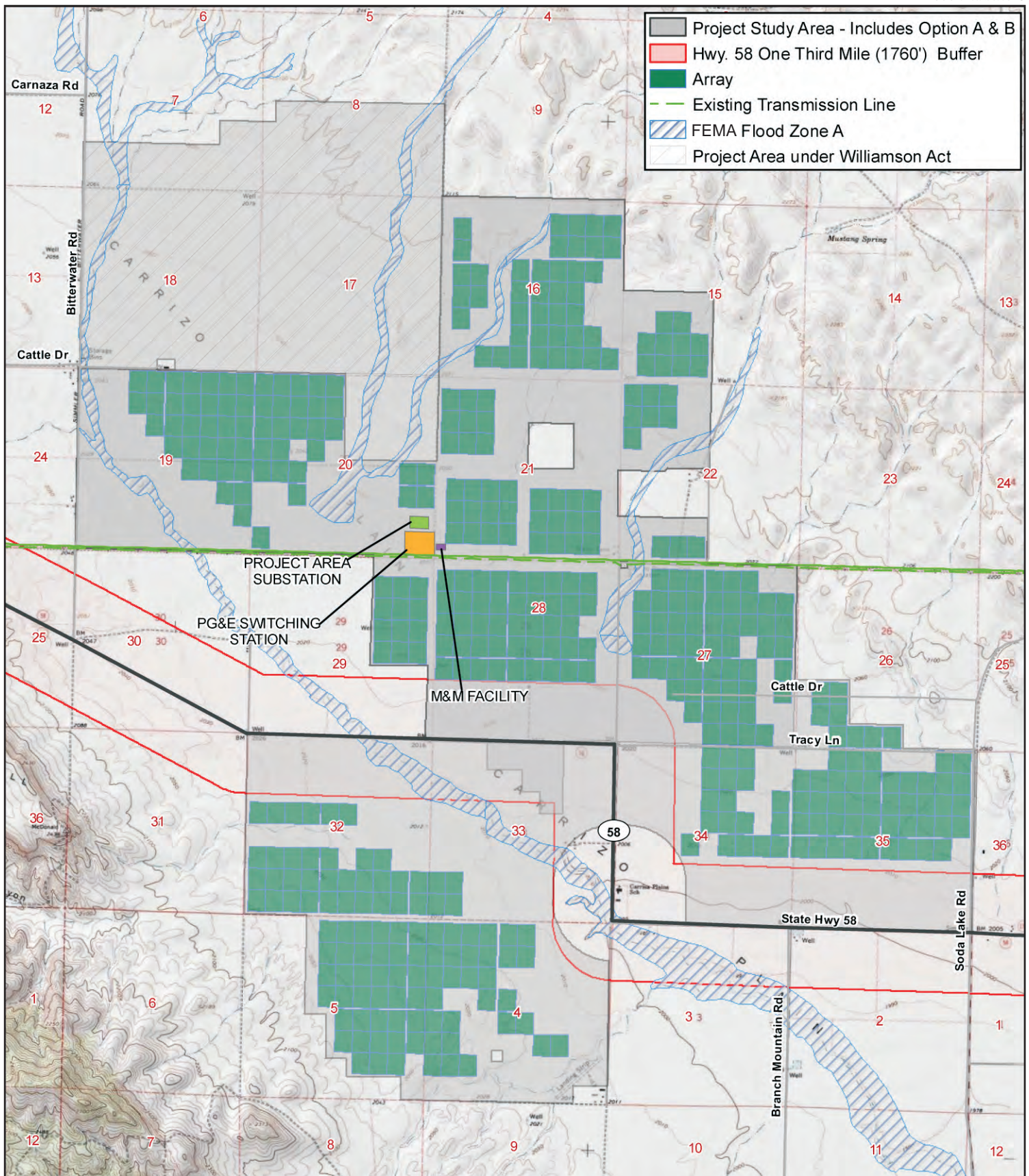
Alternative 3 Increased Setbacks (No WA Lands) would provide an approximate 1,760 (one-third mile) setback between the Proposed Project's solar ~~panel~~module arrays and the north and south boundaries of the Highway 58 ROW; it would additionally avoid all lands within the project study area that are currently under Williamson Act contracts. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. In total, this alternative would generate approximately 550 MW of electricity.

Description

As shown in Figure E-5, the conceptual site plan for Alternative 3 would include portions of T29S, R18E Sections 15, 16, 19, 20, 21, 22, 26, 27, 28, 29, 32, 33, 34, and 35, as well as portions of Sections 4 and 5 of T30S, R18E. Similar to Option A, this alternative would be located on lands north and south of Highway 58, but all solar ~~panel~~module arrays would be positioned a minimum of one-third mile from its ROW; the solar ~~panel~~module arrays removed from the one-third mile buffer area would be placed in Sections 15 and 16 of T29S, R18E. Table E-2 provides a comparative summary of the estimated number of solar ~~panel~~module arrays that would be placed within each section of the study area under each alternative and proposed Options A and B.

The solar ~~panel~~module reserve areas associated with this alternative would be the same as for proposed Option A, except that no reserve areas would be placed within one-third mile of Highway 58 within Sections 27, 28, 29, 32, 33, 34, or 35 of T29S, R 18E or Section 4 of T30S, R18E.

As with proposed Options A and B, the M&M Building, ~~and~~ project substation, and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carrisa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc., would be similar to Proposed Project Option A, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.



Objectives

Alternative 3 Increased Setbacks (No WA Lands) would meet most of the Proposed Project's principal objectives, as outlined below.

- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **Meets objective** (same as Proposed Project).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project).
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (minimizes aesthetics impacts to a greater degree than the Proposed Project [proposed Option A or B] and eliminates impacts associated with Williamson Act contract conflicts for proposed Option B).
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

This alternative is considered feasible, as it represents only a change to the Proposed Project's solar ~~panel~~module array configuration and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Impact Analysis by Discipline

Because the site area and size (e.g., acreage) of this alternative would not differ substantially from the Proposed Project, the duration and activities associated with its construction would be anticipated to be nearly identical to proposed Options A and B. Similarly, because there would be no change in its electrical generating output, this alternative's operation and maintenance would be expected to be practically the same as for the Proposed Project. Consequently, at both regional and localized scales, the impacts associated with Alternative 3 would be comparable to the Proposed Project for the following subject areas:

- | | |
|--|--|
| ▪ Air Quality | ▪ Land Use and Recreation |
| ▪ Climate Change/Greenhouse Gas | ▪ Noise |
| ▪ Biological Resources | ▪ Population and Housing |
| ▪ Cultural and Paleontological Resources | ▪ Public Services, Utilities and Service Systems |
| ▪ Geology, Mineral Resources and Soils | ▪ Transportation and Circulation |
| ▪ Hazards and Hazardous Materials | ▪ Water Resources |

Aesthetics

In comparison to proposed Option A, Alternative 3 would remove all solar ~~panel~~module arrays within one-third mile of Highway 58 and place them in Sections 15 and 16 of T29S, R18E. In comparison to Options A and B, unmitigated, Alternative 3 would increase the Highway 58 setbacks by an estimated 985 to 1,691 feet. With application of Mitigation Measures AE-2.1 (for Option A) and AE-2.6 (for Option B) applied to the Proposed Project (e.g., require a minimum project setback of 400 feet from Highway 58/public roads), implementation of Alternative 3 would still increase Highway 58 setbacks by an

additional 1,360 feet. In comparison to both Options A and B, the setbacks provided by this alternative would substantially reduce short-term impacts associated with the visibility of construction activities, equipment, and night lighting (Impact AE-1) and permanent impacts related to structure contrast, the industrial character of the project, view blockage, skylining and glare from major public viewpoints and by local residences (Impact AE-2). Additionally, in comparison to proposed Option B, this alternative would not surround three sides of the rural residential home located in Section 18 of T29S, R18E and the existing aesthetic setting of Sections 7, 8, 18, and 19 of T29S, R18E would remain the same, thereby alleviating the magnitude of some temporary and permanent impacts to those rural residences located near the intersection of Bitterwater Road and Cattle Drive.

Agriculture

Similar to proposed Option A, under Alternative 3 no project-related elements would be placed in Sections 7, 18, 17, and 18 of T29S, R18. As such, in contrast to proposed Option B, this alternative would not result in the permanent conversion of an estimated 1,212 acres of Williamson Act lands; no impact would occur. However, under this alternative, temporary interferences with existing agricultural uses south of Highway 58 would occur, as would the permanent conversion of agricultural lands (Impacts AG-1 and AG-2).

Alternative Conclusion

Alternative 3 Increased Setbacks (No WA Lands) would reduce aesthetic impacts associated with proposed Options A and B due to the one-third mile buffer area along both sides of Highway 58. Similar to proposed Option A, this alternative would also reduce impacts related to aesthetics in and north of Sections 7, 8, 18, and 19 of T29S, R18E. It is noted, though, that the benefits of this alternative's setback would be slightly less than that associated with the one-half mile buffer that would occur under Alternatives 1 and 2. This alternative would, however, eliminate Option B's impacts related to conflicts with Williamson Act contracts.

Due to this alternative's setback, overall noise-related impacts outside of its one-third mile buffer would remain the same as those identified for the Proposed Project (Impacts NS-1 and NS-4); but impacts to rural residential homes and the Carrisa Plains Elementary within the one-third mile buffer area would be reduced.

Due to this alternative's use of Sections 15 and 16 of T29S, R18E, impacts related to air quality (Impacts AQ-1 and AQ-2) and biology (BR-1) would be the same in these sections as outlined in the conclusion for Alternative 1. These impacts can, however, be mitigated to a level of less than significant (Class II) with full implementation of the mitigation measures provided in Sections C.4 (Air Quality) and C.6 (Biological Resources). It is additionally noted that Alternative 3 Increased Setbacks (No WA Lands) would not avoid potential conflicts with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E. However, under this alternative the rural residential home located in Section 18 of T29S, R18E would not be surrounded by solar ~~panel~~module arrays on three sides.

E.3.4 Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)

Alternative 3B.1 is a refined variant of Alternatives 3B and 3A, as proposed by the Applicant following its review of the alternatives evaluated in the Draft EIR and discussions with resource agencies. As originally proposed, key physical features of Alternative 3A included use of the Proposed Project study area, generation of 550 MW of renewable energy, 550 feet setbacks from Highway 58, 1,760 feet (0.33 mile) setbacks from the Carrisa Plains Elementary School, 50 feet setbacks from wetland (without fairy shrimp [*Branchinecta lynchi* {Option A only}] and [*Branchinecta longiantenna* {Options A and B}]) habitat, 250

feet setbacks from fairy shrimp habitat, 300 and 200 feet setbacks, respectively, from the residential property lines located in Sections 21 and 22 of T29S, R18E, and the avoidance of placing any solar module arrays in Sections 15, 16, 17, 18, 22 or 26 of T29S, R18E or the eastern or southern half of Section 4 or western and southern halves of Section 5 of T30S, R18E. Under Alternative 3A only the western one-third of Section 35 of T29S, R18E was proposed, although nearly the entire section was identified as a "provisional array location" in the event that regulatory approvals for project-related facilities located within federal and State jurisdictional waters could not be acquired. In total, the fenced project area under Alternative 3A was, 3,440 acres of which 1,120 acres affected native annual grassland habitat. Alternative 3A would not encroach onto Williamson Act lands.

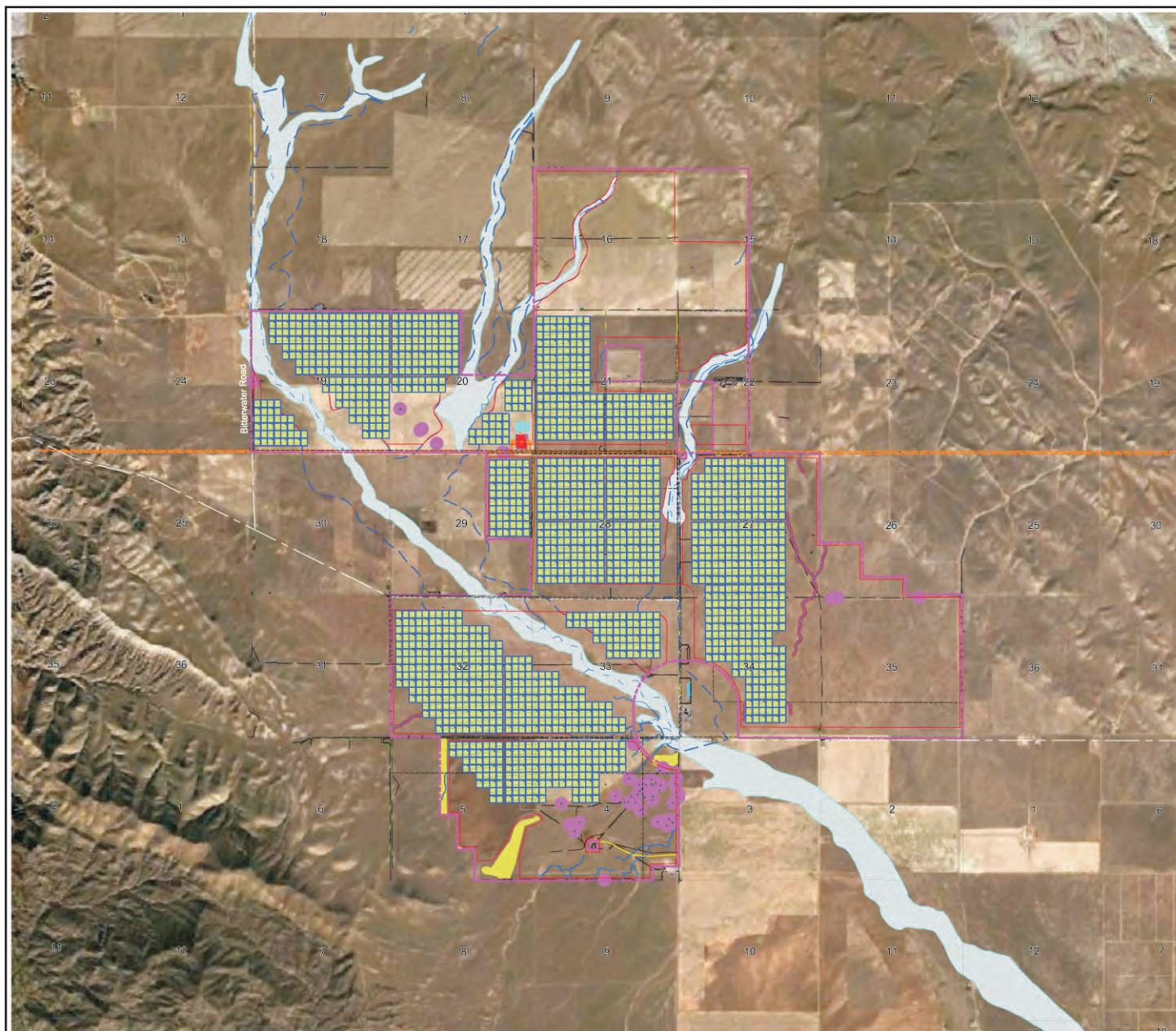
Alternative 3B, as submitted to the County on February 1, 2011, consolidated the Proposed Project's "footprint" by an estimated 14 (Option B) to 17 (Option A) percent while maintaining a 550 MW generating capacity. Under this alternative the facility's fenceline would encompass an estimated 3,500 acres and entirely avoid Sections 15, 16, 17, 18, 22, 26, and 35 of T29S, R18E, as well as the eastern and southern portions on Section 4 and the western and southern portions of Section 5 of T30S, R18E. Based on additional discussions with the County and resource agencies, the Applicant then refined Alternative 3B to setback some of the solar module arrays located in Section 5 of T30S, R18E to avoid native grassland habitat in this section, which may facilitate wildlife movement; this setback caused some additional solar module arrays to be located in Sections 19 and 34 of T29S, R18E. This refinement, known as "Alternative 3B.1", is analyzed below.

Description of Alternative 3B.1

Alternative 3B.1, as finalized and submitted to the County on February 16, 2011, would reduce and consolidate the Proposed Project's "footprint" by an estimated 13 (Option B) to 15 (Option A) percent of the Proposed Project while maintaining a 550 MW generating capacity. Under this alternative the facility's fenceline would encompass an estimated 3,500 acres and entirely avoid Sections 15, 16, 17, 18, 22, 26, and 35 of T29S, R18E, as well as the eastern and southern portions on Section 4 and the western and southern portions of Section 5 of T30S, R18E. As shown in Figure E-6, this alternative would include portions of Sections 19, 20, 21, 27, 28, 29, 32, 33, and 34 of T29S, R18E, and Sections 4 and 5 of T30S, R18E. All of the setbacks described in the paragraph above for originally identified Alternative 3A would be maintained under Alternative 3B.1 Reduced Acreage (No WA Lands/Biology). A comparative summary of the estimated number of solar module arrays associated with each on-site alternative is provided in Table E 2.

Alternative 3B.1 Reduced Acreage (No WA Lands/Biology) would avoid all lands associated with Williamson Act contracts, and reduce the use of lands associated with native annual grassland habitat and wildlife movement corridors. For this alternative it is assumed that the M&M Building and project substation and proposed PG&E switching station would be located in Section 20 of T29S, R18E. Additionally, it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing design, etc., would be similar to Proposed Project Option A. As indicated by the above reference to the PG&E switching station and project substation, this alternative would require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation.

Topaz Solar Farm Project E. Alternatives



Topaz Solar Farm, LLC
San Luis Obispo County, CA

Project Owner-Operator:
Topaz Solar Farm

Project Design-Builder:
First Solar

Project Site Description:
Latitude 35°24'20.19"N
Longitude 120°47'81"W
Elevation 2,045 ft.

Project Climatic Conditions:
Santa Margarita, CA
Record High Temp 110° F
Record Low Temp 3° F

Constraint Description	Proposed Setback (feet)
Property Line	100
Highway 58	500
Carrisa Plains Elementary School	1760
Jurisdictional Drainages	0
Wetlands (without Fairy Shrimp)	50
Fairy Shrimp Habitat	250
Adjacent Residential Property Line - SW 1/4 of NE 1/4 of Section 21	300
Adjacent Residential Property Line - NW 1/4 of SW 1/4 of Section 22	200

Legend:

- Study Area Boundary
- State Highway 58
- Existing Transmission Line
- Calculated Engineering Flood Plain
- Jurisdictional Drainage
- Existing 100 yr FEMA Flood Plain
- Jurisdictional Wetland
- Fairy Shrimp 250ft Buffer
- Rare Plant Polygons



Source: First Solar, Inc., February 2011.

Figure E-6
Alternative 3B.1 Reduced Acreage
(No WA Lands/Biology)

Objectives

Alternative 3B.1 would meet most of the Project's primary objectives, as addressed below.

- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **meets objective** (same as Proposed Project).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project).
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (reduces aesthetic, agricultural and biological resources impacts to a greater degree than the Proposed Project [Options A and B] and avoids the Proposed Project's cumulatively significant and unavoidable impacts to San Joaquin kit fox movement corridors).
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

This alternative is considered feasible as it represents only a consolidation and reconfiguration of the Proposed Project's solar module arrays and no change to its technology or interconnection to PG&E's high voltage transmission grid.

Impact Analysis by Discipline

Because the location, equipment and facilities required for implementation of this alternative would not differ substantially from the Proposed Project, the duration and activities associated with its construction would be nearly identical to Options A and B. Similarly, because there would be no change in its electrical generating output, this alternative's operation and maintenance would be expected to be essentially the same as the Proposed Project. As such, at both regional and local scales, the impacts of Alternative 3B.1 would be similar to the Proposed Project for the following subject areas:

- | | |
|---|--|
| ▪ <u>Air Quality</u> | ▪ <u>Land Use and Recreation</u> |
| ▪ <u>Climate Change/Greenhouse Gas</u> | ▪ <u>Noise</u> |
| ▪ <u>Cultural and Paleontological Resources</u> | ▪ <u>Population and Housing</u> |
| ▪ <u>Geology, Mineral Resources and Soils</u> | ▪ <u>Public Services, Utilities, and Service Systems</u> |
| ▪ <u>Hazards and Hazardous Materials</u> | ▪ <u>Traffic and Circulation</u> |

It is noted, however, that due to the decreased size of this alternative (3,500 acres as opposed to 4,000 or 4,100 acres) there would be a corresponding reduction in earth-disturbing activities, which would, in turn, reduce the overall breadth of the impacts associated with some of the above-referenced subject areas.

Aesthetics

In comparison to Options A and B, Alternative 3B.1 would setback all project-related facilities 500 feet from Highway 58 and 1,760 feet (0.3 mile) from the Carrisa Plains Elementary School. Additionally, in comparison to both Options A and B this alternative would be further setback and only partially surround the occupied residences in Section 22 of T29S, R18E, thereby reducing Aesthetic impacts to these homes. In comparison to Option A, Alternative 3B.1 would also be further setback from the

occupied residences located in Section 4 of T30S, R18E; similarly, in comparison to Option B, this alternative would only flank the south side of the occupied residence in Section 18 of T29S, R18E and two sides (east and west) of the occupied residence in Section 21 of T29S, R18E. Due to these increased setbacks, this alternative would reduce the Proposed Project's Aesthetic impacts to local residences and the Carrisa Plains Elementary School. However, under this alternative the Aesthetic impact reductions along major public viewpoints associated with Highway 58 would be less than those associated with Alternatives 1, 2, 3, 4 and 5 because these alternatives would setback the project from Highway 58 by either 2,640 feet (0.5 mile) (Alternatives 1 and 2) or 1,760 feet (0.3 mile) (Alternatives 3, 4 and 5), which, in comparison to Alternative 3B.1, would represent an increased setback of 2,140 feet or 1,260 feet.

Agriculture

Under Alternative 3B.1 no Williamson Act lands would be affected. As such, in comparison to Option B no significant and unavoidable impacts related to Impact AG-3 (Operation would conflict with Williamson Act lands) would occur, similar to proposed Option A. Additionally, due to Alternative 3B.1's compaction and smaller "footprint" size (3,500 acres in comparison to 4,100 acres [Option A] or 4,000 acres [Option B]), this alternative would reduce both construction-related and operational impacts to active agricultural activities and uses. Similar to Option B, this alternative would impact Farmlands of Statewide Importance located in Section 19 of T29S, R18E, but, unlike Option B it would not affect Farmlands of Statewide Importance located in Section 8 of T29S, R18E. As such, in comparison to the Proposed Project Alternative 3B.1 would eliminate impacts to Williamson Act lands and reduce the magnitude of temporary and permanent impacts to existing agricultural uses and practices.

Biological Resources

The biological resources that would be affected by Alternative 3B.1 would include all the same species and types of impacts defined for the Proposed Project, and all of the same mitigation measures as those defined in Section C.6, Biological Resources, are recommended for Alternative 3B.1. Under Alternative 3B.1, 833 acres of annual grassland habitat would be permanently impacted by project implementation. Alternative 3B.1 would, therefore, result in a net reduction of impacts to this habitat by 888 acres (52 percent reduction) in comparison to Option A (1,721 acres) and 300 acres (26 percent reduction) in comparison to Option B (1,133 acres). Additionally, in comparison to Option A, this alternative would provide greater setbacks to fairy shrimp habitat and vernal pools in Sections 20 and 35 of T29S, R18E and Section 4 of T30S, R18E, and in comparison to Option B, greater setbacks for these resources in Section 20 of T29S, R18E. Alternative 3B.1 would avoid all permanent impacts to native habitat and wildlife movement corridors in Sections 15, 16, 22, 26 and 35, ~~and the eastern-most portions of Sections 27 and 34 of T29S, R18E, the southwestern corner of Section 32, the western and southern-most portions of Section 5 and the eastern and southern-most portions of Section 4.~~ These changes would reduce cumulative impacts to San Joaquin kit fox movement corridors (Impact BR-35 [The Proposed Project would contribute to a cumulatively considerable impact to wildlife connectivity or corridors when combined with impacts from past, present, and reasonable future projects]) to a level of less than significant with mitigation incorporated (Class II). Under either Option A or B, or Alternatives 1, 2, 3, 4, or 5, this cumulative impact to San Joaquin kit fox would be significant and unavoidable (Class I).

The County and the EIR preparers also determined that the Proposed Project, when combined with other proposed solar projects in the area (discussed in Section C.6.4 of the Final EIR), would result in the loss or modification of thousands of acres of vegetation known to support special status plants and wildlife including San Joaquin kit fox, American badger, burrowing owl, and golden eagle; it is unclear to what extent these and other wildlife would utilize the project site during and after construction. However, the reduction in permanent impacts to annual grassland habitat associated with Alternative

3B.1 would reduce cumulative impacts to special-status species (Impact BR-34: The Proposed Project would contribute to a cumulatively considerable impact to special status species when combined with impacts from past, present, and reasonable future projects) to a level of less than significant with mitigation incorporated (Class II). Under either Option A or B, or Alternatives 1, 2, 3, 4, or 5, this cumulative impact to special-status species would be significant and unavoidable (Class I).

Water Resources

Due to the compacted "footprint" of Alternative 3B.1, some solar module arrays would be placed in jurisdictional waters and along the edges of 100-year floodplains. To minimize impacts to water resources this alternative has been designed to place the base of all solar module arrays a minimum of 12 inches above the 100-year flood elevation level of affected drainages, and the Applicant has committed to an Applicant Proposed Measure (APM) to install subsurface scour arrestors at appropriate drainage road crossing locations during construction to minimize scour potential. Under this alternative it would also be necessary to place some underground medium-voltage feeder lines and solar module array support posts within jurisdictional waters and along the edges of some 100-year floodplains. It is estimated that this alternative would, therefore, result in an estimated 750 cubic yards of fill within jurisdictional waters. The Applicant has committed to securing the necessary regulatory approvals for placement of these project features within jurisdictional waters. Although these impacts would not occur under the Proposed Project, with full implementation of APMs WQ-1 (The Applicant will restore portions of the drainages with the objective of improving existing water quality and habitat functions), WQ-2 (Erosion control measures will be implemented during project construction activities to prevent the flow of sediment downstream), Mitigation Measure WR 4-1 (Minimize disturbance within stream channels), and the stipulations prescribed by State and federal regulatory approvals, impacts related to surface water resources, including hydrologic characteristics, flow velocity and depth, and erosion and sedimentation would be anticipated to be less than significant (Class II).

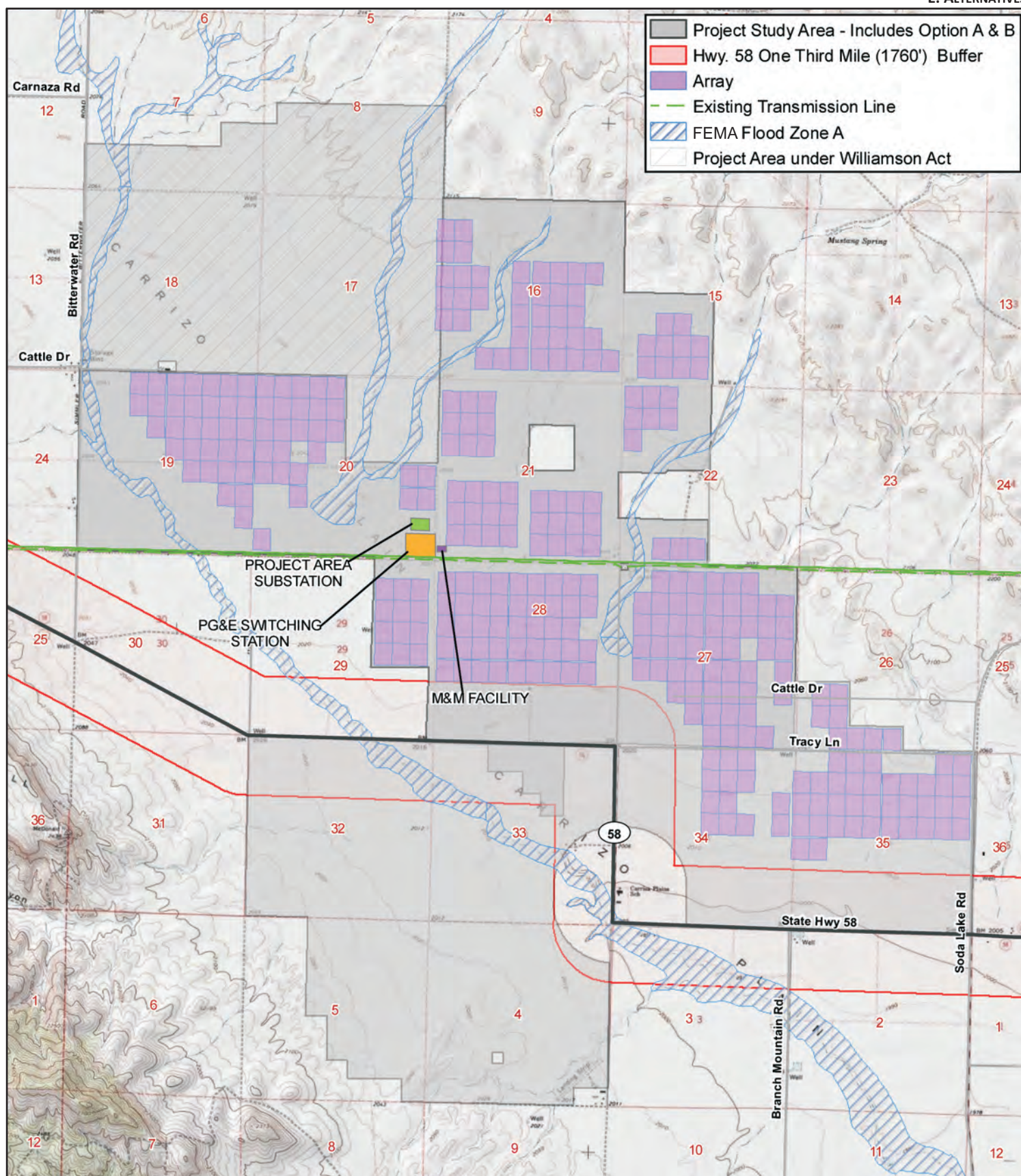
Alternative Conclusions

Alternative 3B.1 would substantially decrease all earth-disturbing activities associated with the Proposed Project by decreasing its overall "footprint" by approximately 14 to 17 percent (in comparison to Options B and A, respectively). The reduced acreage required for this alternative would avoid all impacts to Williamson Act lands. In comparison to the Proposed Project, it would additionally reduce impacts to aesthetics and biological resources, and eliminate a cumulatively significant and unavoidable (Class I) impact to San Joaquin kit fox movement corridors. This alternative would result in greater impacts to surface water resources and jurisdictional waters in comparison to the Proposed Project, however, these impacts would be expected to be mitigable to a level of less than significant (Class II).

It is also noted that this alternative would avoid potential conflicts with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E. Additionally, Alternative 3B.1 would avoid the use of Sections 15 and 16 of T29S, R18E, thereby reducing the additional grading that would be required in this area due to its topography.

E.3.54 Alternative 4 Reduced MW (No WA Lands)

Alternative 4 would reduce the Proposed Project's generating capacity to 400 MW of electricity by decreasing the number, acreage and configuration of the solar ~~panel~~ module arrays. This alternative would place all solar ~~panel~~ module arrays north of Highway 58 and position them a minimum of one-third mile from its ROW. This alternative would also maintain the Proposed Project's setbacks from



designated flood zones and jurisdictional waters. Due to its decreased generating capacity this alternative would not require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation. This alternative was identified to reduce the overall footprint of the project while also avoiding Williamson Act Lands and reducing visual impacts, and impacts to areas south of Highway 58.

Description

As shown in Figure E-76, Alternative 4 Reduced MW (No WA Lands) would include portions of Sections 15, 16, 19, 20, 21, 22, 26, 27, 28, 29, 34 and 35 of T29S, R18E. All project-related facilities would be located a minimum of one-third mile north of Highway 58, and Sections 7, 8, 17 and 18 of T29S, R18E would be avoided. A comparative summary of the solar ~~panel~~module arrays associated with each alternative and proposed Options A and B is provided in Table E-2.

The solar ~~panel~~module reserve areas associated with this alternative would be the same as for proposed Option A, except that no reserve areas would be placed within one-third mile of Highway 58 within Sections 27, 28, 29, 32, 33, 34 or 35 of T29S, R 18E or anywhere south of Highway 58.

As with proposed Options A and B, the M&M Building, ~~and~~ project substation, and proposed PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc., would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

Objectives

Alternative 4 would meet most of the Project Project's primary objectives, as addressed below.

- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **Partially meets objective** (Alternative 4 would result in a 400 MW solar energy facility, which would contribute to State and federal renewable energy goals).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project and would not require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation).
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (reduces several impacts to a greater degree than the Proposed Project [proposed Option A or B] and eliminates impacts associated with Williamson Act contract conflicts for proposed Option B).
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

This alternative is considered feasible as it would not change the Proposed Project's technology or interconnection to PG&E's high voltage transmission grid and would only change the solar panelmodule array configuration, spatial breadth and maximum generating capacity of either proposed Option A or B.

Impact Analysis by Discipline

Alternative 4 Reduced MW (No WA Lands) would place an estimated 318 solar panelmodule arrays north of, and one-third mile away from, Highway 58. Alternatively, the Proposed Project would include the placement of approximately 437 solar panelmodule arrays equaling an estimated 3,059 acre (assuming seven acres per array). The removal of 119 solar panelmodule arrays under this alternative would result in an approximate footprint of 2,226 acres. Under the Proposed Project Option A, the entire project site (e.g. fenced area) would be approximately 4,100 acres and under proposed Option B it would be an estimated 4,000 acres. As such, the entire site area for the Proposed Project is 23 to 25 percent greater than the footprint of the solar panelmodule arrays. Using these same percentages, Alternative 4 would be estimated to have a total site area of approximately 2,700 acres. Generally, this alternative would result in approximately a 30 percent% reduction in land area compared to the Proposed Project (for either option). This reduction estimate coincides with the 27 percent decrease in generating capacity resulting from the one-third mile setbacks from Highway 58.

Although not necessarily a linear, or proportionate, relationship for all subject areas, Alternative 4's decreased site acreage and generating capacity would be expected to reduce the duration of construction and the intensity and/or breadth of operation and maintenance, thereby causing a reduction in both adverse and beneficial the impacts associated with:

- Air Quality
- Climate Change/Greenhouse Gas
- Hazards and Hazardous Materials
- Population and Housing
- Public Services, Utilities and Service Systems
- Water Resources

Under Alternative 4 impacts related to cultural and paleontological resources and geology, mineral resources and soils would be expected to be the same as for the Proposed Project because earth disturbing activities would still be required and existing geologic and soils hazards would not change; as such, the same types of mitigation measures that are outlined in Sections C.7 (Cultural and Paleontological Resources) and C.8 (Geology, Mineral Resources and Soils) would still be necessary. As with the Proposed Project, all impacts associated with these resources can be mitigated to a level of less than significant (Class II).

Although this alternative would reduce the total acreage required for the project and thus proportionately reduce some site-specific impacts to biological resources, this alternative would, in combination with other past, present and reasonably foreseeable projects, contribute to significant and unavoidable cumulative impacts (Class I) to special status species and San Joaquin kit fox wildlife connectivity corridors. Alternative 4 would not reduce these cumulative impacts; it is noted, however, that similar to the Options A and B, all project-specific impacts related to this alternative can be mitigated to a level of less than significant (Class II).

The decreased size of the Alternative 4 would be expected to decrease the total gross number of trucks needed for delivery of facility-specific equipment, materials and aggregate. Implementation of this alternative would also be expected to shorten the duration of project construction. However, in comparison the Proposed Project, this alternative would not be anticipated to reduce the workforce hired for construction, nor would the average daily vehicles trips generated by construction be expected to decline; the daily vehicle trips generated would only occur for a shorter period of time. As such,

construction of Alternative 4 would, on a daily basis, result in the same impacts as the Proposed Project and increase traffic along roads that already have an unacceptable Level of Service (LOS). Per Caltrans' criteria, the project's contribution to the volume of vehicles along these roads would result in direct, indirect and cumulative impacts that are significant and unavoidable (Class I) and the shortened duration of this alternative's construction phase would not reduce this impact. Similar to the Proposed Project, operation and maintenance of this alternative would not result in substantial congestion or delays to existing local or area-wide circulation systems.

For the remaining subject areas addressed in Section C (Environmental Setting, Analysis, and Mitigation Measures), impacts associated with Alternative 4 would be reduced, although significant and unavoidable impacts would still occur, as addressed below.

Aesthetics

Alternative 4 Reduced MW (No WA Lands) would remove all solar ~~panel~~module arrays within one-third mile of Highway 58, thereby reducing public and rural residential viewing impacts along this corridor. Additionally, no solar ~~panel~~module arrays would be placed south of Highway 58, thereby eliminating direct impacts associated with this portion of the study area. The acreage and bulk of the facility would also be reduced, including reductions in the number of above-ground overhead electric distribution poles that would be needed, although installation of two new double-circuit lattice steel transmission towers and four steel poles as an interconnection to PG&E's Midway-Morro Bay 230 kV transmission line would still be required. It is noted, however, that this alternative would not require reconductoring of PG&E's transmission line between the proposed PG&E switching station and the Midway Substation, thereby reducing temporary and permanent aesthetic impacts associated with this action as well. In comparison to proposed Options A and B, the setbacks and reduced project size provided by this alternative would reduce short-term impacts associated with the visibility of construction activities, equipment, and night lighting (Impact AE-1) and permanent impacts related to structure contrast, the industrial character of the project, view blockage, skylining and glare from major public viewpoints and by local residences (Impact AE-2). Additionally, in comparison to proposed Option B, this alternative would not surround three sides of the rural residential home located in Section 18 of T29S, R18E and the existing aesthetic setting of Sections 7, 8, 18, and 19 of T29S, R18E would remain the same, thereby alleviating the magnitude of some temporary and permanent impacts to those rural residences located near the intersection of Bitterwater Road and Cattle Drive. Although these elements of Alternative 4 would reduce the above-noted impacts in comparison the Proposed Project, it would still introduce an industrial-like facility with long-term structure contrasts, view blockage, skylining and glare to the project area, thereby resulting in a significant and unavoidable adverse impact (Class I).

Agriculture

Similar to proposed Option A, under Alternative 4 no project-related elements would be placed in Sections 7, 8, 17, and 18 of T29S, R18. As such, in comparison to proposed Option B, it would eliminate impacts associated with the permanent conversion of an estimated 1,212 acres of Williamson Act lands (Impact AG-3). Additionally, this alternative would eliminate impacts associated with the temporary interference with, and permanent loss of agricultural operations and uses south of Highway 58, thereby reducing the impacts of Option A. However, this alternative would result in temporary interferences with existing agricultural uses north of Highway 58, as well the permanent conversion of agricultural lands in this portion of the study area, thereby resulting in a significant and unavoidable impact (Class I).

Land Use and Recreation

Under Alternative 4 it is assumed that the same construction workforce would be used as for the Proposed Project and that only the duration of construction-related activities would be reduced. As

such, implementation of this alternative would be expected to have the same temporary impacts to the Carrizo Plain National Monument as for the Proposed Project, as outlined in Section C.10 (Land Use and Recreation). These impacts can be mitigated to a level of less than significant (Class II).

South of Highway 58, no project features would occur under Alternative 4, nor would project features be placed within its one-third mile buffer area surrounding Highway 58. As such, direct impacts to rural residential uses in these portions of the study area would be either eliminated or substantially reduced. However, proximity of the project to the rural residences within and adjacent to the study area north of Highway 58 and its buffer area would remain essentially the same as for the Proposed Project, particularly as related to Sections 16, 18, 21, and 22 of T29S, R18E. Because this alternative would still partially surround these homes, temporary and permanent disruptions, displacements or divisions of existing land uses (Impacts L-1 and L-2) would still occur, thereby resulting in significant and unavoidable impacts (Class I).

Noise

Alternative 4 Reduce MW (No WA Lands) would increase the distance between existing rural residences and the Carrisa Plains Elementary School by a minimum of one-third mile along Highway 58, thereby reducing some noise-related impacts during construction (e.g., site-specific construction equipment noise but not construction-related equipment and supply truck transport noise along Highway 58). Additionally, no project-related activity would occur south of Highway 58 in Sections 32 and 33 of T29S, R18E or Sections 4 or 5 of T30S, R18E; therefore, temporary and permanent noise-related impacts to the rural residences located within or adjacent to this portion of the study area would be substantially reduced or eliminated. However, as addressed in the discussion for Land Use and Recreation, above, north of Highway 58 and its one-third mile buffer area this alternative would not increase buffer areas for rural residential uses, most notably in Sections 16, 18, 21, and 22 of T29S, R18E. Consequently, construction, operation and maintenance would still substantially increase ambient noise levels in the project vicinity above existing levels and disturb sensitive receptors (Impacts NS-1 and NS-4). Under this alternative, these impacts would be significant and unavoidable (Class I).

Alternative Conclusion

In comparison to proposed Options A and B, Alternative 4 Reduced MW (No WA Lands) would incrementally reduce project-related impacts associated with six subject areas including air quality, climate change/greenhouse gases, hazards and hazardous materials, population and housing, public services, utilities and service systems and water resources. These reductions would be primarily related to a shortened construction phase and decreased project size. However, there would be no appreciable change to impacts associated with biological resources, cultural and paleontological resources, geology, mineral resources and soils, or transportation and circulation due to local and/or regional attributes of the project area. This alternative could also be achieved without project-specific upgrades to PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation, thereby eliminating the impacts associated with these upgrades (adverse but mitigable to a level of less than significant impacts related to aesthetics, agriculture, air quality, greenhouse gases, biological and cultural resources, geology and soils, hazards and hazardous materials, land use, noise, public services, transportation and circulation, and water resources [please refer to EIR Appendix 4]).

The key subject areas associated with this alternative are related to aesthetics, agriculture, land use and noise. For each of these topical areas, Alternative 4 would eliminate or substantially reduce some subject-specific impacts during either construction or operation and maintenance. The one-third mile setback, decreased project size and avoidance of lands south of Highway 58 of this alternative would all reduce or eliminate impacts related to aesthetics, agriculture, land use and noise. The avoidance of

Sections 7, 8, 17, and 18 in T29S, R18E under this alternative would additionally eliminate impacts related to conflicts with Williamson Act contracts. However, for all of these subject areas, Alternative 4 would still result in direct, indirect or cumulative impacts that are significant and unavoidable (Class I).

Due to this alternative's use of Sections 15 and 16 of T29S, R18E, it is noted that additional grading and earthwork would be required due to this area's topography. As such, in comparison to proposed Option A and Alternative 1, its impacts related to air quality (Impacts AQ-1 and AQ-2) and biological resources (BR-1) would be slightly greater. These impacts can, however, be mitigated to a level of less than significant (Class II) with full implementation of the mitigation measures provided in Sections C.4 (Air Quality) and C.6 (Biological Resources). Additionally, it is noted that this alternative would avoid potential conflicts with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E.

Under Alternative 4, the Proposed Project's full contribution to greenhouse gas emission offsets (as related to conventional [e.g., non-renewable] energy generation) would not be realized because it would generate only 400 MW of renewable energy in comparison to the Proposed Project's generation of 550 MW of renewable energy. Additionally, although this alternative would be expected to employ the same number workers during construction, the duration of employment would be anticipated to occur for a shorter period of time. Therefore, in comparison to the Proposed Project, this alternative's beneficial impacts to local employment and sales tax revenues during construction would be incrementally reduced. Similarly, due to this alternative's reduced acreage (e.g., property size), County revenues related to property taxes could be incrementally reduced. Therefore, these long-term beneficial impacts would be less for Alternative 4 than for the Proposed Project.

E.3.56 Alternative 5 Reduced MW (Biology)

Alternative 5 Reduced MW (Biology) was identified to reduce potential impacts to wildlife corridors and kit fox habitat in Sections 26, 27, 34, and 35 of T29S, R18E. Alternative 5 would decrease the Proposed Project's generating capacity to 400 MW by reducing the number, acreage and configuration of the solar ~~panel~~module arrays. However, as opposed to the Alternative 4, this alternative would remove all of the solar ~~panel~~module arrays located in Sections 26, 27, 34, and 35 of T29S, R18E and replace them in Sections 17, 18 and 19 of T29S, R18E. Alternative 5 would place all solar ~~panel~~module arrays north of Highway 58 and their location would be a minimum of one-third mile from its ROW. This alternative would also maintain the Proposed Project's setbacks from designated flood zones and jurisdictional waters. Due to its decreased generating capacity this alternative would not require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation.

Description

As shown in Figure E-87, Alternative 5 would include portions of Sections 15, 16, 17, 18, 19, 20, 21, 22, 28, and 29 of T29S, R18E. All elements of this alternative would be placed at least one-third mile north of Highway 58. Please refer to Table E-2 for a comparison of how the solar ~~panel~~module arrays would be configured for each of the alternatives. The solar ~~panel~~module array reserve areas associated with this alternative would be the same as for Proposed Project Option B, except that no reserve areas would be located in either Sections 7, 8, 26, 27, 34, and 35, the southwest quarter of Section 19, or anywhere within one-third mile of the Highway 58 ROW.

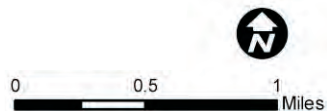
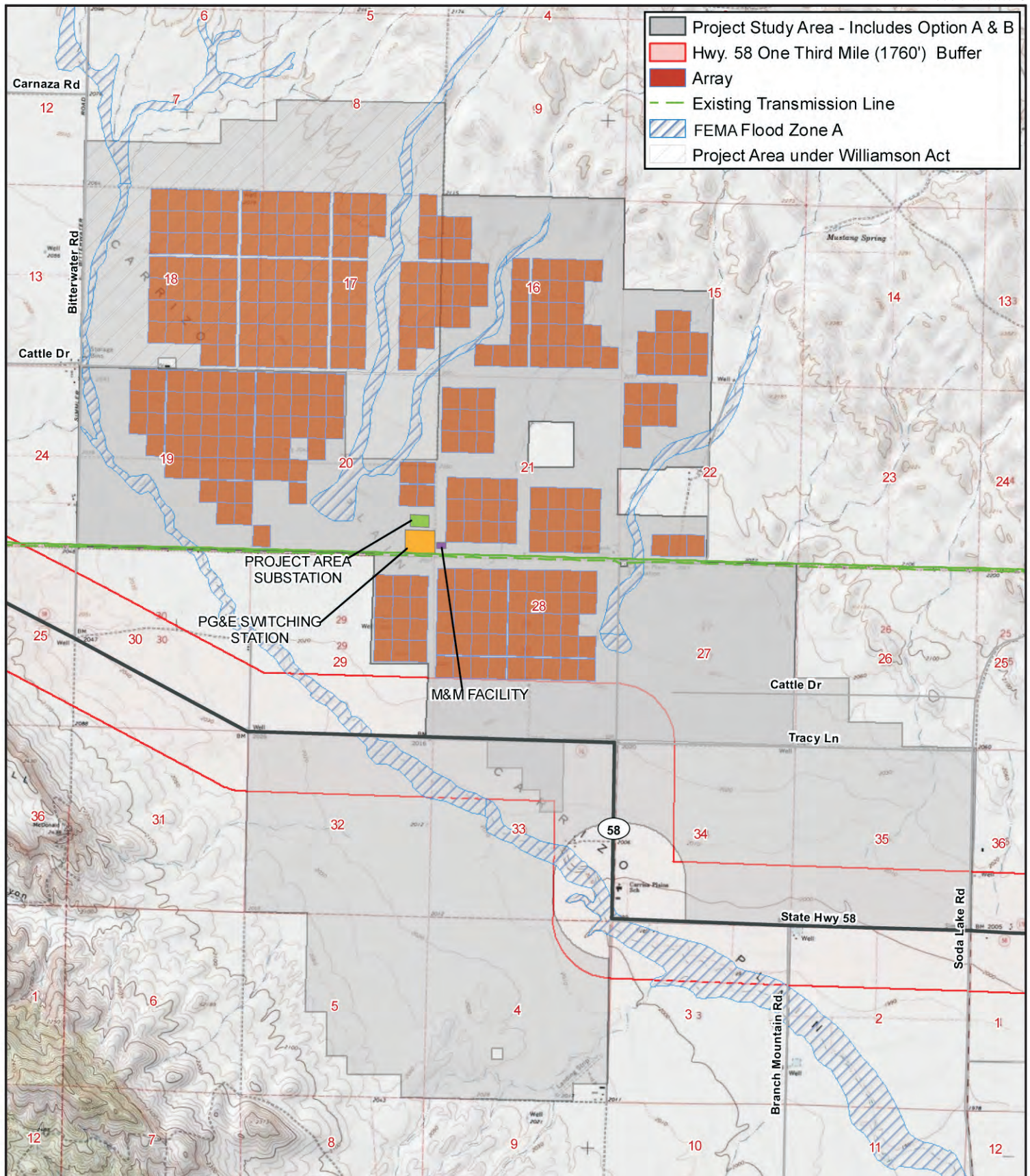


Figure E-8
Alternative 5 Reduced MW (Biology)

As with proposed Options A and B, the M&M Building, ~~and~~ project substation, and PG&E switching station would be located in Section 20 of T29S, R18E. Under this alternative it is assumed that the Solar Energy Learning Center would be located north of the Carissa Plain Elementary School, as has been designed for Proposed Project Option A. All other project features, such as underground medium-voltage feeder lines, above-ground medium-voltage (34.5 kV) collector lines, on-site access roads, a leach field and septic system, perimeter fencing, etc., would be similar to Proposed Project Option B, with their design appropriately scaled and placed to accommodate this alternative's solar ~~panel~~module array site plan.

Objectives

Alternative 5 Reduced MW (Biology) would meet most of the Proposed Project's principal objectives, as outlined below.

- Construct a 550 MW solar energy facility to help meet State and federal renewable energy goals: **Partially meets objective** (Alternative 5 would result in a 400 MW solar energy facility, which would contribute to State and federal renewable energy goals).
- Locate the facility in a high solar resource area: **Meets objective** (same as Proposed Project).
- Locate the facility on a site that has access to utility-grade electrical transmission lines that do not require substantial upgrades to accommodate the energy generated: **Meets objective** (same as Proposed Project and would not require reconductoring of PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation).
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts: **Partially meets objective** (reduces several impacts to a greater degree than the Proposed Project [proposed Option A or B] and eliminates impacts associated with Williamson Act contract conflicts for proposed Option B).
- Support goals stated in the San Luis Obispo County General Plan Energy Element, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. **Meets objective** (same as Proposed Project).

Feasibility

Alternative 5 is considered feasible because it would not change the Proposed Project's technology or interconnection to PG&E's high voltage transmission grid and would only alter the project's solar ~~panel~~module array configuration, spatial extent and maximum generating capacity.

Impact Analysis by Discipline

Alternative 5 would place 318 solar ~~panel~~module arrays north of, and one-third mile away from, Highway 58. This alternative would additionally avoid the disturbance of any lands associated with Sections 26, 27, 34 and 35 of T29S, R18E (2,560 acres total). Unlike proposed Option B, this alternative would not require the placement of solar ~~panel~~module arrays within the southern portions of Sections 7 and 8 of T29S, R18E, which fall under Williamson Act contracts.

For the same reasons as addressed in the impact analysis by discipline for Section E.3.54 (Alternative 4 Reduced MW [No WA Lands]), this alternative would reduce the intensity of both the adverse and beneficial impacts associated with air quality, climate change/greenhouse gas, hazards and hazardous materials, population and housing, public services, utilities and service systems and water resources. ~~Similarly, t~~ Similarly, this alternative's impacts associated with cultural and paleontological resources and geology, mineral resources and soils would also be expected to be the same as for Alternative 4 and

the Proposed Project for the same reasons as provided in impact discussion for Section E.3.45 (Alternative 4 Reduced MW [No WA Lands]). These impacts would be adverse but mitigable to a level of less than significant (Class II).

Although the decreased size of Alternative 5 would be expected to decrease the length of construction, as well as the total number of construction-related delivery trucks needed, it would not, in comparison to the Proposed Project, be expected to reduce either the total workforce needed for construction or the average daily vehicle trips generated by construction. Therefore, similar to Alternative 4 and the Proposed Project, this alternative would result in the same direct, indirect and cumulative impacts to transportation and circulation; these impacts would be significant and unavoidable (Class I).

Under this alternative, the direct, indirect and cumulative impacts related to aesthetics, land use and recreation and noise would effectively be the same as those identified for Alternative 4, except that at a localized scale, the intensity of impacts within Sections 17, 18 and 19 of T29S, R18E would be greater and the intensity of impacts associated with Sections 26, 27, 34 and 35 would be less. However, as addressed in the impact discussion for Alternative 4 (of Final EIR Section E.3.54), these impacts would remain significant and unavoidable (Class I).

For the remaining topical areas addressed in Section C (Environmental Setting, Analysis and Mitigation Measures), this alternative would reduce impacts associated with biological resources and increase the magnitude of impacts associated with agriculture, as discussed below.

Agriculture

Under Alternative 5 Reduced MW (Biology), an estimated 107 solar ~~panel~~module arrays would be placed in Sections 17 and 18 of T29S, R18E; the lands associated with these two sections fall under Williamson Act contracts. Similar to Option B placement of the solar ~~panel~~module arrays in this area would result in the permanent loss of Williamson Act lands (Impact AG-3), which would be considered an adverse impact that can be mitigated to a level of less than significant (Class II). This impact would not occur under Option A; however, in comparison to Option B, this alternative would reduce the spatial breadth of this impact because it would not require the placement of solar ~~panel~~module arrays in Sections 7 and 8 of T29S, R18E. In total, under Option B an estimated 48 proposed and reserve solar ~~panel~~module arrays could be placed within Sections 7 and 8 of T29S, R18E, equaling approximately 336 acres of land (assuming seven acres per solar ~~panel~~module array). As such, Alternative 5 would slightly reduce Option B's impacts related to conflicts with Williamson Act contracts. This alternative would, however, still result in significant and unavoidable impacts (Class I) related to the permanent conversion of existing agricultural operations (Impact AG-2), although, as opposed to Option A, this impact would not occur south of Highway 58.

Biological Resources

Alternative 5 would preclude any project-related development of either Sections 26, 27, 34 and 35 of T29S, R18E, or lands south of Highway 58. As demonstrated in Figures C.6-1 and C.6-2 (Topaz Solar Farm Habitat Map: Option A and Option B, respectively), this preclusion would ~~substantially~~ reduce the acreage of California annual grasslands disturbed by Option A (by at least ~~1,280~~400 acres) north of Highway 58. In comparison to Option A, this alternative would also avoid all impacts to California annual grassland habitat south of Highway 58. This alternative would avoid as well as the number of the ephemeral wetland depressions and vernal pools potentially disturbed by Option A in Sections 26, 32, 34 and 35 of T29S, R18E, as well as those located in Section 4 of T30S, R18E, although it would disturb the ephemeral wetland depressions associated with Section 15 and 16 of T29S, R18E. The alternative would also avoid the grasslands associated with Section 8 of T29S, R18E, which would be disturbed under Option B. As such, primarily in comparison to Option A this alternative would lessen the severity, or

spatial breadth, of impacts related to temporary and permanent disturbances of California annual grassland habitat (Impact BR-1) and loss of foraging and special-status species habitat (Impacts BR-3 and BR-8). It is noted, however, that under either this alternative or Options A and B, these impacts can be mitigated to a level of less than significant (Class II).

This alternative's ~~avoidance~~ reduction in impacts to of annual grasslands, particularly in comparison to Option A, would ~~appreciably~~ appreciably preserve vegetation known to support special status plants and wildlife (Impact BR-34). Because the majority of the remaining habitat for special status species in the Proposed Project area has been lost or previously disturbed, relatively minor changes within remaining habitat, particularly when considered cumulatively, would still have adverse effects. However, the magnitude of impacts generated by the Proposed Project would be greatly reduced with the preservation of annual grassland habitat. Because of the large scale of the potential cumulative loss of habitat in the project area this alternative, in combination with other past, present and reasonably foreseeable projects, would result in impacts to special status species habitat. These impacts however could be mitigated to a level of less than significant (Class II), unlike those found to be significant and unavoidable (Class I) as described for Options A and B.

Implementation of Alternative 5 would prevent temporary and permanent disturbances to all of the San Joaquin kit fox dens and known habitat located in Sections 26, 27, 34 and 35, as well as those located south of Highway 58, as shown in Figures C.6-3 and C.6-4 (San Joaquin Kit Fox Active Den Territories, Option A and Option B, respectively). In comparison to Option A, the reduction of San Joaquin kit fox impacts associated with this alternative (Impacts BR-4, BR-17, BR-30) would be considered substantial. It is noted however, that adverse direct and indirect impacts to San Joaquin kit fox would still occur under any alternative, although these impacts would be mitigable to a level of less than significant (Class II).

As noted in Section C.6 (Biological Resources), the Proposed Project site, including the boundaries of Alternative 5, is considered a highly permeable wildlife movement corridor for San Joaquin kit fox, pronghorn antelope (*Antilocapra americana*), and tule elk (*Cervus elaphus*) (in the northern portion of the site). Particularly as related to Option A, this alternative's avoidance of Sections 26, 27, 34 and 35 and lands south of Highway 58 would be considered to substantially reduce impacts related to San Joaquin kit fox movement corridors (Impact BR-35) at a project-specific level; however, at a regional scale, this alternative's incremental contribution to cumulative impacts would still be considered significant and unavoidable (Class I). Due to this alternative's use of Sections 17 and 18, and overall regional setting, direct, indirect and cumulative impacts related to pronghorn antelope and tule elk would still occur; however, for the same reasons as addressed in Section C.6 (Biological Resources), these impacts would be less than significant for tule elk (Class III) and adverse but mitigable to a level of less than significant (Class II) for pronghorn antelope.

Alternative Conclusion

For all but two subject areas, impacts associated with Alternative 5 would essentially be identical to those of Alternative 4 Reduced MW (No WA Lands) (Section E.3.45). Under Alternative 5, impacts would occur further north of Highway 58 and closer to Bitterwater Road due to the use of Sections 17, 18 and 19 of T29S, R18E and the avoidance of Sections 26, 27, 34 and 35 of T29S, R18E and lands south of Highway 58.

The key differentiators of this alternative is that it would: (1) increase the breadth of conflicts with Williamson Act contracts (Impact AG-3) in comparison to Option A, but decrease the breadth of this impact in comparison to Option B; and (2) substantially reduce direct and indirect impacts to grassland habitat and San Joaquin kit fox and its movement corridors (Impacts BR-1, BR-3, BR-4, BR-8, BR-17 and

BR-30) in comparison to Option A. This alternative would, however, still result in significant and unavoidable impacts (Class I) due to the permanent conversion of agricultural operations (Impact AG-2) and cumulative impacts related to San Joaquin kit fox movement corridors (Impacts BR-34 and BR-35).

Due to this alternative's use of Sections 15 and 16 of T29S, R18E, it is noted that additional grading and earthwork would be required due to this area's topography. As such, in comparison to proposed Option A and Option B, Alternative 5 could have greater impacts related to air quality (Impacts AQ-1 and AQ-2). Biological resources (BR-1) would be reduced in comparison to Option A or Option B. These impacts can, however, be mitigated to a level of less than significant (Class II) with full implementation of the mitigation measures provided in Sections C.4 (Air Quality) and C.6 (Biological Resources), except for cumulative biological resource impacts (see above). It is also noted that this alternative would avoid potential conflicts with a currently proposed minor agricultural cluster and vesting tentative tract map to subdivide an existing 1,280 parcel into eight parcels located south of Highway 58 in Section 4 of T30S, R18E. This alternative would additionally avoid all impacts associated with reconductoring PG&E's 230 kV transmission line between the proposed PG&E switching station and the Midway Substation.

As with Alternative 4, the Proposed Project's full contribution to greenhouse gas emission offsets would not be realized under Alternative 5 because it would generate only 400 MW of renewable energy in comparison to 550 MW of renewable energy. Additionally, although Alternative 5 would be expected to employ the same number workers during construction as the Proposed Project, the duration of employment would be anticipated to occur for a shorter period of time. Therefore, Alternative 5's beneficial impacts to local employment and sales tax revenues during construction would be incrementally reduced. Similarly, due to Alternative 5's reduced acreage, County revenues related to property taxes could be incrementally reduced. Therefore, these long-term beneficial impacts would be less for Alternative 5 than for the Proposed Project.

E.3.67 Alternative 6 Westlands CREZ

As summarized in Table E-1, during the Proposed Project's public scoping process it was requested that an alternative site be considered that is located on disturbed and unusable agriculture lands, thereby lessening the potential impacts to the Carrizo Plain.

Description

The Renewable Energy Transmission Initiative (RETI) incorporated a new Competitive Renewable Energy Zone (CREZ), the Westlands CREZ, in its Phase 2A Update Report, dated December 2009. The Westlands CREZ has a potential renewable energy resource of up to 5,000 MW and is located on agriculture lands that are no longer in use (RETI, 2010). This CREZ was identified as being a moderate-high solar area, capable of generating between five to six kilowatt hours per square meter per day (kWh/m²/day); it was incorporated in the RETI analysis because it consists of disturbed agricultural land and is adjacent to an existing transmission (NREL, 2008; RETI, 2010).

The Westlands Water District has a lease contract with Westside Holdings, a private investment group, to use approximately 30,000 acres of fallow agriculture land for a 5,000 MW solar power plant (Sheehan, 2010). The farmland has been retired over the past decade because of a combination of water shortages and salt buildup that makes the soil toxic to crops (Sheehan, 2010). Since the publication of the Draft EIR, Westside Holdings has begun planning for commercial development in the first phase of the Westlands Solar Park (Westlands, 2010). Westlands Solar Park is considering developments of 200 MW or larger (Westlands, 2010). The first phase of the solar park will be pursued through the summer of 2010; it is expected to consist of 9,000 acres leased from farmers and generate 600 to 1,000 MW of electricity (Woody, 2010). On January 3, 2011, Kings County approved a 125 MW PV project within the

boundaries of the Westlands Solar Park (also within the Westlands CREZ), known as the GWF Solar Project (Kings County, 2011).

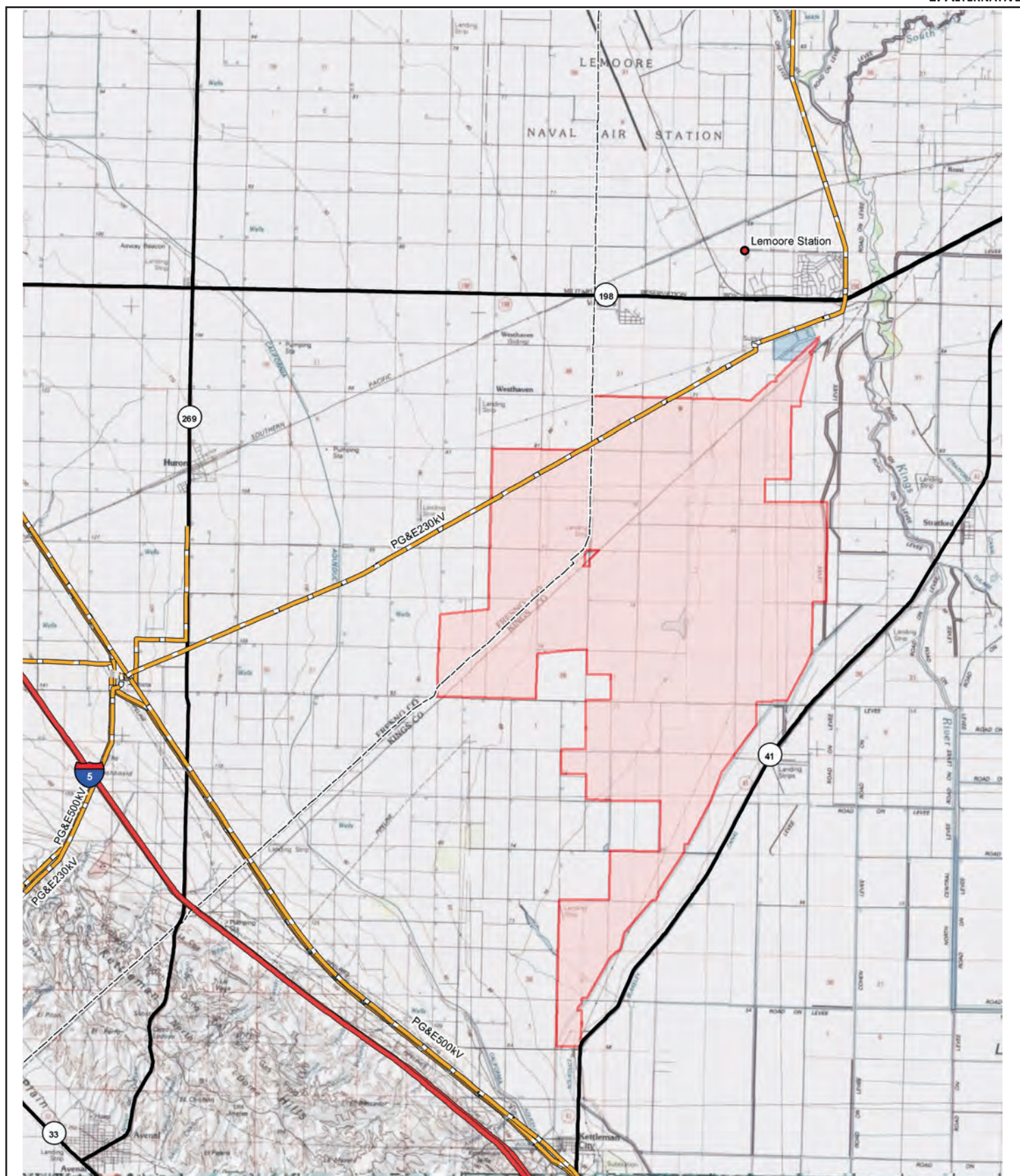
No specific site has been released for the first phase of the solar park, but the Westlands CREZ consists of approximately 30,000 acres of private land within the Westlands Water District lands-service area between Kings County and Fresno County, east of Huron, north of Kettleman City, and southwest of Lemoore (Sheehan, 2010). Approximately 20,000 acres of this area are encumbered by Williamson Act contracts. The total acreage of this area would be much greater than what would be needed for an alternative to the Proposed Project, but details regarding the construction and planning of specific projects within the Westlands solar park project have yet to be released. As such, the Westlands region has been considered generally rather than by a specific project design. The first phase of the Westlands Solar Park is expected to be larger than the Proposed Project. As with any solar generation project, definition of specific transmission line availability would be required, and if transmission line upgrades were needed, they would have to be evaluated under CEQA and/or NEPA. The Westlands CREZ is shown in Figure E-89.

Project Objectives

This alternative would partially meet project objectives, as defined below:

- Construct a 550 MW solar energy facility to be online by the end of 2014~~2~~ in order to help meet State and federal renewable energy goals? **Partially meets objective.** A Westlands project of 550 MW could be constructed, but ~~not this would be unlikely to occur by the end of 2014~~2~~ due to the time required for project siting, design, surveys, and permitting. Because fewer permits from resource agencies are likely to be required, the permit process would likely be substantially faster for this alternative. However, siting, land acquisition, design, and pre-construction compliance are time-consuming processes. Therefore, this alternative partially meets the objective to be online by the end of 2014.~~
- Locate the facility in a high solar resource area? ~~Partially meets objective.~~ **Partially meets objective.** The solar irradiance of this site ~~resource is moderate rather than high, but would be greater than 5~~ would be approximately 5 to 6 kWh/m²/day, ~~the established solar criteria by the National Renewable Energy Lab (NREL, 2008) which is lower than the solar irradiance at the Proposed Project site at (between 6 and 6.5 kWh/m²/day) (NREL, 2011). However, this reduction in solar irradiance would result in an estimated five to 10 percent reduction in efficiency (RETI, 2010)¹; as such, and use of this site would require a corresponding five to 10 percent increase in the project footprint.~~
- Locate the facility on a site that has access to utility grade electrical transmission lines that do not require substantial upgrading to accommodate the additional energy generated? ~~Uncertain~~ **Potentially meets objective.** Recent California Independent System Operator (CAISO) information indicates that the Westlands CREZ Alternative would not require substantial transmission infrastructure upgrade in order to deliver up to 800 MW to the regional grid (CAISO, 2010). Transmission studies would be required to determine what specific transmission upgrades would be required. However, use of this alternative may require construction of a transmission line corridor to access the available capacity from the existing transmission line, which has the potential to have more impacts related to construction than the Proposed Project. ~~whether adequate transmission capacity exists, or whether new or upgraded transmission would be required.~~
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts? **Meets objective.** Although site-specific land surveys would be required for feasibility, the generally level terrain of this area appears to be suitable for project implementation.

¹ Based on information presented in the RETI Project Characteristics and Cost Calculator.



1:168,407

0 1 2 4 Miles



-  Transmission Lines
-  Westlands CREZ Boundary - Boundary revised based on RETI Phase 2B Final Report, May 2010

Figure E-9
Alternative 6
Westlands CREZ

- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy. ~~Does not meet objective~~**Objective not applicable.** Alternative 6 Westlands CREZ would be located outside of the jurisdiction of San Luis Obispo County, therefore, the *Energy Element* would not be applicable.

Feasibility

This alternative appears to be feasible but a final determination would be dependent upon transmission interconnection, site evaluation, project design and permitting. Westlands Solar Park made a request for commercial development partners and interested experienced developers were encouraged to contact Westlands Solar Park prior to August 2010. Westlands requested energy developers with "real energy development experience, large financial backings, and capability for developments of 200 MW or larger." The Applicant could apply to be a development partner with Westlands Solar Park. The Applicant has noted that due to this alternative's lower site elevation, locating the project in the Westlands CREZ area could compromise feasibility due to an estimated five to ten percent solar resource loss. However, because biological constraints to development would be expected to be substantially lower in the Westlands CREZ, this alternative would be unlikely to require substantial habitat compensation as mitigation. Even with a 5 to 10 percent greater footprint to compensate for a loss in module efficiency, this alternative would likely result in a smaller acreage of land acquisition overall when compared to the Proposed Project. Therefore, the County considers this alternative to be potentially feasible.

Impact Analysis by Discipline

~~None of the environmental impacts of the Proposed Project in the Carrizo Plain would occur under The Alternative 6 Westlands CREZ (Westlands CREZ Alternative) would not have any environmental impacts in the Carrizo Plain; however, . However, many impacts similar to those caused by the Proposed Project in the Carrizo Plain for some resources would occur at the Westlands CREZ site because approximately 4,300 to 4,500 acres² would be required for a 550 MW PV solar project. Due to the increased acreage required at the Westlands CREZ site, impacts to some resources at this alternative site could be incrementally greater than at the Proposed Project site. The impacts associated with the construction of the Solar Switching Station, and possibly some aspects of the transmission upgrades, described in Appendix 4 (Analysis of PG&E Reconductoring) would not occur under the Westlands CREZ Alternative; however, similar types of transmission upgrades may be required in the vicinity of the Westlands CREZ. As related to the Proposed Project's significant and adverse unavoidable impacts, the impacts of Alternative 6 Westlands CREZ are discussed below.~~

Aesthetics

The Westlands CREZ region is surrounded by agricultural lands that are actively farmed. The majority of this site would be adjacent to existing agricultural access roads and active agricultural fields. The site would be prominently visible to travelers on Highways 41 and 198, public roads running through Kings County. As with the Proposed Project, building a 550 MW solar project at Alternative 6 Westlands CREZ site would introduce an estimated ~~4,300 to 4,500~~4,000 to 4,100 acre industrial-type facility in an agricultural landscape. However, because the Alternative 6 Westlands CREZ would be surrounded by

² As noted in the discussion of project objectives for this alternative, with a lower solar irradiance there would be an estimated 5 to 10 percent reduction in annual generation. This would mean that the size of the project would need to be 5 to 10 percent larger in order to obtain a comparable amount of annual generation (4,300 to 4,500 acres as opposed to 4,000 to 4,100 acres at the Proposed Project site). This is a worst- case assumption of 10 percent reduction.

heavily farmed areas and would be located in an area that has experienced greater change to its natural environment, the aesthetics impacts at Alternative 6 Westlands CREZ would be reduced when compared with the Proposed Project.

Agriculture

Alternative 6 Westlands CREZ would be located on agriculture lands that have been retired over the past decade due to a combination of water shortages and salt buildup that makes the soil toxic to crops. However, the soil is considered productive agriculture soil and is identified as Prime Farmland, Farmland of Statewide Importance, and Grazing Land by the Department of Conservation (DOC, 2006). ~~Consequently, similar to proposed Option B, this alternative could result in impacts related to the permanent take of Prime Farmland and Farmland of Statewide importance. Approximately two-thirds of the land (20,000 acres) in the Westlands CREZ is enrolled in Williamson Act contracts. Similar to Option A, it would~~ may be possible to design a project in the Westlands CREZ that avoids Williamson Act lands. Alternatively, the Williamson Act contracts would need to be cancelled by the Board(s) of Supervisors in Kings and/or Fresno Counties and a formal determination made that cancellation of the contracts would meet the public interest criteria outlined in the Williamson Act (Government Code Section 51282[a]), or that utility-scale solar projects are a compatible use under the Williamson Act (Government Code Section 51201[e]). This alternative would result in the same long-term impacts to Williamson Act lands as Option B of the Proposed Project if Williamson Act lands were part of the project. Additionally, it is additionally noted that while the land within Alternative 6 Westlands CREZ has been retired due to water shortages, it may be viable for grazing and/or dry land farming. As such, this alternative could potentially create impacts similar to or greater than—the Proposed Project by temporarily or permanently converting agricultural uses to non-agricultural uses.

Biological Resources

No sensitive plants or wildlife species have been recorded in the California Natural Diversity Database (CNDDDB) records for Alternative 6 Westlands CREZ site; however, a number of sensitive plants and wildlife species have been recorded within five miles of it, and have the potential to occur within the identified site boundary.

"A Review of Potential Biotic Constraints to Development of Solar Power Production Facilities at the Westlands Water District Competitive Renewable Energy Zone" was prepared for the Applicant of the California Valley Solar Ranch in April, 2010. This study was a review of the CDFG's CNDDDB for the Alternative 6 Westlands CREZ site, which revealed no records for sensitive species within its CREZ boundaries; additionally the site does not contain either identified critical habitat, or proposed habitat linkages (H. T. Harvey, 2010). The Westlands CREZ Alternative is not located in a recovery area for any special status species.

The CNDDDB records within five miles of Alternative 6 Westlands CREZ include the San Joaquin kit fox (*Vulpes macrotis mutica*), Tipton Kangaroo Rat (*Dipodomys nitratoide nitratoide*), Western snowy plover (*Charadrius alexandrinus nivosus*) and San Joaquin pocket mouse (*perognathus Inornatus*). Additionally, some species, notably the Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), Western spadefoot toad (*Spea hammondi*) and Western pond turtle (*Actinemys marmorata*) could occur on-site because suitable wetland habitat is present within Alternative 6 Westlands CREZ (H. T. Harvey, 2010). However, it is unlikely that a solar project could be located on wetland habitat and, as such, these species could be avoided should they be present. Additionally, Swainson's hawk (*Buteo swainsoni*) and burrowing owl (*Athene cunicularia*) could be located on site as Alternative 6 Westlands CREZ is located within the appropriate breeding and wintering range for these species (H. T. Harvey, 2010). However, this alternative would likely be able to avoid nests or schedule

construction during non-nesting times, mitigating impacts to these species to less than significant (H. T. Harvey, 2010).

It is possible that other special-status species may be present or forage on Alternative 6 Westlands CREZ site. However, if farming has only recently stopped, because this area was intensively farmed for decades, its use could have minimal impacts to high quality or undisturbed habitat. It is expected that the number of special status species directly impacted would be less than the Proposed Project. For this reason, a number of environmental groups, including the Sierra Club, have expressed support for development of solar energy on Alternative 6 Westlands CREZ site (Sheehan, 2010). Additionally, Alternative 6 Westlands CREZ does not occur within known “core” kit fox populations.

Land Use and Recreation

Alternative 6 Westlands CREZ site is located in the Central Valley, an estimated 47 miles southwest of Fresno. An existing PG&E 500 kV transmission line runs parallel to Interstate 5 and adjacent to the south, southwest and west sides of the site. The site is principally made up of agricultural lands punctuated with rural residential homes; one small community that appears to be made up of residential homes and potentially some commercial uses is completely surrounded by the site approximately five miles south of Highway 198 and west of the intersection of Lincoln Avenue and Avenal Cutoff Road (Google Earth, 2010). Consequently, as with the Proposed Project Alternative 6 Westlands CREZ has the potential to temporarily and permanently preclude, disrupt or displace existing land uses and divide established communities in a significant and unavoidable manner.

Noise

There are some rural residential uses surrounding, and interspersed within, Alternative 6 Westlands CREZ site (Google Earth, 2010). Construction of a 550 MW solar electric generating facility within this area would create unwanted noise. As with the Proposed Project, depending on the proximity of the area's existing rural residences to this Alternative's final site plan, significant and unavoidable adverse construction-related noise impacts could occur. Also similar to the Proposed Project, depending on the proximity of these homes to site access and security patrol roads, operation and maintenance activities at night could create significant and unavoidable noise impacts. Consequently, depending on this Alternative's final site plan, noise-related impacts could be either equal to, or less than those of the Proposed Project.

Transportation and Circulation

The two primary State highways that would be used for access to Alternative 6 Westlands CREZ would be Highways 41 and 198. Highway 41, between Interstate 5 and Highway 198, operates at a Level of Service (LOS) B and LOS C (Kings County, 2006). Highway 41, between Nevada Avenue and Jackson Avenue, the intersections nearest to this alternative, is a two-lane highway with an average daily traffic volume of 8,500 vehicles at Nevada Avenue and 9,700 vehicles at Jackson Avenue. Highway 198 also operates at LOS B and C in the vicinity of this alternative (Kings County, 2006). Highway 198 is a two-lane highway at the Fresno County line and becomes a four-lane highway as it continues into Kings County. Interstate 5, the nearest major highway to this alternative, operates at the LOS B at the Highway 41/Fresno County line region (Kings County, 2006). While an in depth traffic study would be required for Alternative 6 Westlands CREZ, the primary access routes operate at a higher LOS than the access roads contemplated for the Proposed Project, and would avoid use of smaller roads within residential areas. Therefore, impacts would be less than for the Proposed Project.

Alternative Conclusions

~~Many~~ ~~The majority~~ of the impacts created by a 550 MW solar PV project at Alternative 6 Westlands CREZ site would be similar to the impacts of the Proposed Project. Alternative 6 Westlands CREZ could reduce impacts associated with the Proposed Project as related to ~~aesthetics, cumulative biological resources and transportation and circulation~~. However, it may potentially create equal or greater adverse impacts related to aesthetics, agriculture, land use and noise. Additionally, adverse impacts related to water resources could potentially occur because the Westlands Water District is currently facing serious water supply and demand challenges; potential adverse impacts associated with selenium loadings in the area's soils and groundwater could also occur (Luoma and Presser, 2000), and would require additional investigation.

E.3.78 Alternative 7 North Carrizo Plain

The RETI Phase 1B Report identified the North Carrizo Plain (e.g., the Cholame Valley) as a potential competitive renewable energy zone. The valley straddles southeast Monterey County and northwest San Luis Obispo County, and is accessed by Cholame Valley Road, which turns off Highway 46 just west of the intersection of Highways 41 and 46.

Description

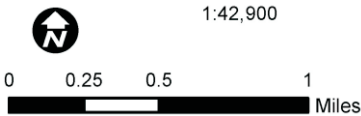
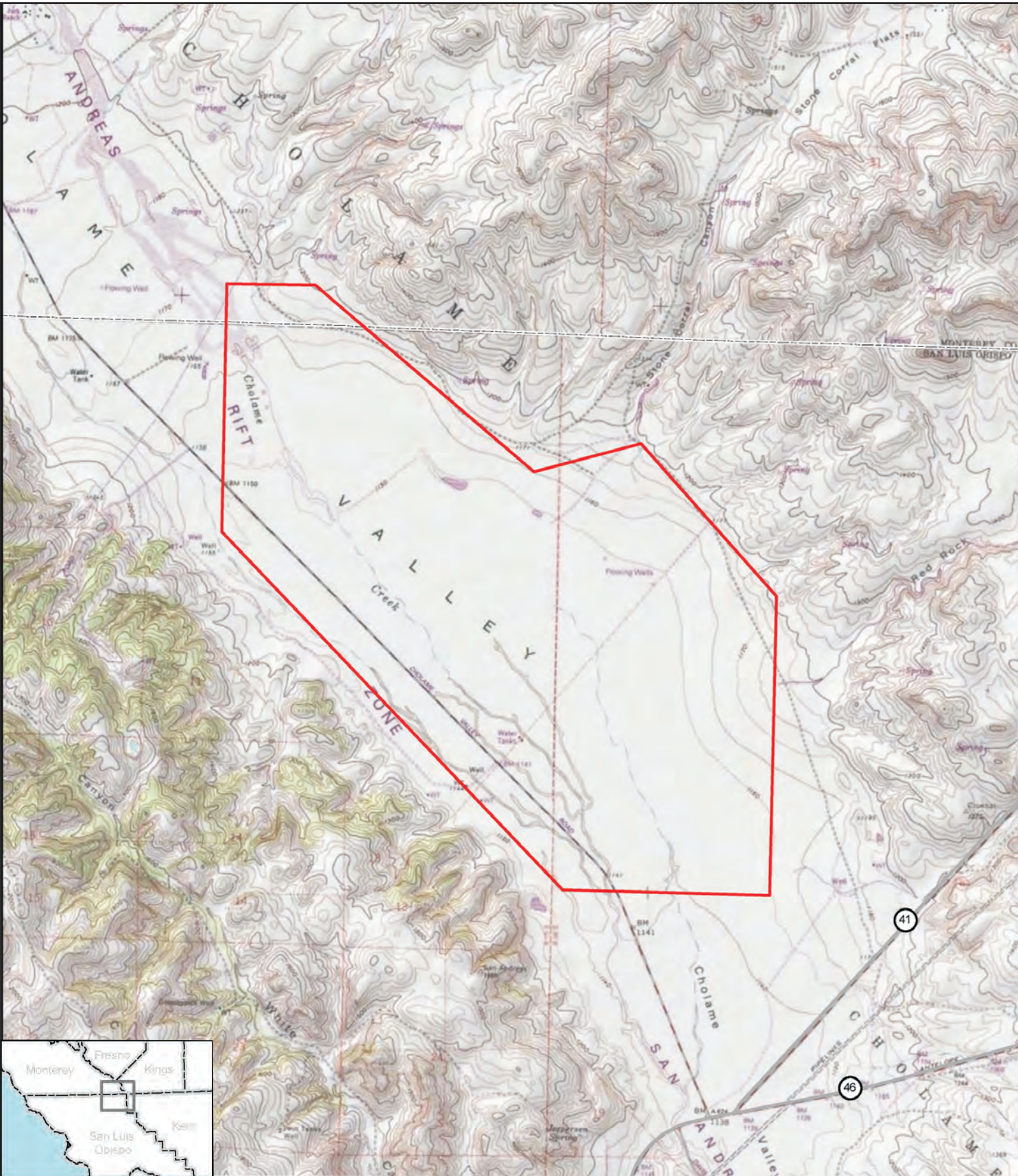
This Alternative 7 North Carrizo Plain would be accessed by Highway 46, and is located 25 miles west of US Highway 101 and 27 miles east of Interstate 5, as shown in Figure E-910. Parcels are zoned for agriculture, and are generally 40 to 160 acres in size. There are no residences in the area. According to the RETI Phase 1B Report, approximately 2,500 acres of land in Alternative 7 North Carrizo Plain would be feasible for a solar PV project. This alternative would be approximately one mile wide and four miles long, and would run along the Cholame Valley Road, just north of Highway 46 until reaching the San Luis Obispo/Monterey County line. Alternative is located at 1,100 to 1,200 feet above sea level and would require avoidance of Cholame Creek and nearby wetlands.

Electricity generated at this alternative site would be transmitted to the grid via a new 230 kV transmission line that would leave the site to the north, meeting the Diablo-Gates 500 kV transmission line corridor approximately ten miles to the north. Interconnection with a 500 kV transmission line would be expensive because a 230/500 kV substation would be required; additionally, the Diablo-Gates line likely has little available capacity. Therefore, it would be expected that the new 230 kV line would need to be constructed to connect with the Arco Substation.

Project Objectives

Alternative 7 North Carrizo Plain would partially meet project objectives, as described below:

- Construct a 550 MW solar energy facility to be online by the end of 2014~~2~~ in order to help meet State and federal renewable energy goals? **Partially meets objective.** ~~The~~A Alternative 7 North Carrizo Plain of 550 MW could not be constructed by the end of 2012~~4~~ due to the time required for land acquisition, project siting, design, surveys, and permitting.
- Locate the facility in a high solar resource area? **Meets objective.** Alternative 7 North Carrizo Plain would be located within an area having the same high solar resources as the Proposed Project.



Boundary

Figure E-10
Alternative 7 North Carrizo Plain

- Locate the facility on a site that has access to utility grade electrical transmission lines that do not require substantial upgrading to accommodate the additional energy generated? **Uncertain.** A major transmission corridor is located about ten miles to the north; however, interconnection to a 500 kV transmission line is not likely economically feasible due to the size and cost of the substation that would be required. More likely, a new 230 kV transmission line of more than 30 miles would be constructed adjacent to the existing line. Transmission studies would be required to determine the specific transmission upgrades that would be necessary.
- Locate the facility on land with compatible topography in a manner that minimizes environmental impacts? **Partially meets objective.** The environmental assessment below defines trade-offs between this alternative and the Proposed Project.
- Support goals stated in the San Luis Obispo County General Plan *Energy Element*, as well as other policies in the plan designed to protect San Luis Obispo County's environment and economy? **Meets objective** (same as Proposed Project).

Feasibility

This alternative appears to be feasible but a final determination would be dependent upon whether the land could be acquired, whether a transmission interconnection is viable and acceptable to PG&E and the CAISO, engineering site evaluation (e.g., soil characteristics), project design and permitting.

Impact Analysis by Discipline

None of the environmental impacts of the Proposed Project in the southern Carrizo Plain would occur under Alternative 7 North Carrizo Plain. However, many similar impacts would be expected at the Cholame Valley site, as discussed below.

Aesthetics

As with the Proposed Project, Alternative 7 North Carrizo Plain would be located in an area with extended and scenic views. Major features include the agricultural land of the Cholame Valley, the Cholame Hills to the west, and the Diablo Range to the east (County, 2009). Neither Highway 41 nor Highway 46 are designated Scenic Highways but both are eligible for designation (Caltrans, 2009). The region surrounding the site is characterized as agricultural lands. The site would be prominently visible to travelers on Highways 41 and 46, and from public roads throughout the region. As with the Proposed Project, building a 550 MW solar project at Alternative 7 North Carrizo Plain would introduce an industrial-type facility between 4,0300 and 4,5100 acres in size to an agricultural and rural landscape. However, because Highway 46 is more highly traveled than Highway 58, a greater number of viewers would be affected. As such, the adverse visual impacts associated with Alternative 7 North Carrizo Plain would be greater than those of the Proposed Project.

Agriculture

Alternative 7 North Carrizo Plain is located on agricultural lands that are actively used for grazing (County, 2009). The soil at this alternative site is considered productive agriculture soil and is identified as Prime Farmland, Farmland of Statewide Importance and Grazing Land by the Department of Conservation (County, 2009). While the site does not contain lands under Williamson Act contract, it is designated by San Luis Obispo County as an agriculture preserve, and thus is subject to the Land Conservation Act (California Government Code Section 51290). As such, this alternative would temporarily and permanently impact existing agriculture uses in a manner similar to the Proposed Project; impacts would be significant and unavoidable.

Biological Resources

The North Carrizo Alternative would be located on agricultural lands, primarily grazing lands. Three predominant plant communities occur within the region of this alternative, including non-native annual grassland, valley sink scrub, and freshwater marsh (County, 2009). Freshwater marsh provides wildlife habitat of value for a number of species. The freshwater marsh and Cholame Creek may be considered jurisdictional to the California Department of Fish and Game or U.S. Army Corps of Engineers, but a focused delineation would be necessary to confirm that this is the case. These regions would be avoided by this alternative; however, the project would likely be located both east and west of the Cholame Creek and freshwater marsh areas. Based on CNDDB records and field studies for nearby projects, a number of sensitive wildlife species have a high probability of occurring at this alternative site. These include the Western Spadefoot toad (*Spea hammondi*), vernal pool fairy shrimp (*Branchinecta lynchi*), longhorn fairy shrimp (*Branchinecta longiantenna*), San Joaquin whipsnake (*Coluber flagellum ruddocki*), prairie falcon (*Falco mexicanus*), grasshopper sparrow (*Ammodramus savannarum*), tricolored blackbird (*Agelaius tricolor*), California horned lark (*Eremophila alpestris actia*), burrowing owl (*Athene cunicularia*), San Joaquin kit fox, as well as nesting migratory birds. Additional special status species that may be present within an estimated five-mile radius of this site include Giant Kangaroo Rat, Southwestern pond turtle (*Actinemys marmorata pallida*), California red legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Munz's layia (*Layia munzii*), showy golden madia (*Madia radiata*), shining navarretia (*Navarretia nigelliformis ssp. radians*) and Mason's neststraw (*Stylocline masonii*). Although impacts to biological resources at this location would be similar to the Proposed Project and likely can be mitigated to a level of less than significant, this alternative would not be located within the San Joaquin kit fox core recovery zone and thus cumulative impacts would be reduced.

Land Use and Recreation

The Alternative 7 North Carrizo Plain site is located approximately eight miles northeast of the community of Shandon in the northeast corner of San Luis Obispo County. Other than a community park in Shandon, there are no recreational resources within ten miles of the site and no rural residential uses within or immediately adjacent to it (Google Earth, 2010); consequently, no impacts to recreation would occur. The site appears to be an undeveloped open space area that is used for grazing (Google Earth, 2010). Although implementation of this alternative could result in the temporary and permanent displacement of an agricultural use, because grazing would likely be economically viable elsewhere, as opposed to the dry-cropping associated with the Proposed Project, these impacts would likely be considered adverse but less than significant. A single rural residence and associated ranch complex is located an estimated 1.5 mile northwest of the northern boundary of this site. As such, construction and operation of this alternative could result in ~~Additionally, because this alternative would not require the temporary and permanent or temporary disruptions or displacement of any rural residential homes to this resident; however, this alternative would not or the division of an established community.~~ As such, the magnitude of impacts to these existing land uses at and surrounding this site would be less than for the Proposed Project.

Noise

Construction at Alternative 7 North Carrizo Plain would create unwanted noise, similar to the Proposed Project. However, ~~ne the rural residences are located northwest of the site would not be~~ within a quarter mile radius of this site construction or operational activities. Additionally, access to the North of Carrizo Plain Alternative would not require the use of smaller roads adjacent to rural residential areas. As such, the North of Carrizo Plain Alternative would create fewer noise impacts than the Proposed Project.

Transportation and Circulation

The two primary roads that would be used for access to Alternative 7 North Carrizo Plain would be Highway 46 and Cholame Valley Road. As stated for the Proposed Project, Highway 46 from Jardine Road to Highway 33 operates at an unacceptable LOS of D during the morning and afternoon peak commuting hours. Since this roadway segment currently operates at an unacceptable LOS, any addition of traffic by this alternative would be considered a significant and adverse impact according to Caltrans criteria. As such, Alternative 7 North Carrizo Plain would not reduce this impact in comparison to the Proposed Project. However, because Alternative 7 North Carrizo Plain would be located just north of Highway 46, along Cholame Valley Road, this alternative would not require use of numerous smaller roads between the Carrizo Plain and the Santa Margarita area during construction. Construction-related traffic impacts to rural residential areas would be reduced.

Alternative Conclusions

The majority of the impacts created by a 550 MW solar PV project at Alternative 7 North Carrizo Plain site would be similar to the impacts caused by the Proposed Project. Alternative 7 North Carrizo Plain would likely reduce impacts in comparison to the Proposed Project for cumulative biological resources, land use and recreation, transportation and circulation, and noise. However, this alternative would potentially create greater adverse impacts to agriculture and aesthetics.

E.4 Alternatives Considered but Eliminated from Further Consideration

E.4.1 Introduction

This section describes and evaluates the alternatives that did not meet the CEQA criteria defined in Section E.1. The following list outlines the ~~four~~^{six} types of alternatives that are addressed in this section, with an explanation as to why each alternative was eliminated.

- E.4.2 Site Alternatives
- E.4.3 Distributed Solar PV
- E.4.4 Other Solar Technologies
- E.4.5 Conservation and Demand-Side Management

E.4.2 Site Alternatives Eliminated

A number of alternative sites were considered during the environmental review of the Ausra CESF and others were suggested by scoping comments for the Proposed Project. This section considers the following alternative sites:

- Sites Evaluated in CEC Staff Assessments
- Kern County Abandoned Oil Fields
- Mojave Desert U.S. Department of the Interior Bureau of Land Management (BLM) Land

E.4.2.1 Sites Evaluated in CEC Staff Assessments

Six alternative sites were considered by the CEC in the environmental review of the former Ausra CESF. These alternative sites are similar to the Proposed Project in land characteristics, and are also located within reasonable proximity to transmission infrastructure. None of the sites, however, were considered to be superior to the proposed Ausra CESF site. In addition, because the Ausra CESF site represented a project within a much smaller project footprint than the Proposed Project, none of the alternative sites

considered for the Ausra CESF project would have the acreage necessary for a 550 MW PV project. A brief description of each alternative site follows.

Lokern Alternative Site. The CEC Staff Assessment for the Ausra CESF considered a broad region near the area where Highway 58 and Interstate 5 merge in Kern County, as identified by the project Applicant. CEC staff reviewed the general region and identified an area that is not considered kit fox recovery area, and is located north of ecological preserves found in the Lokern area. The area generally parallels Interstate 5 between Highway 58 and Highway 46 and extends as far west as Highway 33 near 7th Standard Road.

The industrial Lokern region in the vicinity of Highway 58 and Highway 33 includes numerous oil fields, natural gas plants, a hazardous materials storage facility, and the Morro Bay–Midway transmission line to the south. Highway 33 runs along the axis of the Midway-Sunset oil field for much of the field's 20 mile length. In addition to active oil fields, the area contains several ecological reserves that have been created as biological mitigation for infrastructure projects located elsewhere. The primary reason the Lokern site was eliminated was due to insufficient solar insolation.

Harper Lake Alternative Site. The CEC analyzed a site near Harper Dry Lake (west of Barstow) that is privately owned by Harper Lake, LLC which intends to develop five 100 MW Solar Thermal Plants by 2010 (CEC, 2009a). Solar thermal facilities (SES VIII and IX) are currently operating to the north and northeast (CEC, 2009a). A new facility (Mojave Solar One) is proposed in close proximity to these two existing facilities and is currently undergoing environmental review by the CEC.

According to Solargenix, the Harper Lake site receives greater solar insolation (7.65 kWh/m² day) than the Carrizo Plain (6.72 kWh/m² day) (CEC, 2009a). The Kramer Substation is located 10 miles to the southwest and would be the presumed point of interconnection. (Existing Harper Lake solar facilities connect to the Kramer Substation). Development of additional solar facilities at the site would require the construction of new transmission lines to deliver new solar generation from Kramer Substation to load centers.

Additionally, according to the CEC Staff Assessment, the Harper Lake Site would potentially serve as important habitat for the State threatened Mojave ground squirrel and desert tortoise (CEC, 2009a). A number of very large solar energy facilities have been proposed in the Mojave Desert, raising concerns about the destruction of the fragile desert environment and impacts to sensitive species. The Desert Tortoise Preserve Committee (DTPC) has identified that a proposed energy park in the Harper Lake area would cause impacts to desert tortoise from increased habitat destruction, road kills and raven predation (CEC, 2009a).

Old Mine Alternative and Daggett-Soppeland Alternative Sites. The CEC eliminated the Old Mine Alternative Site and the Daggett-Soppeland Alternative Site from detailed analysis in the Ausra CESF environmental review. The sites are east of Barstow in San Bernardino County, along the Interstate 15 corridor. They were eliminated by the CEC because they would use federal lands, which would require compliance with the National Environmental Protection Act and environmental permitting timeframes would likely be lengthy. The Applicant also indicated that the sites were not in the CAISO queue.

As stated in the CEC Staff Assessment, the Old Mine Alternative and Daggett-Soppeland Alternative Site are in relatively close geographic proximity to the Harper Lake Site and in Southern California Edison (SCE) "territory." The sites are expected to have similar environmental impacts and would require approximately the same length of transmission interconnection (10 miles). As such, the CEC eliminated the Old Mine Alternative and Daggett-Soppeland Alternatives from further consideration.

Northwest Carrizo Plain Alternative Site. The CEC staff reviewed parcels along Bitterwater Road. Lands approximately one-half mile north of the transmission line and directly east of Bitterwater Road (roughly Section 19 of T29S, R18E) appeared feasible. Other potential sites in the Carrizo Plain were found to be limited given the location of the Proposed Project and the proposed California Valley Solar Ranch (CVSR) Project in combination with the Ausra CESF.

The Northwest Carrizo Plain Site was eliminated by CEC staff because it would likely have similar impacts to biological, aesthetic, water resources, and transportation and circulation as the Ausra CESF Project. Noise impacts were found to be reduced in comparison to the Ausra CESF Project. Section 19 has been incorporated into both Study Area A and Study Area B of the Proposed Project. For the purposes of this EIR's alternatives analysis, locations and site configurations in Section 19 have been identified and are addressed in Section E.3 (Alternatives Retained for Analysis).

Antelope Plain Alternative Site D. The CEC analyzed the Antelope Plain Alternative Site D in the environmental review of the Ausra CESF in response to public comment. There are two areas in northwest Kern County that appear to have solar insolation comparable to that in the South Carrizo Plain. One location straddles the Kern County/Kings County border, and the second is near the intersection of Highway 46 and Kecks Road. The CEC also reviewed land east of Highway 33 in the vicinity of the Arco Substation (located midway between Highway 33 and the California Aqueduct, and immediately south of the Kings County border), which connects to a PG&E 230 kV line. The Highway 46/Kecks Road location (Section 8 of T26S, R18E) was considered for this Alternative because it met solar insolation requirements and had fewer biological constraints. Land use is predominantly agricultural and there are only scattered residences in the area. The nearest transmission line interconnection would be approximately 10 miles away at the Arco Substation.

The Antelope Plain Alternative Site D was found to have impacts similar to the Ausra CESF; however, the transmission interconnection and permitting timeframes were expected to increase the schedule beyond the required dates of project construction and completion.

Consideration of CEQA Criteria

Project Objectives. The alternative sites would meet most project objectives. However, not all the alternative sites would support the goals stated in the San Luis Obispo County General Plan, being located in a variety of counties. Additionally, because the alternative sites were considered for the Ausra CESF project, they considered the use of only 640 acres, an area substantially smaller than Proposed Project's requirement of between 4,000 to 4,100 acres. As such, some of these alternatives may not meet the project objective of generating 550 MW.

Feasibility. Most of the alternative sites have the potential to be feasible, although, as stated above, they may not be technically feasible for a 550 MW solar PV facility and transmission access has not been evaluated.

Environmental Advantages. Although some of the alternative sites would offer minor environmental advantages, no substantial reduction of unavoidable and significant adverse environmental impacts was found for any of the alternative sites in comparison to the Ausra CESF (CEC, 2009a). Although the conclusions for the alternative sites/project reconfigurations identified for this EIR's alternatives analysis concur that if lands are used in a manner similar to the CEC's Northwest Carrizo Plain Alternative Site, significant and unavoidable impacts would still occur. However, in some instances the magnitude or intensity of these impacts would be reduced, as addressed in Section E.6 (Comparison of Alternatives).

Alternative Conclusions

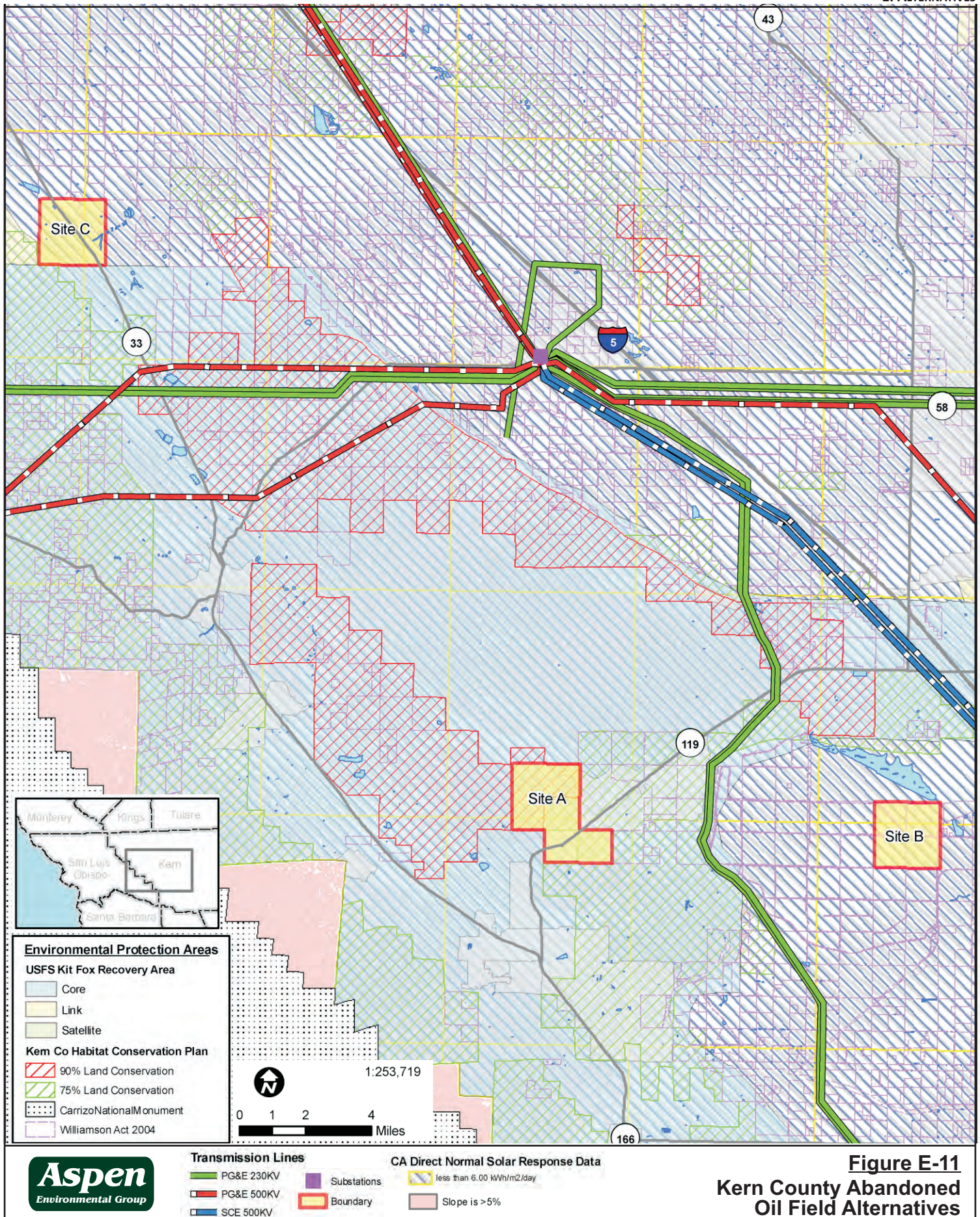
Eliminated From Detailed Analysis. The alternative sites were not found to result in substantial reduction of unavoidable and significant adverse environmental impacts. Additionally, except for the Northwest Carrizo Plain Alternative, almost all of these off-sites alternatives would require longer transmission line interconnections in comparison to the Proposed Project because it is located adjacent to an existing transmission line. The additional transmission interconnection needs associated with these alternative sites which would also result in the potential for increased adverse impacts. Please refer to Section E.6 (Comparison of Alternatives) for an evaluation of the advantages and disadvantages of the variations of the Northwest Carrizo Plain Alternative Site that have been carried forward for analysis in this EIR.

E.4.2.2 Kern County Abandoned Oil Fields

Scoping comments requested that an alternative site on disturbed oil field lands be considered, thereby lessening potential adverse impacts in the Carrizo Plain. Both San Luis Obispo and Kern Counties have a large number of active and plugged oil wells. However, small amounts of disturbed oil fields are available for use that comply with the technical requirements for solar development, as shown in Figure E-1. Of the areas highlighted in Figure E-1, the majority of RETI solar proxy project areas in San Luis Obispo County are located near the Proposed Project site, and are not expected to significantly reduce impacts to the Carrizo Plains. The RETI proxy projects south of Shandon are not located on disturbed oil fields (DOGGR, 2010). The RETI proxy projects located north of the intersection of Highways 46 and 41 are also not located on disturbed oil fields (DOGGR, 2010).

Because disturbed oil fields were not available in San Luis Obispo County, abandoned oil fields in adjacent Kern County were considered. As with San Luis Obispo County, technical constraints reduced the feasibility of this alternative. The majority of the oil fields in Kern County are located west of Bakersfield. The information available on the DOGGR website was used to search for large areas (at least 2,000 acres) with plugged oil wells and low slope topography. Three examples of areas that appeared to achieve the requirements for a solar project were found and further investigated; each is described below (see Figure E-11).

Site A. Using the DOGGR online mapping system, areas with a large number of plugged wells were researched in order to reduce impacts to natural lands. Using this criteria, Sections 23 and 24 of T31S, R23E, and Sections 19, 30, 31, and 32 of T31S, R24E were considered because, according to the DOGGR mapping system, they have a large number of plugged oil wells and low slope. The general vicinity of Site A is shown on Figure E-10~~1~~. The insolation at Site A, although lower than at the Proposed Project site, is greater than 5 kWh/m²/day. These areas appear to achieve the criteria required for solar development. However, upon further research it was found that the slope of this land was greater than five percent. Additionally, this area corresponds to core U.S. Fish and Wildlife Service's (USFWS's) kit fox recovery area, as well as areas identified in the Kern County Habitat Conservation Plan as "90 percent land conservation" and "75 percent land conservation." As such, while Site A does correspond with areas of plugged oil wells, it does not satisfy the solar PV criteria, and would remain within the core kit fox recovery area.



Site B. Figure E-2 (The Kern County Constraints to Solar Project Development) was used to identify two additional areas that appeared to correspond with appropriate insolation and slope requirements. Site B considered the general region south of the intersection of Highway 199 and Highway 43, which had minimal resource constraints. As with Site A, the insolation at Site B, although lower than that at the Proposed Project site, is greater than 5 kWh/m²/day. Using the DOGGR plugged well mapping system, Site B was found to be located on land with few plugged oil wells. Additionally, Site B includes a large body of water, as well as the historical Pelican Island. Because Site B would not correspond with an alternative located on disturbed oil fields, it was eliminated from further consideration.

Site C. Land along Highway 33, north of Seventh Standard Road also appeared to have the required characteristics for solar projects (see Figure E-2). Site C has a similar insolation as the Carrizo Plain and has a slope of less than five percent. Using the DOGGR mapping system, Site C was found to be located in a region with numerous active and plugged wells. Because of the large number of active wells at Site C, there would not be sufficient land available for a 550 MW solar project without interfering with existing active oil wells.

Consideration of CEQA Criteria

Project Objectives. The alternative sites would meet most of the project objectives. However, not all the alternative sites would support the goals stated in the San Luis Obispo County General Plan, being located in a variety of counties. Additionally, the solar resource at Site A and Site B is moderate rather than high, but would be greater than 5 kWh/m²/day, established solar criteria by the National Renewable Energy Lab (NREL, 2008).

Feasibility. After consideration of the solar constraints map and the DOGGR mapping system, none of the plugged oil well areas identified would be technically feasible for a 550 MW project.

Environmental Advantages. Because the plugged oil well sites would be located on already disturbed land that was used for oil recovery, they would all have greater percentage of disturbed land and would likely present environmental advantages to the Proposed Project site.

Alternative Conclusions

Eliminated From Detailed Analysis. The alternative sites were not found to be technically feasible for a 550 MW solar PV project.

E.4.2.3 Mojave Desert BLM Land

The BLM has received a large number of utility-scale solar energy project proposals for BLM-administered lands in California. The BLM processes solar energy right-of-way applications under its Solar Energy Development Policy (BLM Instructional Memorandum No. 2007-097), and addresses environmental concerns for the utility-scale energy projects on a case-by-case basis in conformance with its existing policies, manuals, and statutory and regulatory authorities. An alternative site in the Mojave Desert would be subject to environmental review under the National Environmental Policy Act. The following is a description of the types of environmental concerns likely to be raised with an alternative within the Mojave Desert, including the California Desert Conservation Area.

Project Objectives. An alternative located in the Mojave Desert would meet most project objectives. However, it would not support the goals stated in the San Luis Obispo County General Plan, as it would not be located within San Luis Obispo County.

Feasibility. An alternative solar project located in the Mojave Desert would be feasible, as illustrated by the numerous project applications now under consideration.

Environmental Advantages. An alternative located in the Mojave Desert would not create any impacts within the Carrizo Plain, and would not result in impacts to the San Joaquin kit fox.

Environmental Disadvantages. A number of environmental concerns have been raised during the environmental review of the solar projects proposed on BLM land in the Mojave Desert. The primary concerns include:

- **Biological Resources.** Impacts of large solar projects can be severe to biological resources, including creosote bush scrub and other native plants and wildlife communities. Impacts to the desert tortoise (*Gopherus agassizii*) and Mojave fringe-toed lizard (*Uma scoparia*) have been noted at the renewable sites in the Mojave, as well as other species. Additionally, loss of sand dune habitat and adverse impacts to desert washes have been identified. Cumulative loss of desert habitat has also been identified as a significant concern.
- **Cultural Resources.** The destruction of numerous cultural resources (historic and prehistoric) is a major concern related to development of large solar projects in the Mojave Desert.
- **Soil and Water Resources.** Groundwater pumping has been proposed at most of the proposed solar development projects in the Mojave Desert due to a lack of other water sources. Impacts include adverse changes in groundwater levels. Because many of the proposed solar projects are located on, or crossed by, alluvial fans, concern has been raised regarding impacts to alluvial fans where flash flooding and mass erosion could occur.
- **Aesthetics.** Many of the solar projects proposed in the Mojave Desert have been found to result in significant adverse impacts to existing scenic resource values. Additionally, cumulative visual impacts in combination with existing and foreseeable future solar and other renewable energy projects would contribute to a perceived sense of industrialization of the open, undeveloped desert landscape within the Mojave Desert.

Alternative Conclusions

Eliminated from Detailed Analysis. Although solar projects are being proposed within the Mojave Desert on both private lands and public land under the jurisdiction and management of the BLM, these sites do not present significant environmental advantages over the Proposed Project. The impacts would affect different sensitive biological species and vistas, but would remain unavoidable and significant, as they would on the Carrizo Plain.

E.4.3 Distributed Solar Photovoltaic Alternative

There is no single accepted definition of distributed solar technology. The 2009 Integrated Energy Policy Report (IEPR) defines distributed generation resources as “grid-connected or stand-alone electrical generation or storage systems, connected to the distribution level of the transmission and distribution grid, and located at or very near the location where the energy is used” (CEC, 2009b). Distributed solar facilities vary in size from kilowatts to tens of megawatts but do not require transmission to get to the areas in which the power is used.

A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on residential, commercial, or industrial building rooftops or in other disturbed areas such as parking lots or disturbed areas adjacent to existing structures such as substations. To be a viable alternative, there would have to be sufficient newly-installed panels to generate 550 MW of capacity.

California currently has over ~~500~~773 MW of distributed solar PV systems which cover over 40 million square feet (CPUC, 2010). During 2008, 158 MW of distributed solar PV electricity was installed in

California, doubling the amount installed in 2007 (78 MW), and with 78 MW installed through May 2009, installation data suggests that at least the same amount of MW could be installed in 2009 as in 2008 (CPUC, 2010).

Rooftop PV systems and parking lot systems exist in small areas throughout California. Larger distributed solar PV installations are becoming more common. Examples of the different distributed PV systems are:

- Nellis Air Force Base (Nellis AFB, Nevada): Over 72,000 solar panels, generating 14 MW of energy, were constructed in 2007, by SunPower Corporation on 140 acres of Nellis AFB land (Whitney, 2007). The energy generated is used at Nellis AFB.
- Southern California Edison (SCE, Fontana, California): SCE has installed over 382 MW of solar energy within its service area which delivered 845,000 MW hours in 2009. In June, 2009 SCE obtained approval to cover 65 million square feet of unused Southern California commercial rooftops with 250 MW of the latest solar PV technology, which will generate enough capacity to meet the needs of approximately 162,000 homes. (SCE, 2009a; SCE, 2009b).
- San Diego Gas & Electric (SDG&E, San Diego, California): SDG&E's Solar Energy Project is designed to install up to 80 MW of solar PV electricity, which would include PV installation on parking structures and tracking systems on open land (SDG&E, 2010).
- Pacific Gas & Electric (San Francisco, California): PG&E launched a five-year program to develop up to 500 MW of solar PV power. The program would consist of 250 MW of utility-owned PV generation, and an additional 250 MW to be built and operated by independent developers under a streamlined regulatory process. PG&E's program targets mid-sized projects, between 1 to 20 MWs, mounted on the ground or rooftops within its service area (PG&E, 2009).
- City of San Jose (San Jose, California): The City of San Jose is considering the development and implementation of 50 MW of renewable solar energy on city facilities and/or lands (City of San Jose, 2009). San Jose's "Green Vision" lays out a goal of achieving 100 percent of the City's electricity from renewable energy by 2020, and plans to implement strategies, such as a 24-month period to increase solar installations in the City, 15 percent. The City anticipates that public facilities with appropriate solar access including parking lots, garages, lands and landfills would be eligible for solar installation. The City has received American Recovery and Reinvestment Act (ARRA) funding for the project.

Like utility-scale PV systems, the acreage of rooftops or other infrastructure required per MW of electricity produced is wide ranging. As stated above, California has approximately 40 million square feet (approximately 920 acres) of distributed solar PV accounting for 441 MW installed (CPUC, 2008a). However, based on SCE's use of 600,000 square feet for 2 MW of energy, 1,650 million square feet (approximately 3,850 acres) would be required for 550 MW.

San Luis Obispo County is estimated to have the technical potential for over 393 MW of distributed solar PV electricity (CEC, 2007). However, distributed solar PV could be located throughout the State. The location of distributed solar PV would impact the capacity factor³ of the distributed solar PV. The capacity factor depends on a number of variables including the insolation⁴ of a given site. Because a distributed solar PV alternative would be located throughout the State, the insolation at some of these locations would be less than in the Carrizo Plain alone. The RETI assumed a capacity factor of approximately 30 percent for solar thermal technologies and tracking solar PV, and an approximate 20

³ The capacity factor of a power plant is a percentage that tells how much of a power plant's capacity is used over time (CEC, 2008b).

⁴ Insolation is the total amount of solar radiation striking a surface exposed to the sky (CEC 2008a).

percent capacity factor for rooftop solar PV which is assumed to be non-tracking, for viable solar generation project locations (B&V, 2008; CEC, 2009b). Tracking distributed solar PV would have a higher capacity factor as well.

Consideration of CEQA Criteria

Project Objectives. A distributed solar technology alternative, if constructed at 550 MW, would meet most project objectives. However, the distributed solar technology would not necessarily meet the objective to locate the facility in areas of high solar resource, because the distributed technology could be located throughout the State.

Feasibility. The rate of PV manufacturing and installation is expected to continue to grow very quickly. However, given that there are currently only about 500 MW of distributed solar PV in California, the addition of an additional 550 MW to eliminate the need for the Proposed Project cannot be guaranteed. This would require an even more aggressive deployment of PV at more than double the historic rate of solar PV than the California Solar Initiative program currently employs. Challenges to an accelerated implementation of distributed solar PV are discussed below.

- **RETI Consideration of Subsidies, Tariffs, Cost, and Manufacturing.** The RETI Discussion Draft Paper California's Renewable Energy Goals – Assessing the Need for Additional Transmission Facilities published with the RETI Final Phase 2A Report (September 2009), addresses the likelihood of a scenario of sufficient distributed solar PV to remove the need for utility scale renewable development. This discussion paper identified the factors likely to influence the pace of large scale deployment of distributed solar PV: subsidies; feed-in tariffs; manufacturing and installation cost; and manufacturing scale-up.
- **Cost.** The California Public Utilities Commission's (CPUC's) "33 Percent Renewables Portfolio Standard (RPS) Implementation Analysis Preliminary Results" (Study) considered a number of cases to achieve a 33 percent RPS standard. The results of this Study state that the cost of a high distributed generation scenario is significantly higher than the other 33 percent RPS alternative scenarios. The Study explains that this is due to the heavy reliance on solar PV resources that are more expensive than wind and central station solar power generation. The Applicant for the proposed CVSR project has compared the cost per watt (Alternating Current [AC]) between its project and residential PV, and commercial PV generation and found that the CVSR was approximately \$4.55/W (using CEC data) as opposed to \$9.02/W for residential PV and \$8.05/W for commercial PV (using CPUC data). However, the 2009 IEPR states that solar PV technology has shown dramatic cost reductions since 2007, and that it is expected to show the most improvement of all the technologies evaluated in the 2009 IEPR model, bringing its capital cost within the range of that of natural gas-fired combined cycle units.
- **Tariffs.** The IEPR discusses the need to adjust feed-in tariffs to keep downward pressure on costs. Feed-in tariffs should be developed based on the size and type of renewable resources, given that the cost of generating energy from a 100 MW wind farm is less than the cost of generating to ensure a good mix of new renewable energy projects. According to the report, differentiating feed-in tariffs by type and size can ensure a good mix of new renewable energy projects and avoid paying too much for some technologies and too little for others.
- **Limited Installations.** Examples of large scale distributed solar projects are still limited. In the spring of 2008, SCE proposed 250 to 500 MW of rooftop solar PV to be installed in five years. As of March 2010, SCE had installed only 3 MW, with an additional 1 MW planned for Rialto. As the 2009 IEPR points out, the potential for distributed resources remains largely untapped and integrating large

amounts of distributed renewable generation on distribution systems throughout the State presents challenges.

- **Electric Distribution System.** The State's electric distribution systems (e.g., "grids") are not designed to easily accommodate large quantities of randomly installed distributed generation resources. Accomplishing this objective efficiently and cost-effectively would require the development of a new distribution planning framework.

The 2009 IEPR makes a number of recommendations to support the integration of distributed generation into the California grid, expand feed-in tariffs, and support the efforts to achieve the RPS goals as a whole. It also recommends supporting new renewable facilities and the necessary transmission corridors and lines to access the facilities.

Environmental Advantages. Installation of 550 MW of distributed solar PV would require approximately 1,650 million square feet (approximately 37,879 acres). Distributed solar PV is assumed to be located either on already existing structures or disturbed areas so little to no new ground disturbance would be necessary (and thus few associated biological impacts).

Minimal grading or new access roads would be required for this alternative, and relatively minimal maintenance of the solar panels would be required. As such, it is unlikely that the rooftop solar PV alternative would create erosion impacts. Relatively large amounts of water would be required to wash the solar panels, especially with larger commercial rooftop solar installations; however, the commercial facilities would likely already be equipped with drainage systems. Therefore, the wash water would not contribute to runoff or to erosion.

Environmental Disadvantages. None of the environmental impacts of the Proposed Project would occur with the Distributed Solar Photovoltaic Alternative.

Alternative Conclusions

Eliminated From Detailed Analysis. While it will very likely be possible to achieve 550 MW of distributed solar energy over the next few years, the limited number of currently existing facilities make it difficult to conclude with confidence that it will happen within the timeframe required for the Proposed Project. In addition, it is likely going to be essential to use both utility-scale and distributed renewable technologies to meet the State's 33 percent RPS requirement. As a result, this technology is eliminated from detailed analysis as an alternative to the Proposed Project.

E.4.4 Other Solar Technology Alternatives

In addition to the range of alternative sites discussed earlier, several alternative solar generation technologies were evaluated as potential alternatives to the Proposed Project. Although alternative solar generation technologies would achieve most of the project objectives, each would have different environmental or feasibility concerns. Table E-3 presents a summary of the solar technology characteristics.

Table E-3 Summary Characteristics of Solar Technologies

Technology	Parabolic Trough	Solar Power Tower	Stirling Engine	Linear Fresnel	Photovoltaic
Water Use/ 100 MW (Assumes dry cooling)	~65 AFY*	~20 AFY	~5 AFY	~12 AFY	~2-10 AFY
Acres per MW	6-7	10	9	4	8-12
Low Impact Construction Possible	No	Yes	Yes	No	Yes

Table E-3 Summary Characteristics of Solar Technologies

Technology	Parabolic Trough	Solar Power Tower	Stirling Engine	Linear Fresnel	Photovoltaic
Tallest Component (does not include cooling towers or Transmission Line)	25 feet – trough	300 - 650 feet	38 feet - engine	56 feet	10 -15 feet (+ inverter station)
Slope Requirements	2% or less	5% or less, can use LID	6% or less, can use LID	1% or less	3% or less, can use LID
Siting Restrictions	Troughs are 1300 feet long, requires contiguous land	Heliostats must be in concentric circles around power tower	Can be sited in irregular shapes	Requires rectangles, requires contiguous land	Can be sited in irregular shapes
Heat Transfer Fluid (does not include water)	Yes	No	No	No (water used)	No

* AFY: Acre Feet Per Year

A brief description of each solar generation technology is presented below. However, solar thermal technologies require a higher insolation than solar PV and may not be feasible at the Proposed Project site.

Parabolic Trough. A parabolic trough system converts solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. The plant consists of a large field of trough-shaped solar collectors arranged in parallel rows, normally aligned on a north-south horizontal axis. Each parabolic trough collector has a linear parabolic-shaped reflector that focuses the sun's direct beam radiation on a linear receiver, also referred to as a heat collection element located at the focus of the parabola. Heat transfer fluid within the collector is heated to approximately 740° Fahrenheit as it circulates through the receiver and returns to a series of heat exchangers where the fluid is used to generate high-pressure steam. The superheated steam is then fed to a conventional reheat steam turbine/generator to produce electricity.

Stirling Dish. The Stirling dish technology converts thermal energy to electricity by using a mirror array to concentrate and focus sunlight on the receiver end of a Stirling engine. The curved dishes that focus the sun's energy are approximately 45 feet tall and occupy a maximum horizontal space of approximately 1,135 square feet (0.026 acres), with an anchored footprint of 12.5 square feet (assuming a 4-foot diameter caisson). The internal side of the receiver heats hydrogen gas, which expands. The pressure created by the expanding gas drives a piston, crankshaft, and drive shaft. The drive shaft turns a small electricity generator. The entire energy conversion process takes place within a canister the size of an oil barrel. The generation process requires no water, and the engine does not produce emissions as no combustion takes place. Each concentrator consists of one Stirling engine mounted above one mirror array. Once installed, each concentrator requires very little maintenance aside from periodic washing of the mirrored surfaces of the dish.

Distributed Power Tower. The Solar Power Tower technology converts thermal energy to electricity by using heliostat (mirror) fields to focus energy on boilers located on power tower receivers near the center of each heliostat array. Each mirror tracks the sun during the day and reflects the solar energy back on the receiver boiler. The heliostats are 7.2 feet high and 10.5 feet wide, yielding a reflecting surface of 75.6 square feet. The towers can be up to 459 feet tall, with an additional 10 feet in height for a lightning rod. The towers receive heat from the heliostats, and then convert the heat into steam by heating water in the solar boilers. A secondary phase converts the steam into electricity using Rankine-cycle reheat steam turbine electric generator housed in a power block facility.

Linear Fresnel. A solar Linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. During daylight hours, solar concentrators focus heat on receivers to produce steam, which is collected in a piping system and delivered to steam drums located in a solar field, and then transferred to steam drums in a power block, where steam turbine generators produce electricity (Carrizo, 2007). The steam is then cooled, condensed into water, and the re-circulated back into the process.

Consideration of CEQA Criteria

Project Objectives. The solar thermal technologies would meet all project objectives, except that they may not be able to generate 550 MW given the lower solar intensity within the Carrizo Plain.

Feasibility. All of the solar thermal technologies outlined above are all feasible. However, because solar thermal technologies require a higher insolation than solar PV technologies, development of a solar thermal technology at the proposed site may not be considered technologically feasible. The proposed Ausra CSEF was to have been a Linear Fresnel project in the Carrizo Plain, but its application was withdrawn from the CEC in November, 2009. In general, utility-scale solar thermal projects require sites with at least 7 Kwh/m²/day.

Environmental Advantages. While some solar thermal technologies require the use of smaller land areas than the Proposed Project's technology, all require large land areas to generate 550 MW. As a result, if located in the Carrizo Plain, these technologies would offer minimal environmental advantages because the scale of the impacts of the Proposed Project would still occur. In addition, solar thermal projects can create additional impacts related to large scale water use if wet-cooling is proposed.

Environmental Disadvantages. As with the Proposed Project, the primary environmental disadvantage of solar thermal technologies is the amount of land required and associated impacts to support a utility-scale facility, resulting in a permanent loss of natural habitat similar to the habitat loss created by the Proposed Project, and likely the loss of agricultural lands and operations as well. The size and height of the solar thermal mirrors varies as shown above in Table E-3 but all would cause aesthetic impacts and would introduce prominent and reflective structures.

In general solar thermal plants require water to generate the steam that powers the turbines. Water is also required to wash the mirrors. If wet cooling were used, the cooling towers would require approximately 600 afy per 100 MW. Dry cooling would use significantly less water, approximately 18 afy per 100 MW (NRDC, 2008a; NRDC, 2008b).

Because of the slope requirements for solar thermal technologies, extensive grading is required for solar thermal facilities which can cause severe soil erosion.

Alternative Conclusions

Eliminated From Detailed Analysis. The large area needed for a different type of solar thermal power plant technology would be comparable to that required by the Proposed Project. Because of the more intensive use of the land and the grading required, there could be more severe impacts to biological and cultural resources than would occur under the Proposed Project. The loss of agricultural lands and operations would likely occur as well, potentially including lands under Williamson Act contracts. In addition, due to the large size of some alternative solar power technologies and the use of angled mirrors, potentially greater aesthetic impacts could occur. Some alternative solar thermal technologies also require large amounts of water for cooling.

While solar thermal technologies are viable renewable technologies, they would not be technologically feasible at this location due to the Carrizo Plain's limited insolation. Therefore, this alternative is eliminated from further consideration.

E.4.5 Conservation and Demand-Side Management

Conservation and demand-side management consist of a variety of approaches for the reduction of electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. In 2005, the CEC and CPUC's "Energy Action Plan II" declared cost effective energy efficiency as the resource of first choice for meeting California's energy needs. The CEC noted that energy efficiency helped flatten the State's per capita electricity use and saved consumers more than \$56 billion since 1978 (CPUC, 2008b). The investor-owned utilities' 2006-2008 efficiency portfolio marks the single-largest energy efficiency campaign in U.S. history, with a \$2 billion investment by California's energy ratepayers (CPUC, 2008b). However, with population growth, increasing demand for energy, and the need to reduce greenhouse gases, there is a greater need for energy efficiency. Additionally, County's *Conservation and Open Space Element* states with energy goals and implementing policies that highlight the importance of reducing energy consumption at County facilities and promoting energy efficiency and conservation in all development (County, 2010).

The CPUC, with support from the Governor's Office, the CEC, and the California Air Resources Board (CARB), among others, adopted the "California Long-Term Energy Efficiency Strategy Plan for 2009 to 2020" in September 2008 (CPUC, 2008c). The Plan is a framework for all sectors in California including industry, agriculture, large and small businesses, and households. Major goals of the plan include:

- All new residential construction will be zero net energy by 2020
- All new commercial construction will be zero net energy by 2030
- Heating, ventilation, and air conditioning industries will be re-shaped to deliver maximum performance systems
- Eligible low-income customers will be able to participate in the Low Income Energy Efficiency program and will be provided with cost-effective energy efficiency measures in their residences by 2020.

Consideration of CEQA Criteria

Project Objectives. This alternative would meet most project objectives. However, it would not meet the objective of constructing a solar energy facility.

Feasibility. Energy efficiency in general is a feasible alternative to meeting load growth. However, the level of efficiency presumed to occur in the baseline condition is already very aggressive, and achieving incremental savings beyond that level is speculative at best. Therefore, energy efficiency alone is not a technically feasible alternative to the Proposed Project.

There are potential concerns regarding the feasibility of Demand Response. The level of reductions associated with Demand Response involve (1) speculation, (2) relying upon assumptions concerning CPUC approval of Demand Response investments, (3) subsequent rate design, (4) electricity price elasticity of demand, and (5) the level of Demand Response program participation by customers. The uncertainty of reductions is particularly relevant for the residential class, which represents approximately half of the projected demand reductions from Demand Response deployment but whose performance is highly dependent upon the assumption of program participation.

Environmental Advantages. This alternative would reduce energy consumption, and therefore reduce the need for the Proposed Project. All effects of the Proposed Project would be avoided.

Environmental Disadvantages. There would be no environmental disadvantages to this alternative, as there would be no construction and no new impacts created.

Alternative Conclusions

Eliminated From Detailed Analysis. This alternative is not technically feasible as a replacement for the Proposed Project because PG&E is required to achieve aggressive energy efficiency goals as laid out by the CPUC in 2004, with the aim of exceeding the maximum achievable potential energy savings defined at that time. Additional energy efficiency beyond that occurring in the baseline condition may be technically possible, but it is speculative to assume such a level of energy efficiency is achievable. With population growth and increasing demand for energy, conservation and demand-management alone is not sufficient to address all of California's energy needs. Additionally, this alternative will not provide the renewable energy generation required to meet California's Renewable Portfolio Standard requirements; consequently, technologies such as solar thermal generation facilities would still be required.

E.5 No Project Alternative

Consideration of the No Project Alternative is required by Section 15126.6(e) of the State CEQA Guidelines. The analysis of the No Project Alternative must discuss existing conditions as they occurred at the time that a project's Notice of Preparation (NOP) was published (September 2, 2008, with NOP Supplements published July 14, 2009 and April 30, 2010 for the Proposed Project), as well as "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (State CEQA Guidelines Section 15126.6 [e][2]). The requirements also specify that "[i]f disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed" (State CEQA Guidelines Section 15126.6 [e][3][B]).

Under the No Project Alternative, construction and operation of the Proposed Project would not occur. The baseline environmental conditions for the No Project Alternative are the same as for the Proposed Project, as provided in Section C (Environmental Setting, Analysis, and Mitigation Measures). These baseline conditions would continue to occur into the future, undisturbed, in the absence of project-related construction activities, unless other development occurred on the site.

The objectives of the Proposed Project would remain unfulfilled under the No Project Alternative. Under the No Project Alternative, the Proposed Project would not contribute to achieving California's renewable generation goals. There are two foreseeable outcomes that could occur under the No Project Alternative Project:

- 1. Development of other solar projects in the Carrizo Plain.** Given the transmission capacity available (with reconductoring of the PG&E transmission line) to serve generation in the Carrizo Plain, it is possible that other solar projects would be proposed in the Carrizo Plain. If this occurs, the impacts would likely be similar to those of the Proposed Project, or potentially greater depending on the size (in terms of generating capacity and associated acreage) of the facility or facilities proposed.
- 2. Development of solar projects in other parts of California.** If the County determines that development of the Proposed Project is not appropriate in the Carrizo Plain, renewable generation development could occur in other parts of the State.

E.6 Comparison of Alternatives

Section E.3 describes and evaluates the ~~eight~~^{six} alternatives to the Proposed Project. Of these ~~six~~^{eight}, ~~four~~^{six} alternatives are within the general boundaries of the Proposed Project (Alternatives 1, 2, 3, 3B.1, 4 and 5), one would be in the North Carrizo Plain, and one would be within the Westlands CREZ (Alternative 6), and one would be in the North Carrizo Plain (Alternative 7).

Table E-4 presents a comparison of the ~~six~~^{five} alternatives within the Proposed Project study area. However, the two off-site alternatives are not included in the comparison table because there is less information available for these alternatives and the severity of their associated impacts cannot be predicted with as much certainty as for the alternatives located in the Proposed Project study area.

Environmentally Superior Alternative

In this section, the County has identified the Environmentally Superior Alternative, as required by CEQA Guidelines Section 15126.6(d) and (e)(2). CEQA requires the following for alternatives analysis and comparison:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. (State CEQA Guidelines Section 15126.6[d])

If the environmentally superior alternative is the No Project Alternative, CEQA requires the identification of an environmentally superior alternative among the other alternatives (State CEQA Guidelines Section 15126.6[e][2]).

Based on the analysis presented in this section and on the impact analysis for the Proposed Project presented in Section C of this EIR, the **Alternative 4 Reduced MW (No WA Lands)** and **Alternative 5 Reduced MW (Biology)** have both been identified as the environmentally superior alternatives for a reduced generating capacity alternative. These alternatives have been chosen because they avoid all impacts south of Highway 58, increase the project's setbacks from Highway 58 and the rural residential homes along it, increase setbacks from the Carrisa Plains Elementary School and decrease the length of project construction, thereby substantially reducing the severity of several temporary and permanent impacts, including air quality, climate change/greenhouse gas, hazards and hazardous materials, population and housing, public services, utilities and service systems and water resources. Additionally, south of Highway 58 significant and unavoidable impacts related to the temporary and permanent disruption, displacement or division of existing land uses and agricultural operations (Class I) would be eliminated, as would construction-related noise impacts (Class I). Implementation of either of these two alternatives would also avoid all of the impacts associated with reconductoring the Midway-Morro Bay 230 kV transmission line.

The key differentiator between these alternatives is that Alternative 4 avoids all conflicts with Williamson Act contracts, while Alternative 5 substantially reduces the severity and breadth of impacts related to grassland habitat and San Joaquin kit fox.

Alternative 4 and Alternative 5 would also reduce the severity of the following significant impacts but not to a level that would be less than significant (they would remain Class I):

- Aesthetics: Introduction of structure contrast, developed character, view blockage, skylining and glare north of Highway 58, and cumulative aesthetic impacts
- Agriculture: Construction and operational activities would interfere with existing agricultural operations north of Highway 58, and cumulative agricultural impacts
- Biological Resources: Construction and operational activities would incrementally contribute to adverse and unavoidable cumulative impacts related to special status species and San Joaquin kit fox connectivity corridors
- Land Use: Construction and operational activities north of Highway 58 would disrupt, displace or divide of exiting land uses
- Noise: Construction activities north of Highway 58 would substantially increase ambient noise levels in the project vicinity, and cumulative noise impacts
- Transportation and Circulation: Project implementation would increase vehicle trips to local or areawide circulation system or reduce existing “Levels of Service” on public roadway(s) and cumulative transportation impacts during construction.

For an on-site alternative that maintains the Proposed Project's objective of producing 550 MW of renewable energy, **Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)** has been identified as the environmentally superior alternative. This alternative would eliminate the cumulatively significant and unavoidable (Class I) impact related to San Joaquin kit fox movement corridors, and also contribute to the protection and preservation of movement corridors for other wildlife species along the eastern and westerns sides of the Alternative 3B.1 project area in perpetuity. Alternative 3B.1 would additionally avoid all impacts to Williamson Act lands, and substantially reduce impacts to native annual grassland habitat in comparison to both Options A and B (833 acres of disturbance as opposed to 1,721 acres of disturbance under Option A and 1,133 acres of disturbance under Option B). Alternative 3B.1's reduction in grassland habitat would reduce impact to special-status species from Class I to Class II with mitigation. Due to its increased setbacks from Highway 58 (500 feet) and the Carrisa Plains Elementary School (1,760 feet), this alternative would also lessen the severity of the Proposed Project's aesthetic impacts. Due to its compacted size, overall earth-disturbing activities associated with this alternative would be reduced by 14 to 17 percent in comparison to the Proposed Project. Although not necessarily linear in response to this decreased size, in comparison to the Proposed Project, impacts related to agriculture, air quality, biological resources, paleontological resources, and geology, mineral resources and soils under this alternative would also be expected to be reduced. However, impacts to aesthetics, agriculture, land use, noise and transportation and circulation (though less than the Proposed Project) would still remain significant and unavoidable (Class I).

Table E-4 Comparison of Alternatives

Environmental Resource	Impact Severity Compared to Proposed Project						
	Proposed Project	Alternative 1 Increased Setbacks (North/South)	Alternative 2 Increased Setbacks (North)	Alternative 3 Increased Setbacks (No WA Lands)	Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	Alternative 4 Reduced MW (No WA Lands)	Alternative 5 Reduced MW (Biology)
Aesthetics: Permanent structure contrast, view blockage, skylining and glare for local residents and from major public viewpoints	Options A and B: Significant and unavoidable Option B: Less severe impacts south of Highway 58	Same as Option A but less severe due to 0.5 mile setbacks	Same as Option B but less severe due to 0.5 mile setbacks	Same as Option A but more severe impacts than Alternative 1 due to reduced setbacks (0.33 mile)	<u>Significant and unavoidable but less than Option A due to increased setbacks (500 feet) and reduced project size. More severe than Alternatives 1, 2, 3, 4 and 5 due to its decreased setback distances</u>	Significant and unavoidable but less severe than Option B due to reduced project size and 0.33 mile setbacks; less severe impacts south of Highway 58 (Preferred Alternative for 400 MW generating capacity)	Same as Alternative 4 (Preferred Alternative for 400 MW generating capacity)
Agriculture: Permanent loss of agricultural operations and uses	Options A and B: Significant and unavoidable north of Highway 58 Option B: No impacts south of Highway 58	Same as Option A but less severe due to 0.5 mile setback	Same as Option B	Same as Option A but more severe impacts than Alternative 1 due to reduced setbacks (0.33 mile)	<u>Same as Option A but less severe due to reduced project size (Preferred Alternative for 550 MW generating capacity)</u>	Significant and unavoidable but less severe than Option B due to reduced project size and 0.33 mile setbacks; no impacts south of Highway 58 (Preferred Alternative for 400 MW generating capacity)	Same as Alternative 4 (Preferred Alternative for 400 MW generating capacity)
Agriculture: Conflicts with Williamson Act Lands	Option A: No impact Option B: Adverse impact (1,212 acres)	Same as Option B but less severe (approximately 721 acres)	Same as Option B	Same as Option A	<u>Same as Option A (Preferred Alternative for 550 MW generating capacity)</u>	Same as Option B (Preferred Alternative for 400 MW generating capacity)	Same as Option B but less severe (approximately 876 acres) (Preferred Alternative for 400 MW generating capacity)

Table E-4 Comparison of Alternatives

Environmental Resource	Impact Severity Compared to Proposed Project						
	Proposed Project	Alternative 1 Increased Setbacks (North/South)	Alternative 2 Increased Setbacks (North)	Alternative 3 Increased Setbacks (No WA Lands)	Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	Alternative 4 Reduced MW (No WA Lands)	Alternative 5 Reduced MW (Biology)
Biological Resources: Contribution to cumulative impacts to special status species	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Options A and B	Same as Options A and B	<u>Less severe than either Options A, B or Alternatives 1, 2, 3, 4 and 5. Impacts would be adverse but mitigable to a level of less than significant. (Preferred Alternative for 550 MW generating capacity)</u>	Same as Option B but less severe due to reduced project size (Preferred Alternative for 400 MW generating capacity)	Same as Option B but less severe due to reduced project size; preferable to Alternative 4 due to avoidance of T29S, R18E, Sections 26, 34 and 35 (Preferred Alternative for 400 MW generating capacity)
Biological Resources: Contribution to cumulative impacts to movement corridors for San Joaquin kit fox	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Options A and B	Same as Options A and B	<u>Less severe than either Options A, B or Alternatives 1, 2, 3, 4 and 5. Impacts would be adverse but mitigable to a level of less than significant. (Preferred Alternative for 550 MW generating capacity)</u>	Same as Option B but less severe due to reduced project size (Preferred Alternative for 400 MW generating capacity)	Same as Option B but less severe due to reduced project size; preferable to Alternative 4 due to avoidance of T29S, R18E, Sections 26, 34 and 35 (Preferred Alternative for 400 MW generating capacity)
Land Use: Temporary and permanent disruptions, displacements or divisions of existing land uses	Options A and B: Significant and unavoidable north of Highway 58 Option B: No impacts south of Highway 58	Same as Option A	Same as Option B	Same as Option A but more severe impacts than Alternative 1 due to reduced setbacks (0.33 mile)	<u>Same Option A but less severe due to reduced project size (Preferred Alternative for 550 MW generating capacity)</u>	Same as Option B but less severe due to reduced project size (Preferred Alternative for 400 MW generating capacity)	Same as Option B but less severe due to reduced project size (Preferred Alternative for 400 MW generating capacity)

Table E-4 Comparison of Alternatives

Environmental Resource	Impact Severity Compared to Proposed Project						
	Proposed Project	Alternative 1 Increased Setbacks (North/South)	Alternative 2 Increased Setbacks (North)	Alternative 3 Increased Setbacks (No WA Lands)	Alternative 3B.1 Reduced Acreage (No WA Lands/Biology)	Alternative 4 Reduced MW (No WA Lands)	Alternative 5 Reduced MW (Biology)
Noise: Increases in ambient noise levels during construction	Options A and B: Significant and unavoidable north of Highway 58 Option B: Less severe south of Highway 58	Same as Option A but less severe due to 0.5 mile setbacks	Same as Option B but less severe due to 0.5 mile setbacks	Same as Option A but more severe impacts Alternative 1 due to reduced setbacks (0.33 mile)	<u>Same as Option A but less severe due to increased setbacks and reduced project size (Preferred Alternative for 550 MW generating capacity)</u>	Significant and unavoidable but less severe than Option B due to reduced project size and 0.33 mile setbacks (Preferred Alternative for 400 MW generating capacity)	Significant and unavoidable but less severe than Option B due to reduced project size and 0.33 mile setbacks (Preferred Alternative for 400 MW generating capacity)
Transportation and Circulation: Increased congestion and contributions to existing unacceptable Levels of Service along local and areawide roads during construction	Options A and B: Significant and unavoidable	Same as Options A and B	Same as Option B	Same as Options A and B	<u>Same as Option A (Preferred Alternative for 550 MW generating capacity)</u>	Same as Option B but less severe due to reduced construction period (Preferred Alternative for 400 MW generating capacity)	Same as Option B but less severe due to reduced construction period (Preferred Alternative for 400 MW generating capacity)

F. Other CEQA Considerations

This section presents several topics required by CEQA: growth-inducing effects (Section F.1), significant irreversible commitment of resources (Section F.2), and significant effects of the Proposed Project (Section F.3).

F.1 Growth-Inducing Effects

The San Luis Obispo County General Plan recognizes that certain forms of growth are beneficial, both economically and socially. Section 15126.2(d) of the State CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth inducing if it “could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.”

Potential growth inducing components of the project addressed in this section relate to employment and population growth, increased power generation and regional population growth, and increased transmission capacity that serves renewable power development.

Employment and Population Growth

Construction Workforce. An average construction workforce of 400 workers per day would be required, and this work would occur over approximately 36 months. Workers are expected to be hired from within San Luis Obispo County to the extent practicable, including the cities of San Luis Obispo, Paso Robles, and Atascadero. Additionally, workers may be recruited from the Bakersfield area of Kern County. Some of the workers originating outside the study area would temporarily relocate to accommodations within the Counties of San Luis Obispo and Kern for the duration of construction activities. Demand for temporary accommodations during construction may result in significant impacts to the existing housing supply in the Carrizo Plain due to its rural nature. In addition, there may be growth in employment and housing in the area from new restaurants, mobile home parks, convenience stores, and/or other services that would serve the workers during project construction.

The Applicant has committed to providing shuttle buses to transport workers from Park-and-Ride lots to the project site from nearby towns. In addition, mitigation measures in Section C.12 (Population and Housing) would include development and implementation of a Worker Housing Program in coordination with San Luis Obispo County to identify qualified temporary accommodations, set protocols for First Solar to reserve or coordinate accommodations, and delineate guidelines to ensure that temporary accommodations are made in an appropriate manner. Implementation of the Worker Housing Program would alleviate the temporary direct and indirect population growth impacts resulting from worker relocation.

San Luis Obispo and Paso Robles have a construction and extraction labor force of 7,800 workers and Bakersfield has a construction and extraction labor force of 27,690 workers (CA EDD, 2010a and 2010b). A maximum of 400 workers hired from within the study area would represent approximately 1 percent of the total construction labor force. While a single project using 1 percent of the total construction labor force of the study area would normally be considered a substantial demand, considering the high unemployment rate in the area (10.6 percent for San Luis Obispo County and 18.3 percent for Kern County), presently this would be considered a beneficial impact on the study area in reducing unemployment levels. As a temporary component, the construction phase would not trigger additional population growth in the area.

Operational Workforce. No more than 15 full-time staff would be employed during operation. Both San Luis Obispo County and Kern County have housing vacancy rates of greater than 9 percent, representing 38,456 vacant housing units. Even if all 15 full-time workers were to relocate to the study area, it is anticipated that adequate housing would be available without exceeding the demands of the San Luis Obispo and Kern Counties' existing housing supply. Therefore, project operation would not result in new growth in the area relating to the potential population increase.

Increased Power Generation

While the Topaz Project would contribute to energy supply, which indirectly supports population growth, the development of the Topaz Project is responding to the State's need for renewable energy to meet its Renewable Portfolio Standards. Unlike a gas-fired power plant, the Topaz Project is not being developed as a source of baseload power in response to growth in demand for electricity. The power generated would be added to the State's electricity grid, with the intent that it would allow an overall reduction in use of fossil fueled power plants and their greenhouse gas emissions.

San Luis Obispo County planning documents permit and anticipate a certain level of growth in the project area, along with attendant growth in energy demand. As a result, the purpose of the County Land Use Ordinance (Title 22 of the County Code) is to address this growth and to: (1) Implement the General Plan and to guide and manage the future growth of the County in compliance with the General Plan; (2) regulate land use in a manner that will encourage and support the orderly development and beneficial use of lands within the County; (3) minimize adverse effects on the public resulting from the inappropriate creation, location, use or design of building sites, buildings, land uses, parking areas, or other forms of land development by providing appropriate standards for development; (4) protect and enhance the significant natural, historic, archaeological and scenic resources within the County as identified by the County General Plan; and (5) assist the public in identifying and understanding regulations affecting the development and use of land (County, 2008a; 2008b).

It is this anticipated growth that drives energy production projects, not vice versa. The Proposed Project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth, because (1) the additional energy would be used to ease the burdens of meeting existing energy demands within and beyond the area of the project; (2) the energy would be used to support already-projected growth; or (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis.

Increased Transmission Capacity

The development of the Proposed Project in the Carrizo Plain would require PG&E to upgrade the existing 230 kV transmission line through the plain in order to carry the power to the State's electricity grid. This upgrade is described in detail in Appendix 4 of this EIR. The upgrade project requires that PG&E replace the existing conductors on the transmission towers with larger conductors that can carry more electricity. In addition, two new switching stations, the Solar Switching Station (Proposed Project) and Caliente Switching Station (California Valley Solar Ranch (CVSR) Project), would be constructed to connect into the transmission grid. PG&E is in the process of designing the reconductoring project.

PG&E is an investor-owned utility, regulated by the California Public Utilities Commission (CPUC). The utility's transmission system is operated by the California Independent System Operator under regulations established by the Federal Energy Regulatory Commission. When an electricity generator requests use of PG&E's transmission facilities, PG&E is required to provide access after completion of power flow and cost studies. The CPUC evaluates each PG&E project to ensure that its need and costs

are justified and appropriate, and that financial effects on California electricity ratepayers are appropriate. This analysis will be completed when PG&E submits its application to the CPUC.

The expanded capacity of the Solar-Midway transmission line will accommodate existing load, the Topaz Project, and other generation projects in the region, including the CVSR Project. The reconductored line will have a capacity very close to the amperage requirements of the line with the inclusion of the solar project; thus the reconductored lines will have no significant “excess” or “headroom” capacity. PG&E is not allowed by the CPUC to intentionally over-build the line to accommodate other future projects.

CAISO has initiated a new process, known as the Revised Transmission Planning Process (RTPP) to consider whether certain transmission projects should be undertaken beyond those required for new or expanded interconnecting generators, such as the Proposed Project. This process modification is being considered to accommodate California’s Renewable Portfolio Standard (RPS) and carbon-reduction targets, particularly the 33 percent RPS. This process is intended to translate recommendations from the CPUC, the Renewable Energy Transmission Initiative, and transmission-owning utilities in the State (through the California Transmission Planning Group [CTPG]) into an actionable transmission plan. The current proposal is under stakeholder review and may go to the CAISO Board later in 2010. The current proposal may require that transmission upgrades resulting from a Large Generator Interconnection Procedure studies be subject to additional review to determine whether the upgrades are consistent with overall RPS and carbon-reduction goals. This could result in modifications to the set of upgrades adopted for the Proposed Project and CVSR project based on broader consideration of future needs. However this process has not been adopted and the expanded capacity of the Solar-Midway transmission line was based on the current interconnection procedure.

San Luis Obispo County’s growth is not currently constrained by the availability of electricity since PG&E’s long-term planning accommodates projected growth in demand within its service area. Therefore, while some excess transmission capacity may result from the reconductoring project and this capacity may serve growth within San Luis Obispo County, it is not expected to be large enough to induce the development of other large solar projects in the region.

F.2 Significant Irreversible Commitment of Resources

Section 15126.2(c) of the State CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of the project. Irretrievable commitments of resources should be evaluated to assure that such consumption is justified.

Irreversible impacts can also result from permanent loss of habitat, damage caused by environmental accidents associated with project construction, or operational resource use. Furthermore, construction of the Proposed Project would necessitate some use and long-term conversion of agricultural land and vegetation and habitat removal. As discussed in Section C.6 (Biological Resources), implementation of the Proposed Project would result in approximately 4,113,100 acres (Option A) or 4,406,000 acres (Option B) of long-term impacts to vegetative communities and landforms. Assuming implementation of the mitigation measures recommended in this EIR, long-term loss of habitat would be confined to the solar site and new pole locations, and impacts from loss of habitat would be reduced to a less than significant level for sensitive species.

During operation, implementation of agricultural resources mitigation measures would require an offset for the conversion of agricultural land to non-agricultural use, which would help ensure that agricultural lands of the same or higher quality are conserved within the County (see Section C.3). In addition to long-term conversion of habitat and agricultural lands, the project would also result in long-term impacts to the existing rural visual resources (Section C.2, Aesthetics). A discussion of significant effects

of the project that cannot be avoided is included in Section F.3, and summarized in the Executive Summary. Under Option A, substantial portions of the project footprint will have minimal impacts to the existing topography and topsoil, which will make these areas much easier to return to their previous agricultural and/or biological uses once the facility has been decommissioned.

Construction of the Proposed Project would commit nonrenewable resources during project construction and ongoing utility services during project operations. This includes use of fossil fuels, construction materials, new equipment that cannot be recycled at the end of the project's useful lifetime, and energy required for the production of materials. During project operation, oil, gas, and other nonrenewable resources would be consumed. Therefore, an irreversible commitment of relatively small amounts of nonrenewable resources would occur as a result of long-term project operation. The anticipated equipment, vehicles, and materials required for construction of the Proposed Project are detailed in Section B (Project Description).

Construction and operation of the Proposed Project would require the use of a limited amount of hazardous materials such as fuel, lubricants and cleaning solvents. Additionally, during project construction and operation preexisting soil or groundwater contamination could be encountered. All hazardous materials would be stored, handled, and used in accordance with applicable federal, State, and local regulations. The Applicant would be required to develop and comply with a site-specific spill response plan, hazardous materials business plan, hazardous waste management plan, and a Storm Water Pollution Prevention Plan as well as best management practices. Appropriate implementation of these plans and practices, as well as mitigation measures recommended in Section C.9 (Hazards and Hazardous Materials) and County policies and permits, would reduce the potential for environmental accidents associated with the Proposed Project to less than significant levels. The Proposed Project is not expected to result in environmental accidents that would cause irreversible damage.

The purpose of the Proposed Project itself is to help California meet its renewable energy goals, which have been developed to reduce the effects of global climate change and greenhouse gas emissions. Therefore, the solar project would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. As discussed above, resources that would be consumed as a result of project implementation include water, electricity, and fossil fuels during construction and operations; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. Compliance with all applicable building codes, as well as County policies and the mitigation measures identified in this EIR would ensure that all natural resources are conserved to the maximum extent possible.

F.3 Significant Effects that Cannot be Avoided

F.3.1 Significant Direct Effects of the Proposed Project

Section 15126.2(b) of the State CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. Potential environmental effects of the Proposed Project and proposed mitigation measures are discussed in detail in Section C of this EIR. Impacts in the following areas would be significant and unavoidable with construction and operation of the solar project ~~and generation tie transmission line~~, even with the incorporation of feasible mitigation measures that attempt to reduce impacts to the extent feasible. Note that these conclusions apply to Option A (Southern Option) and Option B (Northern Option) of the Proposed Project (as described in Section B of this EIR), and not to Topaz Solar Farm LLC's preferred alternative, Alternative 3B.1 Reduced Acreage (No WA Lands/Biology).

■ **Aesthetics (for Option A and Option B):**

- **Impact AE-2: Project would introduce structure contrast, industrial character, view blockage, skylining, and glare.** Installation of the solar project would introduce a large industrial-type visual experience into this part of Carrizo Plain. The project would be highly visible along State Highway 58 and to residences within three miles of the site. Consequently, the project would become the dominant feature in the landscape, strongly altering the character of the landscape, markedly lowering its visual quality, and strongly detracting from existing scenic views of the valley and mountains. The degree of impact could be reduced by implementation of mitigation measures, including increasing set back from public roads and screening; however, the visual impact of the large solar field would remain significant and unavoidable. The residual impact of Option B with all APMs and recommended mitigation measures is considered to be substantially less severe than under Option A. Nevertheless, the visual impact of the large solar field under both options would remain significant and unavoidable.

■ **Agriculture (for Option A and Option B):**

- **Impact AG-2: Operation would permanently convert Important Farmland to non-agricultural use.** The project site contains soils that are suitable for agricultural activities. The existing land uses include dry land (non-irrigated) farming and grazing. Option A and Option B have the potential to create “remnant” or “residual” parcels if the project is implemented. Under Option A, seven parcels outside of the project boundary would be permanently reduced in size and would become remnant parcels. Under Option B, five parcels outside of the project boundary would be permanently reduced in size and would become remnant parcels. Impacts would be significant and unavoidable.

■ **Land Use (for Option A and Option B):**

- **Impact LU-1: Construction would temporarily disrupt, displace or divide land uses.** ~~One existing residence and two existing unoccupied residences within Option A and one existing occupied residence and one existing unoccupied residence within Option B would be acquired by the Applicant. These residences would either be demolished or utilized as temporary facilities. Two occupied residences within the project boundary would remain in place after construction of the Proposed Project (under both Option A and Option B), however, the permanent displacement of existing rural residential land uses would be significant and unavoidable. Under Option A three occupied residences located in Sections 16 and 21 of T29S, R18E and Section 4 of T30S, R18E would be located within the study area boundaries of the Proposed Project. Two of these residences would be partially surrounded by Option A within interior exclusion areas (Section 21 of T29S, R18E and Section 4 of T30S, R18E) and one would be north of the Proposed Project in a solar array reserve area that would be anticipated to remain occupied but surrounded by mitigation land (Section 16 of T29S, R18E). Two additional occupied residences that would be expected to remain are located in very close proximity to the boundary of Option A in Section 22 of T29S, R18E. Under Option B two occupied residences would be surrounded by the Proposed Project on at least three sides (Section 18 and 21 of T29S, R18E) and a third occupied residence would be displaced for the placement of solar panel arrays (Section 16 of T29S, R18E). In total there are 33 and 26 rural residences within a one-mile radius from the study area boundaries for Option A and B, respectively, as well as the Carrisa Plains Elementary School. Several unoccupied structures are also located within the study areas. Construction-related impacts would cause direct effects on these land uses due to their proximity to some of the solar panel arrays and the presence of construction crews, the operation of heavy equipment, and increased traffic on local roads. Construction of~~

Option A would additionally require the permanent displacement of current agricultural practices of the site. Construction of Option A and B would result in temporary disruptions to existing land uses and impacts would be considered significant and unavoidable.

- ***Impact LU-2: Operation and maintenance of the project would permanently disrupt, displace or divide land uses.*** ~~One existing residence and two existing unoccupied residences within Option A and one existing occupied residence and one existing unoccupied residence within Option B would be acquired by the Applicant. These residences would either be demolished or utilized as temporary facilities. Several unoccupied structures are also located within the study areas. As indicated in the discussion for Impact LU-1, implementation of either Option A or B would surround and be in close proximity to several rural residences that are expected to remain in place. Option B would additionally require the permanent displacement (e.g., demolition) of an occupied residence in Section 16 of T29S, R18E). Implementation of Option A and B would place permanent physical barriers (e.g., the proposed solar arrays, switching station, substation, Monitoring & Maintenance facility [M&M facility], Solar Energy Learning Center and security fencing) between some of these residences for the duration of the project's operational lifetime. Two occupied residences within the project boundary would remain in place after construction of the Proposed Project (under both Option A and Option B). Taking into consideration residences within a close proximity to the project boundaries in addition to those within the project boundaries, there would be three occupied residences surrounded by Study Area A, and one occupied residence that would be immediately north of the solar panels/modules (for a total of four occupied residences) in Study Area A. In Study Area B, there would be three occupied residences surrounded by Study Area B that are expected to remain during project construction and operation. Although the principal road network between these homes would be maintained, the project would create physical barriers between existing residential uses, thereby disrupting and dividing the overall connectivity of a localized rural residential community for the duration of the project's operational lifetime. In addition, implementation of Option A and Option B would also result in the permanent displacement of the existing agricultural uses contained within its study area boundaries, converting between 4,000 to 4,100 acres of rural and agricultural lands to an industrial use. All land use impacts associated with the operation and maintenance of Option B would be the same as those identified for Option A. From a land use perspective, the permanent preclusion of existing uses would be considered significant and unavoidable.~~

■ **Noise (for Option A and Option B):**

- ***Impact NS-1: Construction noise would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances, such as the County Noise Element thresholds.*** Construction noise would occur onsite for three years from 7:00 a.m. and 5:00 p.m. Monday through Friday. Mitigation measures are recommended to reduce the impact of construction noise on residences in the Project area; however, noise generated by the Project during the approximately three-year construction period would continue to result in significant and unavoidable increases in ambient noise levels in the project throughout the duration of construction. Construction of Option A and B would require the same construction equipment, number of workers, construction duration, and truck haul routes. Therefore, construction noise associated with Option B would be identical to that of Option A.

■ **Transportation and Circulation (for Option A and Option B):**

- ***Impact TR-1: Project implementation would increase vehicle trips to local or areawide circulation system or reduce existing "Levels of Service" on public roadway(s).*** Operation of

the Proposed Project would require a staff of 15 permanent employees and would result in approximately 30 one-way trips (15 trips to the site during the AM peak hour and 15 trips from the project site during the PM peak hour) per day to and from the project site. Because some of these trips would be expected to travel to the project site via Highway 46 and portions of Highway 46 currently operate at an unacceptable Level of Service (LOS), any addition of traffic by the project is considered a significant impact according to Caltrans criteria. Therefore, the addition of project-related operation traffic to this segment of Highway 46 in the AM and PM peak hours would result in a significant and unmitigable impact.

F.3.2 Significant Cumulative Effects

According to Section 15355 of the State CEQA Guidelines, the term “*cumulative impacts*” refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable.

This EIR has considered the potential cumulative effects of the Proposed Project in Section C; Section D includes the cumulative scenario. Impacts of the Proposed Project, when combined with impacts from past, present, and probable future projects would be considered cumulatively significant for the following issue areas:

■ **Aesthetics(for Option A and Option B):**

- ***Impact AE-3: Project would create cumulatively considerable contribution to significant visual impacts when combined with impacts from past, present, and reasonable future projects.*** Locally future foreseeable projects range between two and seven miles from the Carrizo Plain National Monument. The development of the Topaz Project and the CVSR Project may create a significant visual cumulative impact. This is because the CVSR Project would have visual characteristics similar to those of the Proposed Project and, coupled with the transmission line reconductoring and switchyard construction, would contribute to the conversion of a natural landscape to a landscape with prominent industrial character. The Proposed Project would make a substantial adverse contribution of visual elements in the landscape, along with the CVSR Project and the foreseeable future projects. Therefore, impacts of the Proposed Project, when combined with impacts from past, present, and reasonable future projects would be considered cumulatively significant. Option B would have substantially lower levels of exposure to sensitive viewers on Highway 58, at Carissa Elementary School, and from local residences compared to Option A. However, incremental impacts would persist and when combined with impacts of past projects, would still be considered cumulatively significant.

■ **Agriculture(for Option A and Option B):**

- ***Impact AG-4: Project would create cumulative considerable agricultural impacts when combined with impacts from past, present, and reasonable future projects.*** The implementation of both the Topaz and CVSR solar projects and the transmission line upgrades and switchyards in the Carrizo Plain would result in the conversion of thousands of acres of lands that are currently in agricultural production, are under Williamson Act Contracts, or have a high potential for agricultural production due to their soil quality. Temporary components of the solar projects include construction staging areas, parking areas, and construction access roads. Construction activities would temporarily interfere with active grazing activities; therefore the temporary conversion of these lands when combined with impacts from past,

present, and reasonable future projects would be considered cumulatively significant. Operation would result in a significant impact by permanently limiting the type of agricultural activity on the site to only activities compatible with the non-agricultural use of the site, and therefore, the disturbed land would no longer be available for active agricultural operations.

Regardless of mitigation requiring payment to an agricultural land trust, when combined with impacts from past, present, and reasonable future projects, this loss of agriculture land contributes to the decrease in agricultural land throughout the State and County. These impacts would be considered cumulatively significant.

■ **Biological Resources (for Option A and Option B):**

- ***Impact BR-34: The Proposed Project would contribute to a cumulatively considerable impact to special status species when combined with impacts from past, present, and reasonable future projects.*** As a result of past development, many of the species that occur in the Proposed Project area are now limited to a fraction of their historical distribution. The implementation of the Proposed Project and the CVSR project in the Carrizo Plain and the Panoche Valley Solar Farm in the Panoche region would result in the loss or modification to thousands of acres of vegetation known to support sensitive plants and listed wildlife. The large-scale land use conversion from the development of the foreseeable projects list would also result in the loss or modification to habitat supporting rare plants. To reduce impacts to biological resources, a series of mitigation measures have been proposed. However, this mitigation would not reduce the cumulative contribution of all three large solar projects and the other projects identified in the cumulative list to biological resources to a less than significant level.
- ***Impact BR-35: The Proposed Project would contribute to a cumulatively considerable impact to wildlife connectivity or corridors when combined with impacts from past, present, and reasonable future projects (Class I for San Joaquin Kit Fox (SJKF) only).*** The USFWS recovery plan for SJKF determined that it was important to protect and enhance corridors for the movement of kit foxes from the Salinas Valley to the Carrizo Plain and San Joaquin Valley (1998). Both solar projects (Proposed Project and CVSR project) in the Carrizo Plain are found in high permeability areas for SJKF, and implementation of the projects would present new barriers to movement. It is unknown to what degree SJKF would use the solar arrays for movement or foraging. The Panoche Valley Solar Farm could substantially affect the movement patterns of another core SJKF population. Implementation of mitigation measures would reduce these impacts and some residual use of the site would likely occur. However, without a regionally focused strategy for maintaining movement corridors for SJKF, the contribution of the Proposed Project to these cumulative impacts would be significant and unavoidable.

■ **Land Use (for Option A and Option B):**

- ***Impact LU-3: Project would contribute to a cumulatively considerable land use impact when combined with impacts from past, present, and reasonable future projects.*** The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and activity. While this disturbance would be short-term and temporary for each project, a cumulative land use impact would occur from the construction of multiple projects if construction is not carefully managed and area users and residents are not kept informed. Temporary and permanent impacts to residential uses and rural open space uses would be significant and unavoidable.

■ **Noise (for Option A and Option B):**

- ***Impact NS-5: Project would contribute to a cumulatively considerable noise impact when combined with impacts from past, present, and reasonable future projects.*** The only future foreseeable large-scale project that would be under construction and located within one mile of the Proposed Project would be the PG&E 230 kV transmission line reconductoring. If approved, the CVSR Project would be developed in generally the same area as the Topaz Solar Farm Project. While this project is located too far away to result in cumulative noise impacts from onsite construction activities, cumulative noise impacts could result along Highway 58, as this would be a common haul truck route and worker commute route for these projects. Residences located within 50 feet from the road centerline would be exposed to Proposed Project-related unmitigated noise levels due to the cumulative effects of additional traffic noise associated with the proposed CVSR Project nearby. Mitigation measures to reduce the potential of disturbing residences along the construction traffic routes would be implemented; however, traffic-related noise levels would remain above the County's limit of 60 dB Ldn/CNEL resulting in a significant and unavoidable impact.

■ **Transportation and Circulation (for Option A and Option B):**

- ***Impact TR-5: Project would create cumulatively considerable Transportation and Circulation impacts when combined with impacts from past, present, and reasonable future projects.*** Under future conditions when both CVSR and Topaz are under construction, construction traffic generated by the two projects would degrade the LOS on Highway 46 between Jardine Road and Highway 33 from LOS D to LOS E. Based on the Caltrans impact criteria, impacts of the Proposed Project, when combined with impacts from past, present, and reasonable future projects, would be considered cumulatively significant.

F.4 Energy Conservation

In order to assure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on natural gas and oil; and (3) increasing reliance on renewable energy sources.

The Proposed Project itself would help achieve this goal because it would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. In addition, Section C.5 (Climate Change/Greenhouse Gas) describes effects on climate change/greenhouse gas emissions that would be caused by implementation of the Proposed Project, including a discussion on the effects of the project on energy resources.

Specific measures and design features included by the Applicant in the project description that would conserve energy include:

- Using a vegetated understory that would mimic annual grassland vegetation to provide habitat;
- Providing shuttle buses to transport the majority of the proposed 400 construction workers to the project site from Park-n-Ride lots in neighboring communities and towns;
- Minimizing energy usage during project operation by not washing panels/modules; and

- Using aggregate materials from a nearby mine.

Specific measures included by applicable building codes, County policies, and the project mitigation measures to conserve energy and minimize inefficient and unnecessary consumption of energy include:

- Mitigation measures to reduce fuel use during construction and/or increase equipment efficiency (e.g., air quality Mitigation Measures AQ-1.1 and AQ-1.2);
- Mitigation measures requiring the Applicant and all contractors to recycle at least 50 percent of waste generated by the project's construction activity;
- Mitigation measures requiring the Applicant to develop a master Drought Water Management Program and a master Water Conservation Education Program; ~~and~~
- Per Land Use Ordinance Title 22, Section 22.16.030, the Applicant is required to incorporate a landscape with low-water requirements.

In addition, the County's Conservation and Open Space Element (COSE) and CEQA Findings were adopted by the County Board of Supervisors on May 12, 2010. This COSE consolidates and revises five existing General Plan elements, including the Energy Element, and incorporates new material to address timely and relevant conservation issues, including energy resources. As an adopted Element of the County's General Plan, under State law the County's decision makers must consider the Proposed Project's consistency with the COSE. Applicable goals and policies of the COSE and other applicable plans, ordinances, regulations, and standards are addressed in Appendix 13 and Section C.10.6 of this EIR.

Compliance with all applicable building codes, as well as with County policies and the applicant proposed measures and mitigation measures identified in this EIR, would ensure that energy is conserved to the maximum extent possible.

As discussed above in Section F.2, resources that would be consumed as a result of project implementation include water, electricity, and fossil fuels during construction and operation. Additionally, construction would require the manufacture of new materials, some of which would not be recyclable at the end of the Proposed Project's lifetime, and the energy required for the production of these materials would also result in an irretrievable commitment of natural resources. The anticipated equipment, vehicles, and materials required for construction of the Proposed Project are detailed in Section B (Project Description). However, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. Compliance with all applicable building codes, as well as County policies and the mitigation measures identified in this EIR would ensure that all natural resources are conserved to the maximum extent possible. In addition, the Applicant has an established recycling program for its ~~panels~~ modules that will be applied to this project (see Section B, Project Description and Appendix 3 for more information on this program).

The Applicant has committed to use shuttle buses to transport the majority of the proposed 400 construction workers to the project site from Park-and-Ride lots in neighboring communities and towns. Requiring employee use of the shuttles would ensure that the majority of the workforce would not drive personal vehicles to the Proposed Project site, and thus reduce consumption of energy. This EIR recommends additional mitigation measures to augment this commitment including Mitigation Measure TR-1.1 (Prepare and Implement Traffic Control Plan).

No increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the Proposed Project. No mitigation measures above those already present in this EIR would be necessary.

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H. Glossary, Acronyms, and Abbreviations

H.1 Terminology

100-Year Flood – A stream flow caused by a discharge that is exceeded, on the average, only once in 100 years. A 100-year flood has a 1 percent chance of occurrence in any given year.

A-Weighting – A frequency measure of noise, which simulates human perception.

Acre-foot – A unit of measure for water demand and supply. The volume of 1 acre-foot would cover 1 acre to a depth of 1 foot and is equal to 325,851 gallons.

Aggradation (of a stream channel bed) – Raising of stream bed elevation, caused by sediment supply in excess of sediment-transport capacity.

Aggregate – Aggregate is coarse particulate material such as sand, crushed stone, pebbles, or gravel.

Air Quality Standard – The specified average concentration of an air pollutant in ambient air during a specified time period, at or above which level the public health may be at risk; equivalent to AAQS.

Algae – A collective term for several taxonomic groups of primitive chlorophyll-bearing plants which are widely distributed in fresh and salt water and moist lands. This term includes the seaweeds, kelps, diatoms, pond scums, and stoneworts.

Ambient Air – Any unconfined portion of the atmosphere; the outside air.

Ambient Noise Level – Noise from all sources, near and far. ANL constitutes the normal or existing level of environmental noise at a given location.

Ausra Project – Ausra CA, LLC (doing business as Carrizo Energy, LLC). Applicant for the former Carrizo Energy Solar Farm ~~ø~~Project. The Carrizo Energy Solar Farm ~~ø~~Project was cancelled in November 2009. Topaz Solar Farm LLC acquired options on the land previously considered for the Ausra project. These lands are now part of the Topaz project.

Avifauna – Birds.

Baseline – A set of existing conditions against which change is to be described and measured.

Backfill – Earth that is replaced after a construction excavation.

Backhoe – A self propelled machine with an arm equipped with a toothed shovel that scoops earth as the shovel is pulled toward the machine.

Berm – A narrow shelf, path, or ledge typically at the top or bottom of a slope; also, an earthen, mounded wall.

Biota – Living organisms.

Brackish – Pertaining to water, generally estuarine, in which the salinity ranges from 0.5 to 17 parts per thousand by weight.

Btu – British thermal unit, a measurement of energy, the amount of energy that can be obtained as heat by combusting approximately 1/1000 cubic feet of natural gas.

Cadmium Telluride)(CdTe). Cadmium telluride is a stable compound of cadmium (Cd) and tellurium (Te). Cadmium, a human carcinogen produced as a byproduct of zinc refining, is compounded with tellurium, a byproduct of copper refining, to form the stable compound CdTe.

California Valley – California Valley is an unincorporated community located along Soda Lake Road about two miles south of State Highway 58 in San Luis Obispo County, in the northern portion of the Carrizo Plain. Fewer than 500 people live in California Valley.

California Solar Ranch Project – Project proposed by High Plains Ranch II, LLC, a wholly owned subsidiary of SunPower Corporation Systems (SunPower). This project is proposed four miles east of the Topaz project. It would be a 250 MW PV solar power plant. This project includes an aggregate mine and a 2.8-mile 230 kV transmission line to connect to the existing Morro Bay-Midway 230 kV transmission line.

Carbon Monoxide (CO). A colorless, odorless, toxic gas produced by incomplete combustion of carbon in fossil fuels.

Carrizo Energy Solar Farm Project (CESF). Application was terminated in November 2009 and First Solar acquired the development rights to the property in the Carrizo Plain.

Community Noise Equivalent Level (CNEL). the averaging of noise levels on a measurement scale of decibels that increases the actual noise measurement, to account for an increased sensitivity to noise during late evening, nighttime, and morning hours (the increments are 5 dB from 7 to 10 p.m. and 10 dB from 10 p.m. to 7 a.m.).

Cultural Resource – Places or objects important for scientific, historical, and religious reasons to cultures, communities, and individuals.

Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:

- The individual impacts may be changes resulting from a single project or separate projects.
- The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

dBA – The A-weighted decibel scale representing the relative insensitivity of the human ear to low-pitched sounds; decibels are logarithmic units that compare the wide range of sound intensities to which the human ear is sensitive.

Dead-End Towers – The structures at the termination point of a transmission line, or at the overhead/underground transition point.

Decibel (dB) – A logarithmic unit, which measures the pressure levels of sounds.

Demand Side Management (DSM) – Conservation and demand side management consists of a variety of approaches to reduce electricity use such as energy efficiency and conservation, home insulation, energy efficient appliances, fuel substation, etc.

Dry Farmed- Growing crops without irrigation and depending on rain for watering of crops. Dry-farming involves tilling, rolling, and accumulating soil moisture over two to three years and then planting.

Emission – Unwanted substances released by human activity into air or water.

Emission Control Device – Any piece of equipment that reduces the release of any air pollutant into the atmosphere; see BACT.

Emission Limit – A regulatory standard that restricts the discharge of an air pollutant into atmosphere.

Emission, Primary – An emission that is treated as inert (non-reactive).

Emission, Secondary – Unwanted substances that are chemical byproducts of reactive primary emissions.

Environmental Impact Report (EIR). An environmental impact assessment document prepared in accordance with the California Environmental Quality Act (CEQA).

Environmentally Sensitive Habitat (ESH). An area designated by governmental agencies as requiring special administration or protection.

Environment means the physical conditions that exist in the area and that would be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is where significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and artificial conditions.

Fallow (field)– Refers to a recently tilled, or recently rolled field, or a field that is growing a volunteer crop.

Fault – A fracture or zone of fractures in rock strata which have undergone movement that displaces the sides relative to each other, usually in a direction parallel to the fracture. Abrupt movement on faults is a cause of most earthquakes.

Final Environmental Impact Report (FEIR). The Final EIR includes all comments made to the Draft EIR as well as the responses of the Lead Agency to those comments and is submitted to the state/local government and the public for review of a proposed project.

First Solar – The parent company of Topaz Solar Farms LLC, a wholly owned subsidiary of First Solar, Inc.. Topaz Solar Farms LLC is the project applicant for the Topaz Solar Farm Project (Proposed Project).

Fugitive Dust – Airborne pulverized soil particles.

General Scour – Degradation of a channel bed as a result of imbalance of channel sediment-transport capacity and supply during a single stream flow.

Generation – The production of electricity from other forms of energy such as combustion, falling water or thermal transfer.

Generation Capacity – Maximum electric production limit for which a generator is rated. The maximum limit fluctuates with changes in temperature or other environmental circumstances, depending on the type of machine.

Gen-Tie or Generation-Tie – Transmission line connecting a generator to the electric grid.

Gigawatt-hour (gWh) - a measure of electric energy; one million kilowatt-hours.

Horsepower – A unit of power equivalent to 33,000 foot-pounds per minute or 745.7 watts of electricity.

Impacts analyzed under CEQA must be related to a physical change. Impacts are:

- Direct or primary impacts that would be caused by the Proposed Project and would occur at the same time and place; or
- Indirect or secondary impacts that would be caused by the Proposed Project and would be later in time or farther removed in distance but would still be reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems.

Inventory, Emission – A list of daily or annual emissions, listed by pollution source category (e.g., trains, refineries, agriculture, etc.).

Inversion – A layer of air in the atmosphere in which the temperature increases with altitude at a rate greater than normal (adiabatic). Pollutants tend to be trapped below the inversion.

Invertebrate – Animals that lack a spinal column.

Inverter – Inverters take the direct current (DC) output of the panels and convert it to alternating current (AC) for delivery to the transmission grid via the project medium voltage collection system, substation, and switchyard.

Kilovolt (kV) - A measure of electric voltage, one thousand volts.

KOP – Key Observation Point; one or a series of points on a travel route or at a use area where the view of the proposed project would be most revealing.

L10 – An average of noise levels that are exceeded 10 percent of the time during the measurement period.

Ldn – The average ambient noise level in dBA with levels between 10 p.m. and 7 a.m. increased by 10 dBA.

Leq – Energy-equivalent sound level; average level of sound determined over a specific period of time.

Lead Agency – The agency responsible for preparation of the CEQA document. For the proposed Topaz Solar Farm EIR, San Luis Obispo County is the Lead Agency under CEQA.

Less than significant impact. An impact that is adverse but that does not exceed the defined thresholds of significance. Less than significant impacts do not require mitigation.

Level of Service (LOS). A measure of roadway congestion, ranging from A (free-flowing) to F (highly congested).

Liquefaction – The process of making or becoming liquid (soils).

Megawatt (MW) - A measure of electric power equal to 1,000 kilowatts or 1,000,000 watts.

Mitigation consists of measures that avoid or substantially reduce the Proposed Project's significant environmental impacts by:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
- Compensating for the impact by replacing or providing substitute resources or environments.

Modified Mercalli Intensity (MMI). A subjective numerical index describing the severity of an earthquake in terms of its observed effects on humans, man-made structures, and the earth's surface.

Monitoring Station – A mobile or fixed site equipped to measure instantaneous or average ambient air pollutant concentrations.

Nitrogen Oxides – A gaseous mixture of nitric oxide (NO) and nitrogen dioxide (NO₂) and symbolically represented as NO_x.

NO – Nitric oxide. A molecule of one nitrogen and one oxygen atom. Results usually from combustion of organic substances containing nitrogen and from recombination of nitrogen decomposed in air during high temperature combustion.

NO₂ – Nitrogen dioxide. A molecule of one nitrogen and two oxygen atoms. Results usually from further oxidation of nitric oxide (NO) in the atmosphere. Ozone accelerates the conversion.

Ozone – A molecule of three oxygen atoms — O₃. A colorless gas formed by a complex series of chemical and photochemical reaction of reactive organic gases, principally hydrocarbons, with the oxides of nitrogen, which is harmful to the public health, the biota, and some materials.

Noise Level, Median – The level of noise exceeded 50 percent of the time. Usually specified as either the daytime or the nighttime median noise level. Also given the designation L₅₀.

Oxides of Nitrogen NO_x. Poisonous and highly reactive gases produced when fuel is burned at high temperatures, causing nitrogen in the air to combine with oxygen.

Option A and B. The EIR will analyze two project options. Option A (Southern Option) and Option B (Northern Option) include a different configuration of solar arrays with some overlap in land area. Only one option would be permitted if the project is approved by the County.

Particulate Matter (particulates) – Very fine sized solid matter or droplets, typically averaging one micron or smaller in diameter. Also called “aerosol.”

ppb – Parts per billion, a measure of the amount of one substance found in a second, which is the carrier.

ppm – Parts per million, a measure of the amount of one substance found in a second, which is the carrier.

Photovoltaic (PV) - Direct conversion of light into electricity.

Photovoltaic (PV) Array An interconnected system of photovoltaic modules that function as a single electricity-producing unit. The Topaz project would have 437, 1.3 MW arrays.

Photovoltaic (PV) Cell – The smallest semiconductor element within a PV module to perform immediate conversion of light into electrical energy.

Photovoltaic (PV) Module – The smallest assembly of solar cells and ancillary parts, such as interconnections and terminals, intended to generate direct current power under unconcentrated sunlight.

Photovoltaic (PV) Panel – Often used interchangeably with PV module, but more accurately used to refer to a physically connected collection of modules.

PM10 – Particulate matter less than 10 microns in size, which is small enough to be inhaled deeply into the lungs and cause disease.

PM2.5 – Particulate matter (2.5 microns or less).

Prevention of Significant Deterioration (PSD). A federal set of limits on emissions of sulfur oxide and particulates to protect air quality in non-urban area.

Project means the whole of an action that has the potential for resulting in a physical change in the environment, directly or ultimately.

Reconductoring – Installation of new and larger capacity conductors (the wires that carry electricity) on existing transmission towers/poles. Depending on engineering, tower replacement is sometimes necessary to support the larger (i.e., heavier) conductors.

Right-of-way (ROW)- An easement, lease, permit, or license across an area or strip of land to allow access or to allow a utility to pass through public or private lands.

Riparian – Area along the banks of a river or lake supporting specialized plant and animal species.

Ruderal – Growing where the natural vegetation cover has been disturbed.

Significant Ecological Area (SEA). An area containing an ecosystem of value and requiring government protection.

Seedbank – The layer of topsoil containing native plant seed material, which is frequently used as a “seed bank” for revegetation of native plants.

Sensitive Receptor – Land uses adjacent to or within proximity to the Proposed Project that could be impacted by construction, operation, and maintenance activities.

Shrink-Swell Potential – The expansion or contraction of primarily clay-rich soils during alternating wetting and drying cycles.

Significant impact on the environment means a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

Significant and unavoidable impact. An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less than significant level through the implementation of mitigation measures.

SIP – State Implementation Plan (see Air Quality); a document required periodically from each county by EPA that indicates the progress and the planning of the county for improving the quality of its air.

Skylining – Extending above the horizon line.

Solar Insolation – The solar power density incident on a surface of stated area and orientation, usually expressed as Watts per square meter or Btu per square foot per hour.

Solar Irradiance – The direct, diffuse, and reflected solar radiation that strikes a surface.

SOx – Sulfur oxide. The group of compounds formed during combustion or thereafter in the atmosphere of sulfur compounds in the fuel, each having various levels of oxidation, ranging from two oxygen atoms for each sulfur atom to four oxygen atoms.

Study Area A and B. The EIR will consider two study areas for the project. The study areas are larger than the area covered by the solar arrays (Option A and Option B) to allow flexibility in final design. Study Area A includes the Option A (Southern Option) solar array configuration and Study Area B includes the Option B (Northern Option) solar array configuration.

Substrate – Geologic term describing soil or geologic layers underlying the ground surface.

Sulfates – Compounds in air or water that contain four oxygen atoms for each sulfur atom. See SOx.

Sulfur dioxide (SO₂) – A corrosive and poisonous gas produced from the complete combustion of sulfur in fuels.

Sulfur Oxides – A gaseous mixture of sulfur dioxide (SO₂) and sulfur trioxide (SO₃) and symbolically represented as SOx. Can include particulate species such as sulfate compounds (-SO₄).

SunPower – The parent company of High Plains Ranch II, LLC (a wholly owned subsidiary of SunPower Corporation Systems); High Plains Ranch II, LLC is the applicant for the California Valley Solar Ranch project, which is proposed approximately four miles east of the Topaz Solar Farm Project.

Terrestrial – Related to or living on land. Terrestrial biology deals with upland areas as opposed to shorelines or coastal habitats.

Total Suspended Particulates (TSP). Solid or liquid particles small enough to remain suspended in air. PM10 is the portion of TSP that can be inhaled.

Turbidity – Cloudiness or muddiness of water, resulting from suspended or stirred up particles.

Utility Corridor – A strip of land, or an easement, on which utility facilities such as power lines and pipelines are constructed.

Visual Sensitivity – Consideration of people's uses of various environments and their concerns for maintenance of scenic quality and open-space values; examples of areas of high visual sensitivity would be areas visible from scenic highways, wilderness areas, parks, recreational water bodies, etc.

Volume to Capacity ratio (V/C) - A measure of the capacity of a roadway. When V/C is 100 percent, no more traffic can be accommodated.

Watershed – The area contained within a drainage divide above a specified point on a stream.

Wetland – Lands transitional between obviously upland and aquatic environments. Wetlands are generally highly productive environments with abundant fish, wildlife, aesthetic, and natural resource values. For this reason, coupled with the alarming rate of their destruction, they are considered valuable resources, and several regulations and laws have been implemented to protect them.

Williamson Act – A sState program administered by the County of San Luis Obispo under the California Land Conservation Act of 1965. The program provides an opportunity for landowners to voluntarily place their property into a 10-year agricultural preserve in exchange for reduced property taxes. Beginning on the first year following the execution of a 10-year contract, a year is automatically added for each year

that elapses to maintain an ongoing 10-year term unless a notice of nonrenewal is served. Once a notice of nonrenewal is served on a contract with 10 years remaining, it takes 9 to 10 years for the contract to expire. Contracts can be cancelled if they meet the findings of the County's Rules of Procedure to Implement the California Land Conservation Act of 1965 (June 1972).

H.2 Acronyms and Abbreviations

AAC – All-aluminum conductor

AADT – Annual average daily traffic

AAQS – Ambient Air Quality Standard

AB – Assembly Bill (e.g., AB 32)

AC – Alternating current

ACE – Assessment of Chemical Exposure

ACHP – U.S. Advisory Council on Historic Preservation

ACM – Air Control Measure

ACOE – U.S. Army Corps of Engineers

ACSR – Aluminum Conductor, Steel Reinforced

ADT – Average Daily Tripway

af – acre feet (see acre-foot)

AFC – Application for Certification

AFY – Acre-feet/year

ANL – Ambient Noise Level

ANSI – American National Standards Institute

AP or APEFZ – Alquist-Priolo Earthquake Fault Zone

APCD – Air Pollution Control District

API – American Petroleum Institute

APM – Applicant Proposed Measure

APN – Assessor Parcel Number

AQAP – Air Quality Attainment Plan

AQMP – Air Quality Management Plan

ARB – (California) Air Resources Board

ARPA – Archaeological Resources Protection Act

ARRA – American Recovery and Reinvestment Act

Array – See photovoltaic array

ASME – American Society of Mechanical Engineers

ASTM – American Society for Testing Materials

ATC – Authority to Construct

ATCM – Air Toxics Control Measure

BA – Biological Assessment

BACT – Best Available Control Technology

BBL – Barrel

BLM – Bureau of Land Management

BMP – Best Management Practice

B.P. – Before Present

BPD – Barrels Per Day

BSA – Biological Study Area

Btu – British thermal unit

°C – Degree(s) Celsius

CAA – Clean Air Act (1969)

CAAQS – California Ambient Air Quality Standard; see AAQS

CdTe – Cadmium Telluride

CAISO – California Independent System Operator

Cal Fire – California Department of Forestry and Fire Protection

CAL OSHA – California Occupational Safety and Health Administration

Caltrans – California Department of Transportation

CAMP – Construction Activity Management Plan

CAP – San Luis Obispo County Climate Action Plan (see Climate Change/Greenhouse Gas) or San Luis Obispo County Clean Air Plan (see Air Quality)

CAPCOA – California Air Pollution Control Officers Association

CARB – California Air Resources Board, sometimes abbreviated as ARB

CBACT – Construction Best Available Control Technology

CCAA – California Clean Air Act

CCC – California Coastal Commission

CCD – Census County Division

CCIC – Central Coast Information Center

CCR – California Code of Regulations

CDC – Center for Disease Control and Prevention

CDCA – California Desert Conservation Area

CDF – California Department of Forestry and Fire Prevention

CDFG – California Department of Fish and Game

CDNPA – California Desert Native Plant Act

CEC – California Energy Commission

CEE – Customer Energy Efficiency

CEERT – Center for Energy Efficiency and Renewable Technologies

Cell – See photovoltaic cell

CEQ – Council on Environmental Quality

CEQA – California Environmental Quality Act

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (also known as “Superfund”)

CESA – California Endangered Species Act

CESF – Carrizo Energy Solar Farm (also known as the Ausra Project)

CFR – U.S. Code of Federal Regulations

cfs – Cubic feet per second.

CH₄ – Methane

CHP – California Highway Patrol

CHRIS – California Historical Resource Information System

CHSC – California Health and Safety Code

Class I – Significant impact; cannot be mitigated to a level that is not significant

Class II – Significant impact; can be mitigated to a level that is not significant

Class III – Adverse impact, but not significant

Class IV – Beneficial impact

cm – Centimeter

CNDDDB – California Natural Diversity Database

CNEL – Community Noise Equivalent Level

CNPS – California Native Plant Society

CO – Carbon Monoxide

CO₂ – Carbon Dioxide.

CO₂e – Equivalent CO₂ emission rate

CPCN – Certificate of Public Convenience and Necessity

CPNM – Carrizo Plain National Monument

CPUC – California Public Utilities Commission

CRC – Certificate of Right-of-Way Compatibility

CRHR – California Register of Historical Resources

CRLF – California Red-legged Frog	DSM – Demand Side Management, for example, home insulation, energy efficient appliances, etc.
CRMP – Cultural Resource Management Plan	DTSC – (California) Department of Toxic Substance Control
CRNR – California Regulatory Notice Register	DWR – (California) Department of Water Resources
CSC – California Species of Concern	ECP – Erosion Control Plan
CSD – Community Service District	EDD – (California) Employment Development Department
CSP – Concentrating Solar Power	EMF – Electric and Magnetic Field
CUP – Conditional Use Permit	EPA – U.S. Environmental Protection Agency
CVSR – California Valley Solar Ranch project	EPRI – Electric Power Research Institute
CWA – Clean Water Act	ESA – Endangered Species Act, or Environmental Site Assessment
CWC – California Water Code	ESA – Environmentally Superior Alternative (CEQA)
cy – Cubic yard	ESH – Environmentally Sensitive Habitat
CZMA – Coastal Zone Management Act	ESHA – Environmentally Sensitive Habitat Area
CZMP – Coastal Zone Management Program	ESU – Evolutionary Significant Unit
dB or dBA – see Decibel	FAA – Federal Aviation Administration
dbh – Diameter at breast height	FCC – Federal Communication Commission
DC – Direct current	FEIR – Final Environmental Impact Report
DEIR – Draft Environmental Impact Report (see EIR)	FEMA – Federal Emergency Management Agency
DFG – California Department of Fish & Game (see also CDFG)	FERC – Federal Energy Regulatory Commission
DOC – (California) Department of Conservation	FESA – Federal Endangered Species Act
DOE – US Department of Energy	FHWA – Federal Highway Administration
DOF – (California) Department of Finance	FIRM – Flood Insurance Rate Map
DOGGR – (California) Division of Oil, Gas, and Geothermal Resources	Flora – Plants or plant life
DOSH – Division of Occupational Safety and Health	FLPMA – Federal Land Policy Management Act
DOT – U.S. Department of Transportation	FRA – Federal Railway Administration
DPM – Diesel particulate matter	FTE – Full-time equivalent
DPR – Department of Parks and Recreation	
DRA – (CPUC's) Division of Ratepayer Advocates; previously Office of Ratepayer Advocates (ORA)	

GHG – Greenhouse gas	KPRA – Kingpin-to-rear axel
GIS – Geographic Information System	kV – Kilovolt. (one thousand volts)
gpd – Gallons per day; a measure of flow rate	kV/cm – Kilovolts per centimeter
gpm – gallons per minute	kV/m – Kilovolts per meter
GPS – Global positioning system	KVPs – Key viewpoints
gWh – Gigawatt-hour; (One million kilowatt-hours)	kWh – Kilowatt-hour
HAPs – Hazardous air pollutants	lbs/day – Pounds per day
HCP – Habitat Conservation Plan	LCA – Life-cycle analysis
Herpetofauna – Biological term for reptiles	LFZ – Likely Fault Zone
Herpetologist – Person who studies reptiles	Lmax – Maximum Leq
HF – High frequency	Lmin – Minimum Leq
HMA – Housing Market Area; see Population and Housing	LOS – Level of Service (a measure of roadway congestion) m – Meter, length equal to 39.37 inches
HMBP – Hazardous Materials Business Plan	M – Thousand
HOV – High-occupancy vehicle	m – m Meter
HPMP – Historic Properties Management Plan	m³ – C ubic meters-
HVAC – Heating, ventilation and air conditioning	MEI – Maximum Exposed Individual; see Air Quality-
Hz – Hertz; a measure of frequency in cycles per second	mg/L – m Milligrams per liter
I-5 – Interstate 5	MGD – Million gallons per day
IOU – Investor Owned Utility	Micron – One millionth of a meter
IPPs – Independent Power Producers	Milligauss (mG) – Measurement of magnetic field strength
ISCST – Industrial Source Complex (short term); an EPA-approved computer air quality module	MM – Mitigation Measure, or Million (thousand thousand)
ISO – Independent System Operator; or International Organization for Standardization	mm – Millimeter
ITE – Institute of Traffic Engineers	M&M – Monitoring and Maintenance Building
kcmil – Thousand circular mils; refers to conductor size	MMI – Modified Mercalli Intensity (scale)
km – Kilometer	MMP – Mitigation Monitoring Plan
km² – Square kilometer	MMTCO₂ – Million metric tonnes of CO ₂
	MP – Milepost

MW – Megawatt; (measure of electric power).
MW_{AC} – Megawatt per acre

Mw – Moment magnitude; measurement by which earthquakes are measured

MWh – Megawatt-hours

MSL – Mean sea level

NAAQS – National Ambient Air Quality Standards; see AAQS

NACE – National Association of Civil Engineers

NAHC – Native American Heritage Commission

NCCP – Natural Community Conservation Plan

NESC – National Electrical Safety Code

NESHAP – National Emission Standard for Hazardous Air Pollutants

NHPA – National Historic Preservation Act

N₂O – Nitrous oxide

NOA –Notice of Availability

NOC – Notice of Completion

NOD – Notice of Determination

Non-Firm Purchases – Electric energy purchases having limited or no assured availability

NOP – Notice of Preparation (of environmental document)

NOx – Oxides of nitrogen

NPDES – National Pollutant Discharge Elimination System

NPPA – Native Plant Protection Act

NPS – National Park Service (an agency of the U.S. Department of the Interior)

NRCS – Natural Resource Conservation Service

NRHP – National Register of Historical Places

NSR – New Source Review; see Air Quality

NTSB – National Transportation Safety Board

O&M – Operations & Maintenance

O₃ – See Ozone

OPH – Office of Historic Preservation

OPR – Office of Planning and Research (State of California)

Panel – See photovoltaic panel

PCE – Passenger car equivalent

PCP – Pollution Control Plan

PCS– Power Conversion Stations

PEA – Proponent's Environmental Assessment

PGA – Peak ground acceleration

PG&E – Pacific Gas and Electric Company

pH – A measure of acidity or alkalinity

PM – Particulate Matter

PPA – Power Purchase Agreement

ppb – Parts per billion, a measure of the amount of one substance found in a second, which is the carrier

ppm – Parts per million, a measure of the amount of one substance found in a second, which is the carrier

ppt – Parts per thousand, a measure of the amount of one substance found in a second, which is the carrier

PRC – Public Resources Code

PSA – Permit Streamlining Act

PSD – Prevention of Significant Deterioration

PTO – Permit to Operate; granted by the APCD after source testing and validation of permits

PV – photovoltaic

PVCS– PV Combining Switchgear

RCRA – Resource Conservation and Recovery Act

RES – Renewable Electricity Standard	T-BACT – Toxic Best Available Control Technology
RETI – Renewable Energy Transmission Initiative	TCM – Transportation Control Measures
RMP – Resource Management Plan	TCP – traditional culture property
RO – Reverse Osmosis	TCP – Traffic Control Plan
ROGs – Reactive organic gases	TCR – Transportation Concept Report
ROI – Region of Influence	TDS – Total Dissolved Solids
ROW – Right-of-way	TNC – The Nature Conservancy
RPS – Renewable Portfolio Standard	TL – Transmission line
RRP – Road Restoration Plan	TMP – Transportation Management Plan
RWQCB – Regional Water Quality Control Board	Topaz – Topaz Solar Farm Project (the Proposed Project)
SAA – Streambed Alteration Agreement	tpd – Tons per day
SB – Senate Bill	TPH – Total Petroleum Hydrocarbon
SCAB – South Coast Air Basin	TSCA – Toxic Substances Control Act of 1976
SCF – Standard cubic foot; a measure of volume or rate of flow of liquid	TSP – Total Suspended Particulates
SCS – Soil Conservation Service (now NRCS)	UBC – Uniform Building Code
SEA – Significant Ecological Area	UFC – Uniform Fire Code
SF₆ – Sulfur hexafluoride	ug/m³ – Millionths of a gram per cubic meter, a unit of concentration in liquids or gases
SHPO – State Historic Preservation Office	USA – Underground Service Alert
SLOCOG – San Luis Obispo Council of Governments	USACE – U.S. Army Corps of Engineers (see also CAO E)
SLO County – San Luis Obispo County, the CEQA Lead Agency for this project	USCS – Unified Soils Classification System
SO₂ – Sulfur dioxide	USGS – US Geological Survey
SR – State Route (e.g., SR-58 or State Highway 58)	USDA – United States Department of Agriculture
SRA – Sensitive Resource Area	USEPA – United States Environmental Protection Agency
SSC – Species of Special Concern	USFWS – U.S. Fish and Wildlife Service
SWPPP – Stormwater Pollution Prevention Plan	USGS – U.S. Geological Survey
SWRCB – State Water Resources Control Board	V/C – Volume to Capacity ratio (capacity of a roadway)
TACs – Toxic Air Contaminants	

VAC – Visual absorption capacity

VAR – Voltage ampere-reactive

VMT – Vehicle miles traveled, usually per day

VOC – Volatile organic compounds

vpd – Vehicles per day

WA – Williamson Act

WDR – Waste Discharge Requirements

WSA – Water Supply Assessment

I. Preparers of the ~~Draft~~ Final EIR

A consultant team of 30 key technical and administrative personnel headed by Aspen Environmental Group prepared this document under the direction of San Luis Obispo County (County). Steve McMasters (County Project Manager), Trevor Keith (County Project Manager), John McKenzie (Senior Environmental Planner), Ellen Carroll (Environmental Coordinator), and other County departments and representatives provided comment and input into this Topaz Solar Farm Project EIR. Table I-1 presents the technical preparers from the Aspen consultant team.

Organizations Consulted

The organizations listed below were consulted during the preparation of the Draft EIR.

- Bureau of Land Management (BLM), Bakersfield Field Office - Sue Lopez
- BLM, Carrizo National Monument, Recreation Planner - Ryan Cooper BLM Manager of the Carrizo Plain National Monument - Jonha Hurl
- Federal Aviation Administration – Dave Persaud
- United States Fish and Wildlife Service – Susan Jones
- United States Fish and Wildlife Service – Ken Sanchez
- United States Fish and Wildlife Service – Kate Symonds
- California Department of Conservation – Molly Penberth
- California Department of Fish and Game – Dave Hacker
- California Department of Fish and Game - Bob Stafford
- California Department of Fish and Game – Julie Vance
- California Department of Parks and Recreation, Office of Historic Preservation - Lucinda Woodward
- California Department of Transportation, Division of Aeronautics - Terry L. Barrie
- Atascadero Unified School District - Wendy Morin
- County of San Luis Obispo, Administrative Office - Andrea McGarvey
- County of San Luis Obispo, Administrative Office - Leslie Brown
- County of San Luis Obispo, Agriculture Department – Michael Isensee
- County of San Luis Obispo Fire Department – Paul Lee and Rick Swan
- County of San Luis Obispo, GSA-IT - Timothy John Peters
- County of San Luis Obispo, Land Conservation Program – Terry Wahler
- County of San Luis Obispo Sheriff's Department – Rob Bryn
- County of San Luis Obispo Department of General Services, Parks and Recreation Division – Ernie Delrio
- County of San Luis Obispo, Planning and Building Department, Building Division, Onsite Wastewater Specialist - Barry Tolle
- San Luis Obispo County Air Pollution Control District - Meghan Field
- San Luis Obispo Council of Governments - Mike Harmon

Table I-1. EIR Preparers and Reviewers

Agency/Firm	Personnel by Name and Title	Education	Years Exp.	Issue Area
Technical Assistance				
Aspen Environmental Group	Sandra Alarcón-Lopez	M.A. Urban Planning B.A. Speech and Hearing Science	27	EIR Project Manager
	Jason Ricks	M.S. Environmental Public Health B.S. Biology	12	Deputy Project Manager Transportation
	Susanne Huerta	Master of Urban Planning B.A. Geography	5	Project Assistant, Agricultural Resources
	Sue Walker	M.A. Applied Geography B.A. Physical Geography	20	Alternatives, Land Use, Policy Consistency
	Brewster Birdsall, P.E. Q.E.P.	M.S. Civil Engineering B.S. Mechanical Engineering	14	Greenhouse Gas, Air Quality, Noise
	Will Walters, P.E.	B.S. Chemical Engineering	25	CdTe Review, Panel Heat
	Aubrey Mescher	Masters of Environmental Science and Management (MESM) (emphasis in Water Resources Management) B.A. Environmental Studies	5	Hydrology/Groundwater, Water Supply Assessment
	Marisa Mitchell	M.A. Environmental Studies B.S. Environmental Science	5	Hazards; Transmission Line Upgrades Analysis
	Jacob Hawkins	MESM B.S. Biology	10	Public Services/Utilities, Fiscal Impact Analysis
	Scott Debauche	B.S. Urban & Regional Planning	14	Air Quality Population/Housing
	Stan Yeh	M.P.A., Environmental Policy, B.S., Environmental Studies	10	Cumulative, Other CEQA Considerations, Population and Housing
	Chris Huntley	B.A. Biology	15	Biological Resources
	Jared Varonin	B.S. Ecology and Systematic Biology	8	Biological Resources
	<u>Ruth Darling</u>	<u>B.S. Conservation Biology</u>	<u>3</u>	<u>Biological Resources; Transmission Line Upgrades Analysis</u>
	Lisa Blewitt	B.S. Chemical Engineering	13	Noise
	Negar Vahidi	Master of Public Administration B.A. Political Science	18	Agricultural Resources
	Richard McCann	Ph.D. Agricultural and Resource Economics M.P.P. Institute of Public Policy Studies M.S. Agricultural and Resource Economics B.S. Political Economy of Natural Resources	24	Fiscal Impact Analysis

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Agency/Firm	Personnel by Name and Title	Education	Years Exp.	Issue Area
Technical Assistance				
	Craig Hattori	B.A. Philosophy	16	GIS/Graphics
	Anton Kozhevnikov	B.S. Geography	10	GIS/Graphics
	Akbar Noorzay	M.A. History B.A. History	7	GIS/Graphics
	Judy Spicer	B.A., English	45	Document Production
	Mark Tangard	B.A. Geography	35	Document Production
	Kati Simpson	B.A. Geography A.A. Liberal Arts and Sciences	24	Graphics
Mead and Hunt	Carol Roland	Ph.D. US History M.A. US History B.A. US History	22	Historic Resources
Terra Verde	Brooke Langle	B.S. Ecology	13	Biological Resources
Geotechnical Consultants, Inc.	Jim Thurber	M.S. Geology B.S. Geology	24	Geology/Soils Groundwater
	Aurie Patterson	B.A. Geology	13	Geology/Soils Groundwater Paleontology
McCormick Biological, Inc.	Randi L. McCormick	B.S. Biology	23	Biological Resources
Tremaine & Associates	Kim Tremaine	Ph.C. Anthropology M.A. Cultural Resources Management B.A. Anthropology	32	Cultural Resources
Wood Rodgers	Ravi Narayanan	M.S., Transportation Engineering B-Tech. Civil Engineering	13	Transportation
Lindsley Architectural Lighting	Alan Lindsley	B.A. Environmental Design	33	Reflection/Glare
	James Jewell	Master of Fine Arts, Theater Design B.A. Concentration in Technical Theatre and Lighting	53	Reflection/Glare
William Kanemoto & Associates	William Kanemoto, Principal	Master of Landscape Architecture B.A. Liberal Arts	24	Visual Resources