2. PROJECT DESCRIPTION

2.1. INTRODUCTION AND BACKGROUND

2.1.1. Overview of Westlands Solar Park and WSP Gen-Tie Corridors Plan

The overall project covered by this EIR includes two main elements, consisting of: 1) the Westlands Solar Park ("WSP") Master Plan, which is an overall plan of development for solar generating facilities within WSP; and 2) the Westlands Solar Park Generation-Interconnection Tie-Line Corridors Plan ("WSP Gen-Tie Corridors Plan"), which is the route plan for high-voltage transmission corridors to provide interconnection and capacity for delivery of WSP-generated power to the State electrical grid at Gates Substation. These main project elements are interrelated and mutually supportive, and for the sake of brevity are also referred to as the Westlands Solar Park and WSP Gen-Tie Corridors. The main plan elements and their settings are shown in Figures PD-1 and PD-2 and are briefly described below.

1) Westlands Solar Park (WSP) Master Plan – The WSP Master Plan is intended to serve as the planning framework for a series of utility-scale solar photovoltaic (PV) energy generating facilities on about 21,000 acres in west-central Kings County, generally located south of SR-198, west of SR-41 and the Kings River, and east of the Fresno County Line. The combined generating capacity of WSP solar projects is estimated to be 2,000 MW, although the final power output could increase with improved solar PV module efficiency over the course of the WSP buildout period. The solar PV projects developed within WSP would have varying generating capacities, with the power output from the solar facilities ranging up to about 250 MW. The installation of solar generating facilities is planned to occur incrementally over an approximately 12-year buildout period extending to about 2030. The rate of solar project installation is anticipated to range from about 20 to 250 MW per year, with the installation rate averaging about 167 MW per year over the 12-year buildout period. For planning purposes, Master Plan area is divided into 12 subareas (or solar generating facilities – SGFs), and includes several substations to step up the generated power to a transmission voltage of 230-kV.

2) Westlands Solar Park to Gates Substation Gen-Tie Corridors – Two gen-tie lines are planned to deliver WSP solar-generated power to the State's electrical grid at the Gates Substation, as follows:

   a. WSP-South to Gates Gen-Tie Corridor – This planned 230-kV gen-tie corridor would run parallel and adjacent to the Nevada-Jayne Avenue roadway right-of-way, commencing at planned substation on Nevada Avenue in the south-central portion of WSP and running westward along the north side of the roadway for 11.5 miles to the Gates Substation. This gen-tie corridor would serve as the first of two WSP (gen-ties providing delivery of solar power generated in the central and southern portions of the WSP to the Gates Substation where it would be transferred to the State electrical grid. [An optional configuration under consideration would consist of two parallel 230-kV gen-ties in this alignment, as an alternative to the second gen-tie corridor described below.]

   b. WSP-North to Gates Gen-Tie Corridor – This planned 230-kV transmission corridor would run parallel and adjacent to the existing 230-kV Henrietta-Gates transmission line, commencing at a planned substation in the northern portion of WSP, and running southwestward for 11.5 miles to the Gates Substation.

This transmission corridor would serve as the second WSP gen- tie line providing delivery of solar power generated in the northern and central portions of the WSP to the Gates Substation where it would be transferred to the State electrical grid. [As mentioned above, this gen-tie alignment may not be pursued if it is ultimately decided to add a second parallel gen-tie line along the Nevada-Jayne Avenue alignment described above. Alternatively, it is possible that this corridor may include two parallel 230-kV gen-tie lines, in which case the southern gen-tie described above may not be constructed.]

Role of WSP Master Plan and Transmission Plan in WWD's Policy Scheme

The WSP Master Plan is intended to serve as a further refinement of WWD's *Land Use and Asset Management Plan*. More specifically, the WSP Master Plan provides further definition of the policy directive contained in the Land Use and Asset Management Plan which identifies renewable energy development as a preferred form of development for the reuse of retired lands, particularly those lands located in the vicinity of existing electrical substations. The WSP Gen-Tie Corridors Plan is intended to advance the implementation of the WSP Master Plan by providing the means for delivery of WSP solar generation to the State electrical grid.

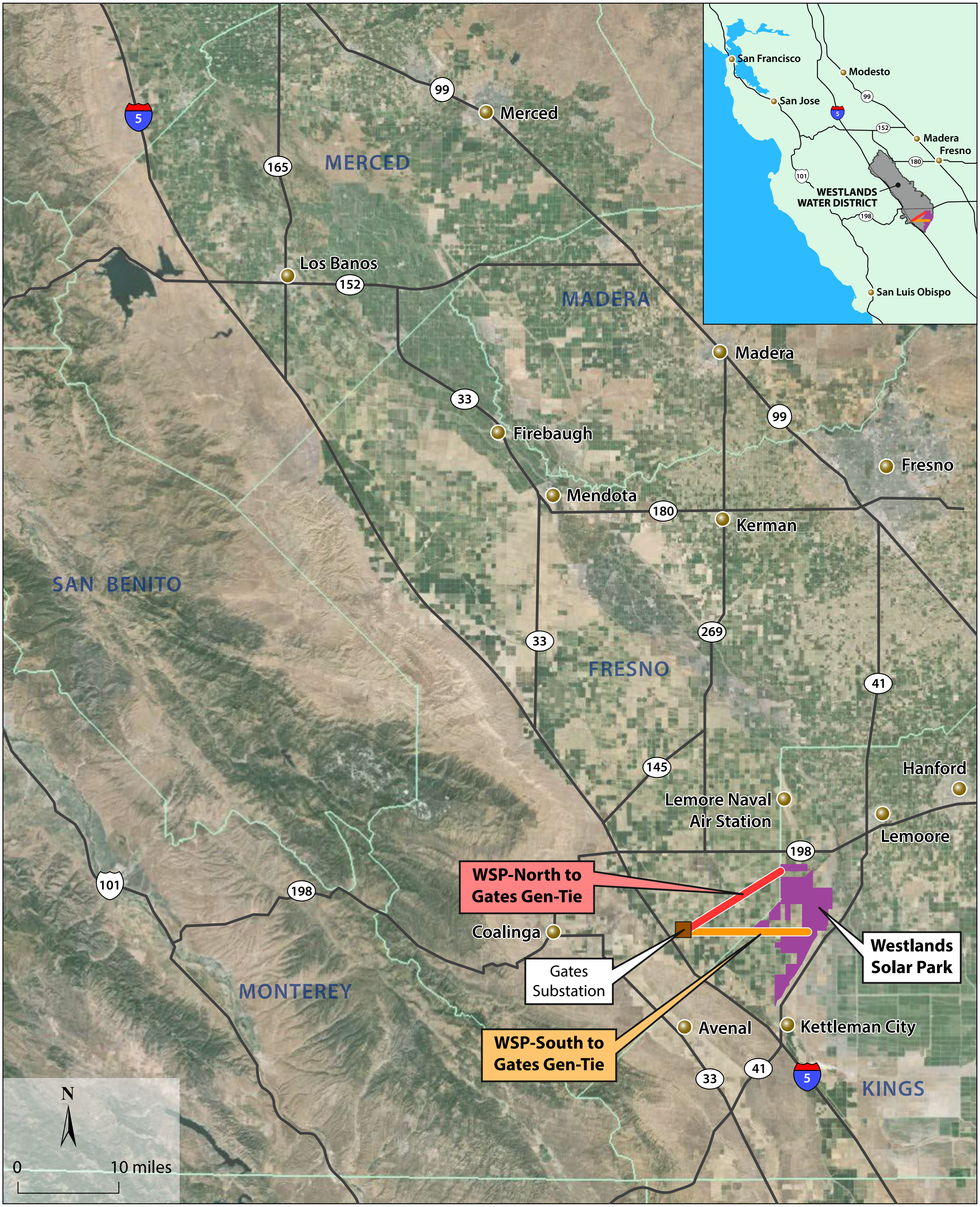
Role of WSP in Statewide Renewable Energy Planning

The foundation for renewable energy planning in California is the legislative mandate to reduce greenhouse gas emissions under AB 32 (California Global Warming Solutions Act of 2006, as extended and supplemented by SB 32 in 2016), and a related series of Executive Orders establishing and updating the Renewable Portfolio Standard (RPS), which currently requires that 50 percent of the electricity provided by each of the State's Investor-Owned Utilities (IOUs) be generated by renewable sources by 2030.

In 2010, the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), the California Independent System Operator (CAISO), utility providers, and stakeholders participated in a statewide planning effort, known as the California Renewable Energy Transmission Initiative (RETI), to identify the electricity transmission corridors necessary for California to meet the RPS goals. The RETI planning process identified various renewable resource-rich areas, along with conceptual transmission upgrades needed to connect these areas to the statewide grid. The RETI process resulted in the designation of Competitive Renewable Energy Zones (CREZs), which are areas determined to hold the greatest potential for cost-effective and environmentally responsible renewable energy development. The WSP is entirely located in an area that has been designated by the RETI as the Westlands CREZ, which is the only CREZ in the San Joaquin Valley. Westlands CREZ was designated by RETI because it consists of disturbed agricultural land contaminated with selenium, and is adjacent to existing transmission and near the Gates substation. Through the RETI process, the Westlands CREZ was identified as having a potential renewable energy resource of up to 5,000 MW.

Recent Refinements to WSP Master Plan and Transmission Corridors Plan

The plans evaluated in this EIR have been refined during the several years since the initial planning stages for the Westlands Solar Park, and since the original Notice of Preparation (NOP) for the WSP Master Plan and Transmission Corridors EIR issued in March 2013 (contained in Appendix B of this EIR). These changes are described below, in relation to the Master Plan elements as described in the NOP. (The plan modifications were also described in the Revised NOP, issued in August 2017.)



Base map: Google Earth, 2016

Regional Location

Figure PD-1

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a. Westlands Solar Park Master Plan – Some of the land areas included in the WSP Master Plan as described in the original NOP have been removed from the Master Plan Area. The lands removed consist of properties in the northern and south-central portions of the plan area. As a result, the overall land area included in the WSP Master Plan has been reduced from approximately 24,000 acres to approximately 21,000 acres, and the corresponding estimate of total generating capacity has been reduced from approximately 2,400 MW to approximately 2,000 MW, based on assumed development intensity of PV solar facilities of about 10 gross acres per MW. No new lands have been added to the Master Plan area as described in the NOP.

b. Westlands Transmission Corridors Plan – The transmission corridors plan described in the original NOP has been modified in two ways, as follows:

   i. Gates to Gregg Corridor – The project description in the original NOP included a new transmission corridor connecting the Gates Substation with the Gregg Substation located just north of Fresno. The southern 26-mile segment of this corridor was to be shared with the Westlands Transmission Corridor, as described below. Subsequently, PG&E initiated the separate Central Valley Power Connect (CVPC) project to construct a new transmission line between the Gates and Gregg substations. As such, the Gates to Gregg transmission element of the Westlands Solar Park Transmission Plan became redundant and was therefore eliminated as part of the proposed project to be evaluated in this EIR.

   ii. Westlands Solar Park Transmission Corridor – The initial concept for this corridor was to have it include two interior segments that would mainly follow new alignments northward through the interior of Westlands Water District. The first segment would commence at the Gates Substation and diverge from the existing 230-kV transmission line (along I-5) near SR-198 east of Harris Ranch and head directly north to a point southwest of the Helm Substation (this route is shown in the original NOP in Appendix B). The 26-mile first segment from Gates to Helm was intended to be a joint transmission corridor to be shared with the Gates to Gregg corridor, described above. The second segment was planned to branch off at the Helm junction and head northwestward for about 20 miles to rejoin the I-5 corridor alignment which would then continue northwest parallel to the existing 230-kV transmission lines for a final 40 miles to the Los Banos Substation on SR-152 near Santa Nella.

   Subsequent to removal of the Gates to Gregg corridor from the Westlands Transmission Plan, the original interior transmission route lost its primary beneficial attribute of providing for a joint transmission corridor with the Gates to Gregg corridor in the southern segment. Accordingly, a new preferred route for the Westlands Transmission Corridor was identified along the west side of the valley, with the transmission corridor running parallel and adjacent to existing transmission lines near I-5.

   Subsequent to the identification of a new preferred transmission route along the west side of the valley through this planning and EIR process, a separate interconnection application was filed with the federal Western Area Power Administration (WAPA or Western) to construct a new transmission line along the west side of the valley between the Gates Substation and the Dos Amigos Pumping Plant, and potentially further on to the Los Banos. That transmission corridor will be the subject of a separate project-specific EIS/EIR. Since that joint NEPA/CEQA document will provide full project-level environmental review for a transmission corridor along the west side of the valley, the programmatic review of a westside transmission corridor that was originally planned in this EIR became redundant and was therefore eliminated from consideration in this document.

iii. Henrietta-Gates Transmission Upgrades – Under the original transmission plan, the renewable energy generated at WSP was to be conveyed to the Gates Substation solely by an 11-mile transmission line running parallel and adjacent to the existing 230-kV Henrietta-Gates transmission line. That transmission corridor is still part of the plan but has been renamed the "WSP-North to Gates Gen-Tie."

iv. WSP-South to Gates Gen-Tie Corridor – This 11.5 mile transmission corridor has been added to the plan to serve the central and southern portions of the WSP plan area. This gen-tie corridor is described in further detail below.

2.2. PROJECT OBJECTIVES

Introduction

State CEQA Guidelines Section 15124(b) indicates that an EIR should include:

> "A statement of objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project."

Overall Project Goals

The Westlands Solar Park Master Plan and WSP Gen-Tie Corridors Plan are intended to fulfill the following goals:

1) To provide an overall plan to guide and facilitate the beneficial reuse of drainage-impaired lands through development of renewable energy generation in the Westlands Competitive Renewable Energy Zone (CREZ).
2) To establish the preferred transmission gen-tie corridors to convey WSP-generated renewable energy to the statewide electricity market. Establishment of these routes would facilitate deliveries of renewable energy generation from drainage-impaired lands of Westlands Solar Park to the state electrical grid.

Project Objectives of the WSP Master Plan

The major goals articulated above encompass the following specific objectives of the WSP Master Plan:

- Generate approximately 2,000 megawatts of clean, renewable electrical power utilizing solar photovoltaic (PV) technology and to deliver the electrical output to the State's electrical grid. (The estimated overall generating capacity for WSP could increase with improvements to solar PV module efficiency during the course of the buildout period for WSP.)

- Contribute to the solution of area-wide agricultural drainage problems by retiring all of the lands within the WSP plan area and providing productive reuse of those lands for renewable energy production as an alternative to irrigated agriculture.
- Provide for the economically viable and environmentally beneficial reuse of the WSP plan area's physically impaired agricultural soils.
- Contribute to the reduction in overdraft of the aquifer for supplemental irrigation.
- Reduce cumulative salt loading to the groundwater resource.
- Constructively address the chronic shortage of surface water deliveries by removing the least productive farmland from irrigation by imported water, and by facilitating the redirection of scarce surface water allocations from the WSP plan area to more productive agricultural land within Westlands Water District that is not physically impaired by saline soils, high groundwater, or high selenium or other mineral concentrations. (This applies only to the privately-owned western half of the WSP plan area. The WWD-owned lands in the eastern half of the WSP plan area have already been retired from irrigated agriculture.)
- Provide utility-scale power generation on physically-impaired farmland in order to reduce pressure for renewable energy development on prime agricultural soils elsewhere.
- Provide for development of utility-scale solar generation facilities on highly disturbed lands which provide minimal habitat value for wildlife.
- Provide a low-impact alternative location for the siting of utility-scale renewable energy development that might otherwise occur on lands with high habitat value for protected wildlife species (such as the Mojave Desert).
- Provide utility-scale solar generation in a location that is already served by high-voltage transmission lines.
- Help implement the State's goal of increased electrical generation to 50 percent with renewable resources by 2030 under California's Renewables Portfolio Standard (RPS).
- Help implement the California Renewable Energy Transmission Initiative (RETI) by providing for the development of up to 5,000 MW of the solar resource within the Westlands CREZ. (It is noted that the Westlands CREZ received the highest state-wide environmental ranking among all CREZs designated through the RETI process.)
- Contribute to overall reduction in greenhouse gas emissions by generating electricity that is not based on the combustion of fossil fuel, pursuant to The California Global Warming Solutions Act (AB 32), as extended and supplemented with SB 32 in 2016.
- Create new employment opportunities for local residents.
- Positively contribute to the local economy through stimulation of economic activity such as creation of secondary multiplier employment and the purchase of materials and services.
- Provide community benefits through increased property tax and sales tax revenues.

Project Objectives of the WSP Gen-Tie Corridors Plan

The objective of the WSP Gen-Tie Corridors Plan is as follows:

- Provide delivery of renewable solar power from the Westlands Solar Park to the State's electrical grid while minimizing impacts to the environment.

2.3. DESCRIPTION OF WESTLANDS SOLAR PARK MASTER PLAN

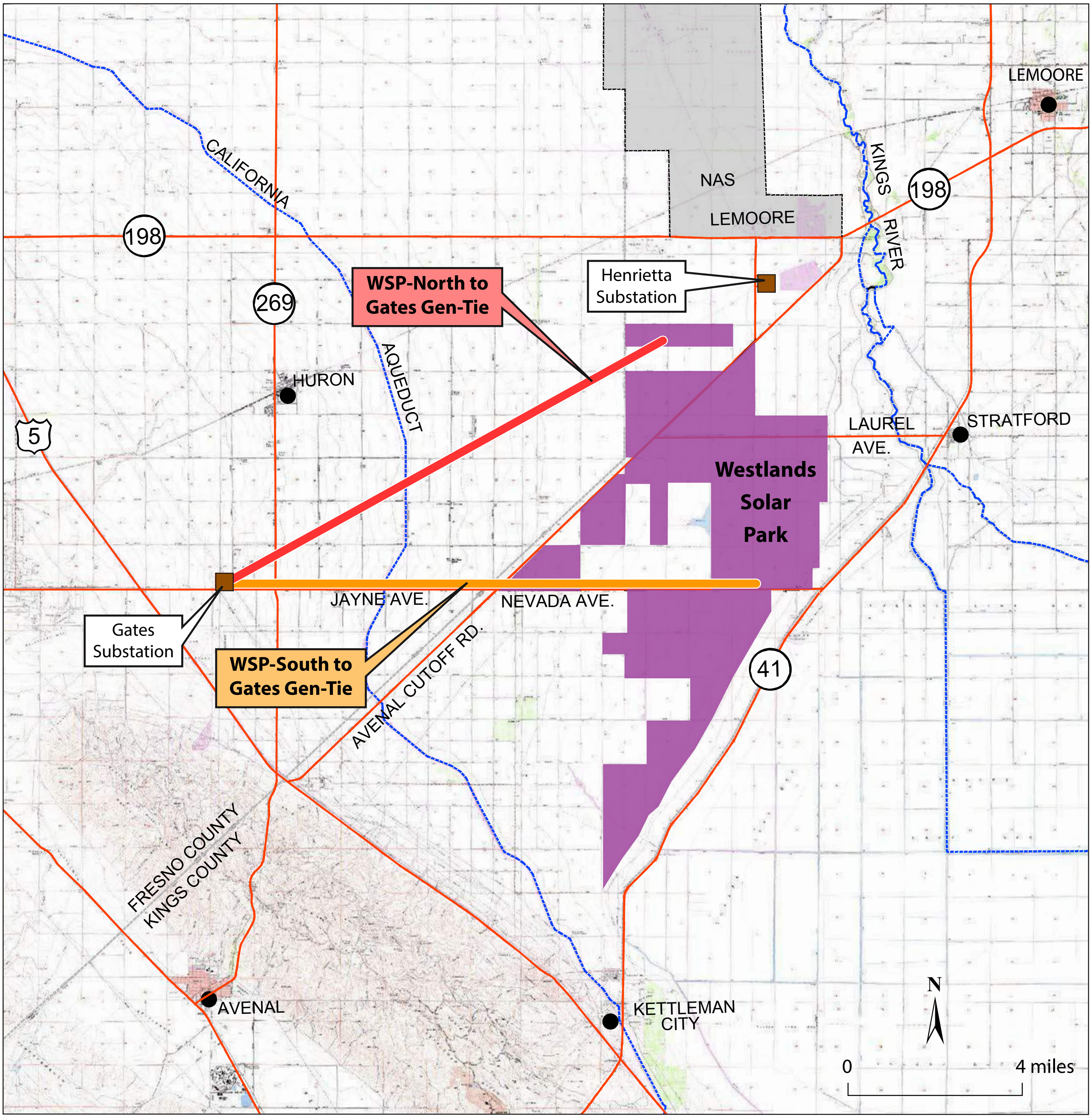
2.3.1. SETTING

Regional Setting

The Westlands Solar Park is located in west-central Kings County in the southern San Joaquin Valley (see Figure PD-1). The WSP plan area and the surrounding region consist of very sparsely settled rural land characterized by large-scale agricultural operations. The terrain is virtually level, and the dominant elements of the landscape are irrigation canals and ditches, scattered rural residences and ranch complexes, high-voltage transmission lines, the California Aqueduct, State highways, and County roads (see Figures PD-2 and PD-3). The nearest inhabited and urbanized areas include: Naval Air Station (NAS) Lemoore (2 miles north), City of Lemoore (5.5 miles northeast), Hanford (12.9 miles northeast), Stratford (2.5 miles east); Kettleman City (2 miles south), Avenal (8.75 miles southwest), and Coalinga (20 miles west), and Huron (9 miles west)

The major transportation routes in the WSP region include: Interstate 5 which runs along the base of the Coast Ranges at a distance of 2 to 9 miles west; State Route 198, an east-west highway that runs parallel to the WSP boundary 2 miles to the north; and State Route 41 which runs parallel to the southeast WSP boundary. Local transportation access is provided by Avenal Cutoff Road which bisects the WSP diagonally and provides primary vehicular access to and through the WSP and provides connections to the Cities of Lemoore and Hanford to the northeast and to I-5 and the community of Avenal to the southwest. The WSP is bisected from east to west by Nevada Avenue which connects SR-41 to Avenal Cutoff Road, and continues westward in Fresno County as Jayne Avenue providing access to I-5 and the City of Coalinga. Laurel Avenue traverses the northern portion of the WSP plan area in an east-west direction and provides a connection between Avenal Cutoff Road and SR-41 and the community of Stratford located 2.5 miles east. Gale Avenue is a County Road in Fresno County which commences westward from Avenal Cutoff Road and connects to SR-269 which runs in a north-south direction and provides access to the community of Huron to the northwest of the WSP.

Other major features in the region include: the California Aqueduct, which runs roughly parallel to and east of I-5 at a distance of 3 to 6 miles from the WSP; the Kings River, which flows in a general north-south direction approximately one to two miles east of the WSP; and the Tulare Dry Lakebed, which is situated entirely on the southeast side of State Route 41, at least one mile southeast of the WSP. Other features of note in the area include PG&E's Gates Substation located 7 miles west of the WSP on Jayne Avenue between I-5 and the California Aqueduct, and PG&E's Henrietta Substation and the adjacent GWF natural gas peaker plant which are located one mile north of the WSP on 25th Avenue between Avenal Cutoff Road and SR-198.



WSP Vicinity

Figure PD-2

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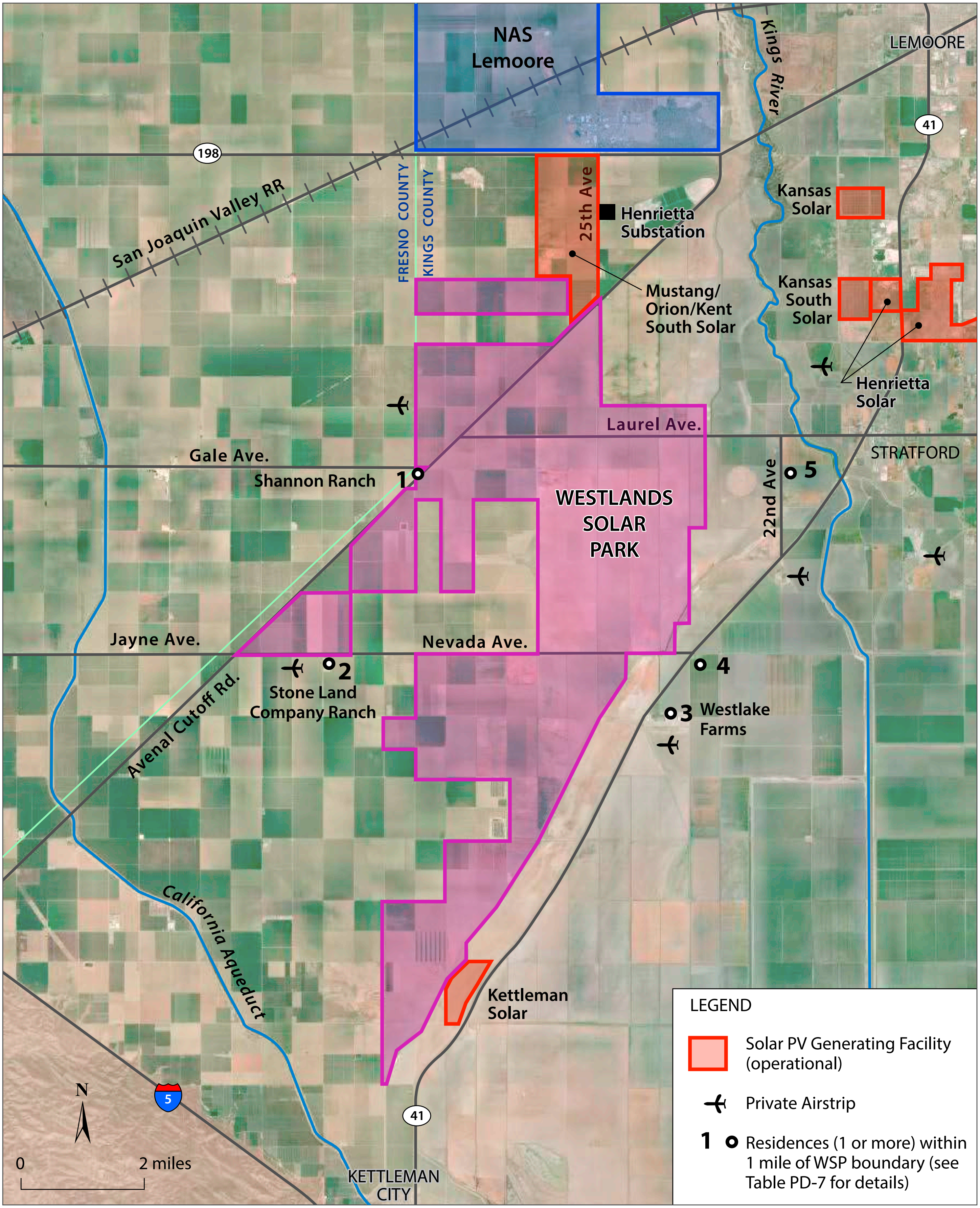

Base map: Google Earth, 2016

WSP Vicinity - Existing Land Use

Figure PD-3

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Major power transmission lines in the vicinity include: a 230-kV line connecting the Gates and Henrietta substations: a 70-kV sub-transmission line running from the Henrietta Substation in the north to the Tulare Lake Substation in the south: and the Path 15 Transmission Corridor which consists of several 500-kV and 250-kV lines running generally parallel to Interstate 5.

Description of WSP Site and Adjacent Lands

WSP Site Conditions

The WSP plan area consists almost entirely of cultivated agricultural land on virtually level terrain. There are no dwellings or agricultural buildings within the WSP plan area. The primary crops grown on WSP lands include wheat, pistachios, almonds, cotton, tomatoes, onions, and alfalfa. Apart from agricultural fields, the main physical features within the plan area include agricultural infrastructure such as irrigation canals, ditches, ponds, turnouts, and pumps, as well as groundwater wells and standpipes.

The WSP is traversed by three improved County Roads including Avenal Cutoff Road, Laurel Avenue, and Nevada Avenue, in addition to shorter segments of other County roads. The road rights-of-way include utility pole lines, and two high voltage (230-kV) transmission corridors pass through the northwest corner of the WSP plan area in a northeast-southwest direction.

There is an active natural gas pipeline, owned and operated by Southern California Gas Company, that runs parallel to and southeast of Avenal Cutoff Road through the WSP plan area. A branch of the gas pipeline splits off at Laurel Avenue and runs eastward along the south side of Laurel to the community of Stratford.

In the northeast corner of the WSP, at Avenal Cutoff Road and 25th Avenue, there is 22 MW solar PV project (Westside Solar) approved by Kings County in 2015. The 2 MW first phase was completed in 2016, and the remaining 20 MW is planned for construction in 2018.

Surrounding Land Use

In addition to the land uses described above, the lands surrounding the WSP site within a one mile radius consist almost entirely of cultivated agricultural land with several ranch complexes, few scattered rural dwellings, and several newly constructed solar PV generating facilities (see Figure PD-3).

Ranch Complexes

There are 4 ranch complexes within one mile of the WSP boundary. The nearest and largest is the Shannon Ranch, located just off-site to the west, at the intersection of Avenal Cutoff Road and Lincoln/Gale Avenue. This ranch consists of 20 single-family dwellings, a ranch office, a machine shop, and various other outbuildings and structures. The Shannon Ranch also includes a private airstrip located to the north of Gale Avenue just east of the Fresno County boundary.

The second ranch complex is the Stone Land Company Ranch located on the south side of Nevada Avenue directly opposite the WSP boundary and approximately 1.5 miles east of Avenal Cutoff Road. This ranch includes two dwellings, a private airstrip, and a number of operations buildings.

The third ranch complex is the Westlake Farming Company complex located on the west side of SR-41, south of Nevada Avenue. This complex includes 4 dwellings and a number of operations buildings.

The fourth ranch complex is an unnamed ranch located about 1 mile southeast of WSP at the southeast corner of SR-41 and Nevada Avenue. This complex includes 2 dwellings, a number of operational buildings, and a private airstrip.

Rural Residences

Apart from the ranch complexes described above, the lands surrounding the WSP are sparsely settled, with very few rural dwellings located in the WSP vicinity. The nearest existing rural dwellings are 6 residences located along and near 22nd Avenue which runs north-south approximately one mile east of the eastern WSP boundary.

In summary, there are 34 existing rural residences located within an approximately 1 mile radius of the WSP plan area, including 28 dwellings associated with 4 ranch complexes, and 6 rural residences.

Existing Solar PV Generating Facilities

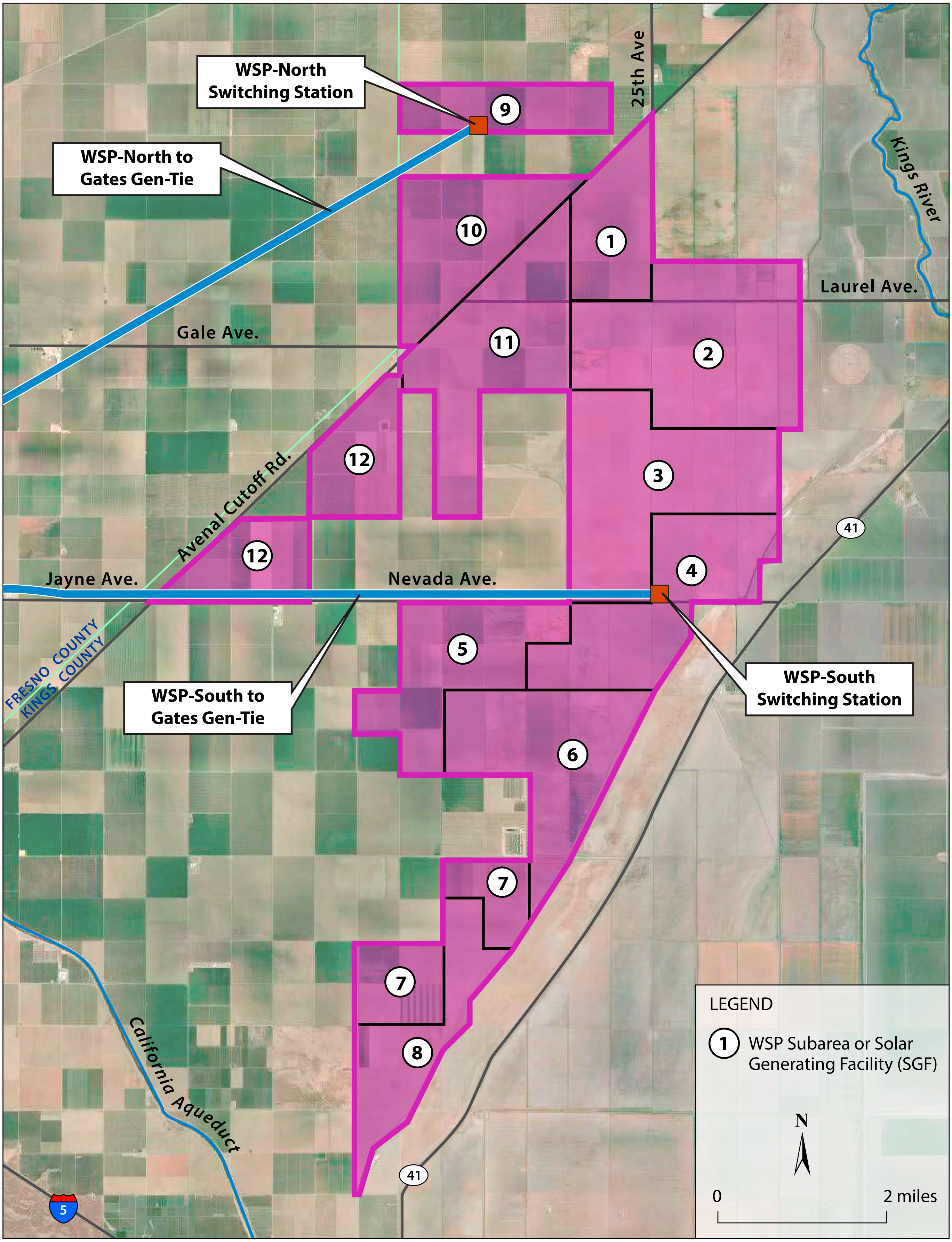
There are four solar generating facilities that are complete and operational within 1 mile of the WSP plan area. Immediately to the north along 25th Avenue are three Recurrent Energy projects (Mustang, Orion, and Kent South) totaling 200 MW on 1,822 acres. The fourth completed solar project (Kettleman – 20 MW) is located on 220 acres on the west side of SR-41 immediately southeast of the southern-most portion of the WSP plan area, approximately 3 miles north of Kettleman City. There are three additional completed solar facilities located between 2.5 and 5 miles east of WSP. These include the 20 MW Kansas and 20 MW Kansas South solar projects, located approximately 2.5 and 4 miles northeast, respectively, and the 136 MW Henrietta solar project which is located adjacent to SR-41 approximately 3 miles northeast of the WSP plan area (see Figure PD-3).

Other Surrounding Land Uses

Other notable land uses within 1 mile of the WSP plan area include: the Omaha Ranch, a dairy operation located on Omaha Avenue west of SR-41; and a vacant tomato processing plant located 0.4 miles north of WSP along 25th Avenue.

2.3.2. WESTLANDS SOLAR PARK MASTER PLAN

The Westlands Solar Park is planned for a series of utility-scale solar photovoltaic (PV) energy generating facilities comprising approximately 21,000 acres in west-central Kings County (see Figure PD-4). The WSP lies entirely within the Westlands Competitive Renewable Energy Zone (CREZ), as identified through the Renewable Energy Transmission Initiative (RETI) which determined that this zone has the potential to generate up to 5,000 Megawatts (MW) of renewable energy. (See "Statewide Renewable Energy Planning" above.) The WSP Master Plan provides a planning framework for the development of the renewable solar energy resource within the Westlands CREZ. The total peak generating capacity of WSP is estimated to be approximately 2,000 MW, based on an assumed development intensity of PV solar facilities of about 10 gross acres per MW. This estimated capacity may increase with improvements in solar PV efficiency over the course of the WSP buildout period. The installation of solar generating facilities is planned to occur incrementally over an approximately 12-year buildout



Base map: Google Earth, 2016

Westlands Solar Park Master Plan

Figure PD-4

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period extending from about 2018 to 2030, with the installation rate of about 167 MW per year, on average. The development of WSP is planned to occur through the private development of individual solar projects of varying sizes, with the largest solar facility anticipated to have a 250 MW generating capacity. The Master Plan provides for several substations situated throughout the WSP for the purpose of stepping up generated power to a transmission voltage of 230-kV.

The WSP Master Plan is divided into 12 subareas, and for planning purposes it is assumed that each of these subareas will be developed as a solar generating facility (SGF). These subareas/SGFs are listed in Table PD-1 and their locations are shown in Figure PD-3. The subareas range in size from approximately 930 acres to 3,160 acres, and the electrical generating capacity for the corresponding SGFs ranges up to 250 MW. Some subareas may be developed with single solar generating facilities, while other subareas may be divided into smaller units of solar development.

TABLE PD-1

WSP SUBAREAS/SOLAR GENERATING FACILITIES

Subarea/SGF [See Fig. PD-3]	**Acres**	**MW**
1	1,059	90
2	3,160	250
3	2,565	250
4	1,956	150
5	1,612	170
6	2,008	200
7	1,109	110
8	1,151	120
9	931	100
10	1,544	160
11	2,117	220
12	1,726	180
Total WSP	**20,938 ac.**	**2,000 MW**

The Master Plan does not include a formal phasing plan, recognizing that the location and timing of individual solar projects within WSP will depend on market conditions and technical factors, including the scheduling of interconnection to the electrical grid and the construction of internal collection and external transmission facilities.

The primary purpose of the WSP Master Plan is to provide for the rational and orderly solar development within the WSP plan area. At the same time, the Master Plan is intended to remain adaptable in response to evolutionary refinements to solar technologies and generating systems. The Plan should be viewed as a general and flexible framework for accommodating individual solar projects, and not a prescriptive plan as to form, phasing, or scheduling of solar development.

WSP SOLAR GENERATING FACILITIES (SGFS)

Overview

Individual solar generating facilities within WSP will be developed as private developments under the overall Master Plan. The size of individual SGFs developed within WSP is expected to range from 20 MW to 250 MW. While there likely will be no standard sized solar facility that would be typical of WSP solar development, a 250 MW solar facility was identified as the typical large facility for purposes of this EIR analysis. The selection of a relatively large solar facility to represent a typical project allows for the identification and evaluation of reasonable worst-case impacts associated with individual solar development projects within WSP.

For Master Planning purposes, it is assumed that the average intensity of solar facility development throughout WSP will be about 10 gross acres per MW. While land requirements for solar arrays themselves would be less, this factor recognizes additional land requirements for supporting infrastructure such as operations and maintenance (O&M) facilities, power storage systems, substations, internal power collection and transmission corridors, and maintenance access driveways, as well as existing physical features that need to be accommodated such as natural gas pipeline easements, irrigation canals and ditches, and irregular site boundaries. Thus the intensity of solar development within some solar facilities may be less than one MW per 10 acres, while facilities on sites with more physical constraints may require more than 10 acres per MW.

Solar PV generating facilities are modular in design, with the basic building block consisting of individual solar arrays consisting of rows of solar modules with a combined generating capacity ranging from 250 kW to 750 kW per array (see Figure PD-5a). The arrays are combined to form larger units of 1 to 3 MW called solar blocks. For large-scale utility applications, hundreds of solar blocks are interconnected as part of a solar power generating facility. Each solar block is served by inverters, which can be located centrally or distributed within the array footprint. The inverters convert the direct current (DC) power to alternating current (AC), which is then conveyed to a centrally located transformer and switchgear which steps up the voltage to 34.5-kV or other collection voltage. Within WSP, the collected power is planned to be conveyed to a substation within each solar generating facility, which would step up the collection voltage to 230-kV for delivery to the grid via WSP gen-tie lines.

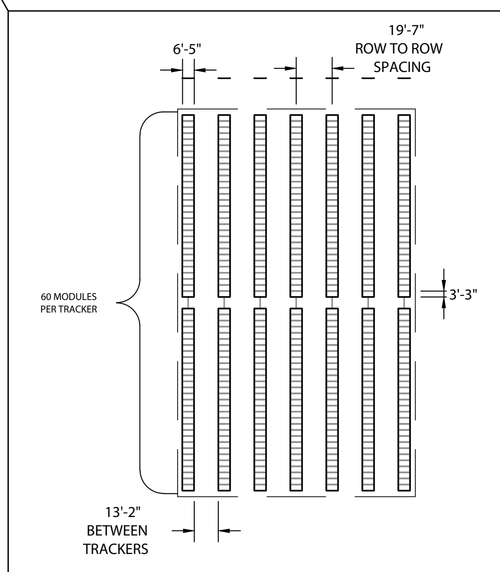
(In this EIR, several terms are used interchangeably to refer to individual solar PV generating facilities to be developed within WSP. These terms include: “solar project,” “solar development,” “solar facility,” or “solar generating facility,” or in abbreviated form as “SGF.”)

The main operational components of the WSP solar projects will include: solar PV systems, electrical infrastructure, support facilities, power storage systems, substations and interconnections. A detailed description of each of these operational components is provided below.

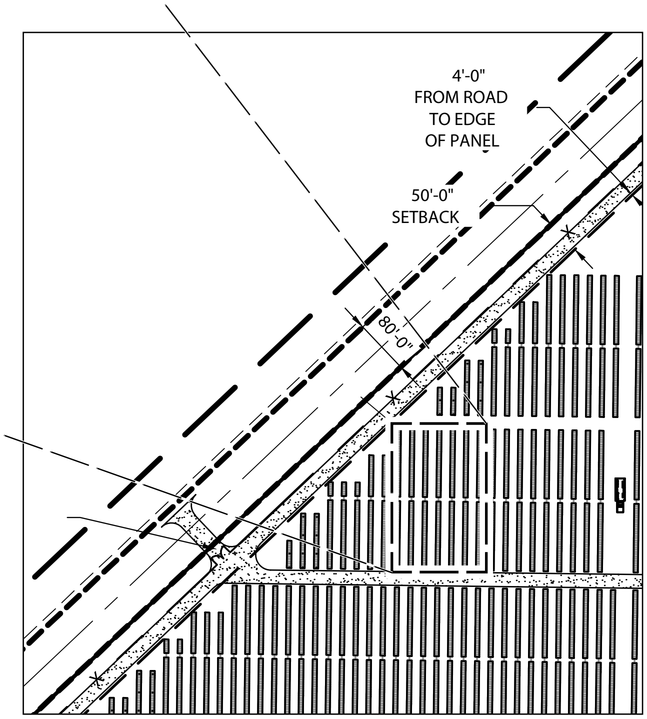
Solar Photovoltaic Systems

Photovoltaic (PV) cells convert sunlight directly into electricity. This involves the conversion of light (photons) to electricity (voltage) in a process known as the “PV effect.” The direct conversion of sunlight to electricity involves no moving parts. It also does not require water to generate electricity as with solar thermal systems where focusing mirrors are used to heat a water-based solution to create steam for power generating turbines.

Solar PV Modules on Horizontal Trackers



Typical Solar Array



Typical Plan Detail

Typical Solar PV Array

Figure PD-5a

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There are two types of solar PV technology that are anticipated to be employed by the WSP solar projects. These include flat plate modules composed of mono- or polycrystalline silicon cells, and thin-film modules made up of layered semi-conductor cells. All PV cells are dark in color in order to maximize absorption and minimize reflectance of sunlight.

The solar cells are arranged in flat panels or modules which vary by size depending on the manufacturer. The modules are mounted in rows onto metal frames called tables or racks which in turn are mounted on support posts or piles driven into the ground. The racking systems can either be set at a fixed angle or connected via a drive motor that allows the tracking units to follow the sun in a single axis in order to capture more sunlight.

It is expected that solar facilities within WSP will utilize one of two main PV collection systems. These include the "horizontal tracker," and "fixed tilt" systems, as described below.

Horizontal Single-Axis Tracker Systems

The horizontal tracker system consists of solar arrays mounted on motorized tracking systems that allow the panels to rotate from east to west to follow sun throughout the day. The horizontal tracker system can include either crystalline silicon or thin-film solar panels with racking systems which are mounted horizontally (parallel to the ground), and with the rows oriented in a north-south direction. The racking systems would be mounted on long galvanized steel posts, consisting of either cylindrical pipes or I-beams (also known as H-beams or W-beams). The posts are approximately 4 inches in diameter and are hydraulically driven into the ground to depths of 6 to 10 feet.

When the solar modules are in a flat horizontal position, the modules would be 4 to 5 feet from the ground surface. When the solar panels are tilted at the highest angle (about 60 degrees from horizontal) during the early morning and evening hours, the lowest point on the solar modules would be at least 3 feet above the ground surface, and the highest point (i.e., the leading edge of the uppermost solar panel) would be approximately 8 to 10 feet above the ground surface.

The long north-south rows of solar panels would be about 6 to 8 feet wide and would be spaced approximately 10 to 20 feet from adjacent parallel rows in order to avoid the panels casting shadows on each other, especially when the sun is lower in the sky.

Fixed-Tilt Systems

Fixed-tilt systems are very similar in appearance to horizontal trackers, except that they are ranged in east-west oriented rows. The fixed-tilt systems do not track the path of the sun, but are instead permanently tilted upward toward the south to receive optimal solar energy. Fixed-tilt panels are tilted at about 20 degrees from horizontal. The lowest point on the solar modules would be at least 3 feet above the ground surface, and the highest point (i.e., the leading edge of the uppermost solar panel) would be approximately 5 to 7 feet above the ground surface.)

The long east-west rows of solar panels would be 8 feet wide and would be spaced approximately 8 feet from adjacent parallel rows in order to avoid the panels casting shadows on each other.

Summary

Currently, the horizontal single-axis tracker system is considered to produce optimal solar generation at WSP, and is therefore considered to be the primary system that would likely be installed in the initial stages of solar development. For planning purposes, the WSP Master Plan was prepared based on the use of horizontal trackers as the PV prototype system throughout WSP. Nevertheless, due to the similarity in overall physical characteristics among the two PV system types, the impact analyses contained in this EIR are also applicable to solar development projects which utilize the fixed-tilt systems. Thus, at programmatic level, this EIR is intended to provide CEQA review for both of the above-described PV system types within WSP.

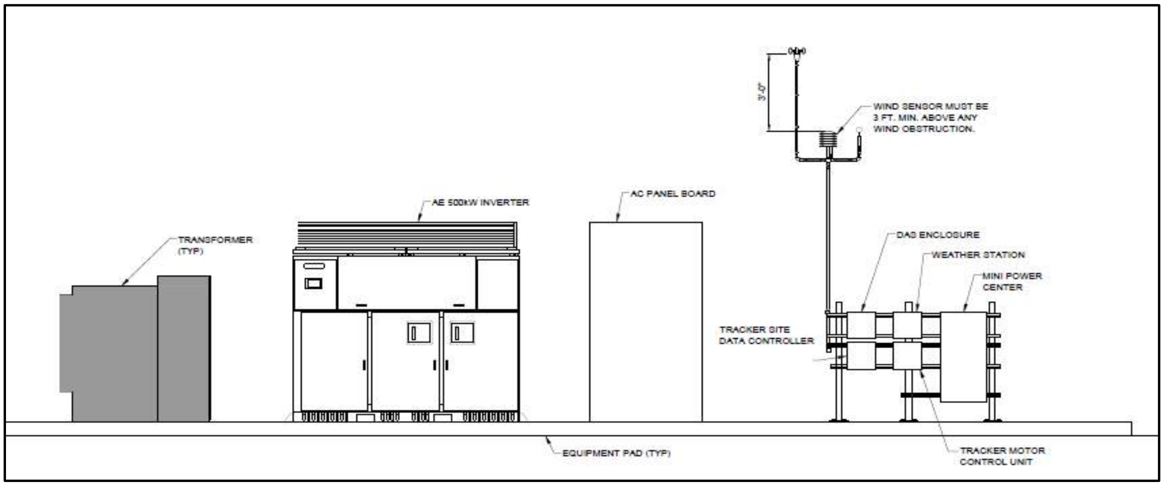
While other PV systems may be emerge as technology advances over time, it is expected that the overall physical characteristics will not vary significantly from the PV systems described above. Therefore, the environmental effects of such PV systems are not expected to be substantially different from those described above.

Other forms of solar power generation, such as parabolic trough and solar power tower, do not utilize PV modules but use solar energy reflected from mirror arrays to heat water or other media to generate steam and drive generation turbines. These solar thermal systems are substantially different from PV systems in terms of physical appearance, land requirements, and water demands, among other things. As such, the environmental effects of such systems vary substantially from the effects associated with PV solar systems. These non-PV solar generating systems are not planned for WSP, and therefore this EIR does not evaluate the environmental effects associated with such systems.

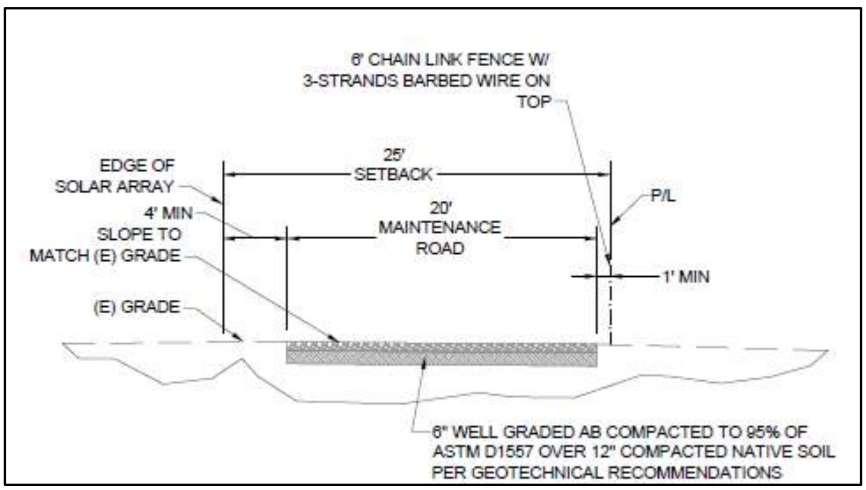
Power Collection and Storage

Power Collection

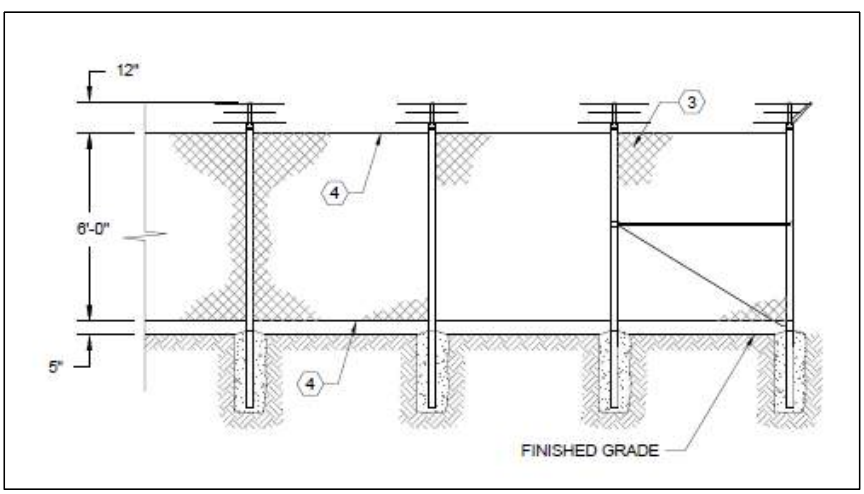
The PV modules would be electrically connected by wire harnesses and combiner boxes that collect DC (direct current) power from each PV block or array and deliver it via underground cables to a Power Conversion Station (PCS) which would be centrally located within each array. Each PCS would include an inverter and transformer (see Figure PD-5b) which would serve solar blocks comprising 1 to 3 MW of power generation. The inverter would convert the DC electrical output from the modules to grid-quality AC (alternating current) output. The transformer would then step up the generated power to a medium collection system voltage, typically 34.5 kilovolts (kV). The inverter and transformer are often housed together on a 6- to 8-inch thick concrete pad measuring up to 15 by 50 feet. The buried collection lines would connect a series of transformers through trenches (approximately 3 feet wide and 3 feet deep) leading to PV combining switchgear (PVCS), which can accommodate 20 to 30 MW and would be centrally located to serve the respective blocks and feed the substation within the SGF. The power output from the PVCS would then be conveyed to on-site substations located within each SGF via high-capacity overhead circuits. These on-site overhead lines are typically mounted on wooden poles approximately 50- to 60-feet tall and up to 14 inches in diameter, and spaced about 250 feet apart. Within each SGF, a substation would step up the collected power to 230 kV, which would then be delivered via the WSP gen-ties to Gates Substation for interconnection to the state power grid, as described later in this section.



Inverter/Transformer Pad



Internal Gravel Maintenance Road



Perimeter Fence

Typical Solar Facility Details

Figure PD-5b

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Power Storage Systems

Due to the intermittent nature of PV solar generation, the integration of solar generation into the statewide grid presents challenges for power dispatching. In order to provide for more effective integration of solar power into the grid, the operators of utility-scale solar facilities are increasingly including energy storage systems into their facility plans. It is expected that SGFs within WSP will incorporate energy storage systems into their facilities. Typical systems would consist of battery, fuel cell, and or compressed air systems in enclosures measuring approximately 40 feet by 10 feet by 9 feet high placed on concrete foundations. The storage enclosures could be dispersed throughout the sites or concentrated in specified locations. The amount of power storage included in a particular solar facility would vary depending on project requirements. A typical 250 MW solar facility may include up to 15 acres for storage facilities to provide up to 250 MW of storage; thus, storage facilities would occupy well under 1 percent of the typical SGF site area.

Support Facilities

Operation and Maintenance (O&M) Buildings

The typical 250 MW solar facility would include an O&M building to house security and operational monitoring systems, and to provide for storage of parts and supplies. It may also include a lunchroom/breakroom, restrooms, and a small office area. The O&M building would consist of a prefabricated building set on concrete slab-on-grade, and would have an enclosed floor area of about 2,000 to 3,000 square feet, and a maximum building height of about 20 feet. The facility would include an operations yard for storage for operational equipment, vehicles and materials, and would include parking and maneuvering areas for staff vehicles, delivery trucks, and service vehicles. The O&M facility would be located within an operations yard covering area of about 1 acre. For smaller solar facilities constructed within WSP, the O&M facilities would be smaller.

Small quantities of potable water would be required at the solar facilities for drinking and other uses. Potable water would be delivered by a water delivery service, or would be brought to the site by workers. Domestic wastewater disposal would be provided by a septic tank located within the O&M site. The tank would have a capacity of approximately 2,000 gallons and would be emptied as needed by a contracted wastewater service vehicle. For smaller solar facilities the sanitary needs of workers visiting the solar facilities for maintenance activities may be provided by portable chemical toilets that would be serviced by a private contractor. The use of septic leachfields for on-site wastewater disposal is not expected to be needed or proposed for any SGF within WSP.

Project Entrances and Internal Gravel Driveways

Each solar generating facility within WSP would be served by its own entry driveway which would provide access to its O&M facility and solar fields. Each solar facility would have a main gated entrance on a County road, such as Avenal Cutoff Road, Laurel Avenue, or Nevada Avenue. The project entrances would be designed and constructed in accordance with the Kings County Improvement Standards.

As required by Kings County for all solar projects, permanent access within each SGF would be provided primarily by internal gravel driveways which would also run along the site perimeter of each project phase. The internal gravel driveways would be about 20 feet wide to allow passage of emergency and maintenance vehicles, and would be spaced per Kings County Fire Department standards. The internal gravel driveways would be designed and constructed to have a continually durable dust free surface, in accordance with the Kings County Improvement Standards, and would be permeable to allow percolation of rainfall into the underlying soil.

Perimeter Fencing

The perimeter of each SGF phase would be securely fenced and gated to prevent unauthorized access. Fencing would consist of 6- to 7-foot high chain-link galvanized metal perimeter fences topped with standard three-strand barbed wire (see Figure PD-5b). Additionally, a slack wire may be installed above the barbed wire as an anti-perch device. Fence posts would be driven into the soil profile using truck mounted vibratory drivers. All fence posts would be capped to prevent the entrapment of small birds. Vehicle access gates would be installed at the site entrances on public access roads; these gates would remain locked when not in use to the extent allowed by local ordinance.

Fencing for each SGF would include a continuous 5-inch gap between the bottom of the fence and the ground surface for all fencing in order to allow unimpeded passage of kit foxes and other small wildlife.

Signage

SGF signage would consist primarily of identification signs at the project entrances, and safety signage at electrical equipment. During the construction phases, temporary directional signage would be employed as needed. All signage would conform to the sign standards of the Kings County Zoning Ordinance.

Exterior Lighting

Lighting for the solar facilities would be designed to provide minimum illumination for safety and security while avoiding direct light spillover onto public roadways or adjacent properties. Permanent exterior lighting would be installed at the facility entrances, the O&M facilities, and the substations/switching stations. Lighting systems would be light-activated to automatically come on in the evening and shut off in the morning. Lighting within the solar fields would be confined to the inverter/transformer pads, and would be activated only when needed by switch or motion sensors. There would be no lighting along any internal access driveways, or around the facility perimeters. Light fixtures would be shielded and focused downward and toward the interior of each SGF site.

Telecommunications

Each SGF would include a Supervisory Control and Data Acquisition (SCADA) system to provide remote monitoring of facility operation and remote control of critical components. Within each SGF, the solar arrays would be connected by fiber optic or other cabling that would be installed in buried conduit leading to a SCADA system cabinet at the O&M facility. The SCADA systems would be connected to local telecommunications service via overhead lines or buried lines. Telecommunications may also be transmitted wirelessly.

Meteorological Stations

Each SGF phase would include one or more meteorological monitoring stations ("met" stations) to record key data such as insolation (incident solar radiation), air temperature, precipitation, wind direction and speed, and relative humidity. The met stations would collect meteorological data from about 11-14 feet above the ground, or about 3 feet above the maximum height of nearby equipment, to allow for accurate wind readings.

Substations, Internal Gen-Ties, and Switching Stations

SGF Substations

As mentioned, each SGF within WSP would include an on-site substation where the collection voltage of the project-generated electricity would be stepped up to 230 kV. (Note: Smaller SGFs could share a substation at or near their common border. For purposes of this analysis, it is assumed that all SGFs would have their own substations.) Each substation would occupy 1 to 3 acres of land and would contain high-voltage transformers, switchgear, a control building, and related substation facilities (see Figure PD-5c). The substation equipment would range in height from approximately 12 feet (control buildings), to 35 feet (transformers), and 65 feet (dead-end structures, microwave towers). The substation sites would include concrete footings and foundation pads for substation equipment, and remaining area would be graveled. The high-voltage transformers would each contain approximately 5,000 gallons of dielectric fluid (mineral oil), and would be placed on concrete pads with concrete containment berms. The substations would each be enclosed by security fencing.

Internal WSP Gen-Ties

The power from the individual SGF substations would be delivered via a high-voltage gen-tie traversing the interior of the Westlands Solar Park. The internal WSP gen-tie corridors would consist of either steel lattice towers or tubular steel monopoles between 100 and 150 feet high. The routing of the internal WSP gen-ties would be established subsequently when the sequencing of solar development is determined and site plans for the individual SGFs are prepared. The internal gen-tie line would connect to the external WSP gen-tie lines described below, which would deliver the generated power to the Gates Substation. Although not currently anticipated, it is possible that interconnection to the State grid could occur at the WSP site, in which case one or more switching stations would be included within WSP, as described below.

PG&E Switching Stations

It is possible that up to two 230 kV switching stations could be constructed to serve the WSP plan area in the event that a public utility were to operate one or both of the WSP gen-ties connecting WSP to Gates Substation. If so, one switching station would be located in the northwest portion of the plan area, and the other in the central area along Nevada Avenue. Each switching station would occupy approximately 5 to 10 acres, and would include control buildings, transformers, circuit breakers, dead-end structures, and busbars. The tallest structures would be dead end structures (typically 65 feet tall), and microwave radio towers up to 150 feet in height. The two switching stations would be connected to the State grid via the WSP gen-tie lines described in Section 2.4.

Interconnection to the Regional Electrical Grid

Electricity generated within WSP would be delivered to customers by the California Independent System Operator (CAISO or Cal-ISO), acting as a transmission provider, through the transmission system owned by Pacific Gas and Electric (PG&E). In order to obtain the right to connect to the CAISO grid, each WSP solar project must first apply for a queue position with CAISO through the Generation Interconnection Process (GIP). Next, the proposed generator must obtain Phase 1 and Phase 2 studies from CAISO, a process that typically takes two years. Finally, the proposed generator must obtain a Generation Interconnection Agreement (GIA) from CAISO.

2.3.4. CONSTRUCTION OF WSP SOLAR GENERATING FACILITIES

The Westlands Solar Park is planned to be developed as a series of individual PV solar projects over a period of about 12 years. As mentioned, these solar projects are expected to range in size up to 250 MW. A normal construction period for a typical 250 MW SGF would be about 2 years. It is expected that the overall pace of WSP buildout will be about 167 MW of generation per year, on average, although actual construction completed in any given year could range from 0 to 250 MW. It is likely that the construction periods for some SGFs would overlap. For purposes of presenting a reasonable worst-case analysis in this EIR, it is assumed that two SGFs of 250 MW each would have overlapping construction schedules. That is, the second construction year of the first SGF would overlap with the first year of the second SGF, such that no more than 250 MW would be constructed in any given year. (The details of this hypothetical scenario are described in Section *3.13. Traffic/Transportation*.)

The following is a detailed description of the construction process for a typical SGF to be developed within WSP. Where appropriate, the largest expected SGF of 250 MW is used to illustrate a typical large SGF. The completion of each WSP solar facility would involve three major construction stages, including: site preparation activities, installation of solar arrays and electrical components, and installation of substations, switching stations, and interconnection to the electrical grid via gen-ties. Each of these construction stages is described in turn below.

Site Preparation Activities

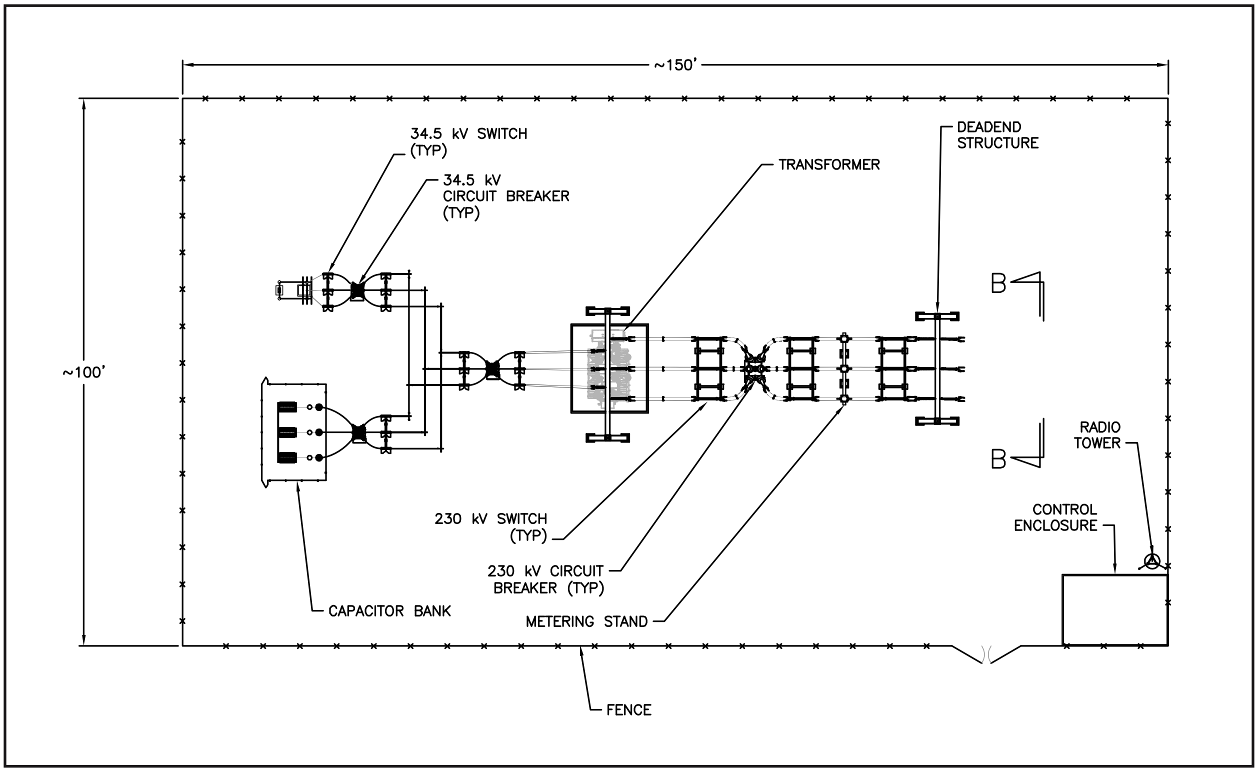
Pre-construction Activities

The site development process would begin with pre-construction activities such as surveying and staking for various project elements like internal driveways, PV array locations, electrical trenches, equipment pads, and support structures. The next step would be construction mobilization, which would include delivering initial equipment, supplies, and temporary construction trailers to the site.

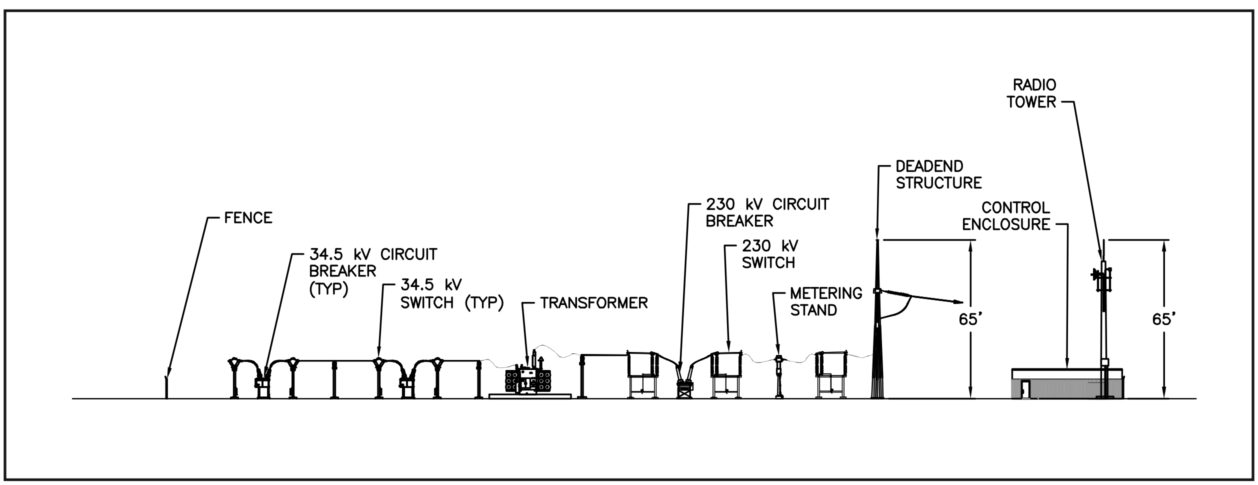
Site preparation activities that would occur prior to general construction within a given increment of solar development include: site clearing and grading, preparation of construction staging areas, and construction of the main internal driveways, as described below.

Clearing and Grading

Prior to facility construction, the site would be cleared of vegetation, and minimally graded and compacted. Grading would occur only for access roads and to smooth localized bumps in terrain.



PLAN VIEW



PROFILE

Typical 230-kV Substation

Figure PD-5c

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Given the level terrain throughout the WSP plan area, no mass grading is planned or anticipated. Other areas of the each SGF site may be disced to a depth of 6 inches. Compaction would only occur at the equipment pads and along the internal driveways. Site clearing and soil preparation would occur incrementally as needed, and would not commence until a given area is needed for the next construction phase. Vegetative cover would be retained as long as possible to minimize exposed soils and reduce potential for erosion and wind-blown dust.

Since the existing ground throughout WSP is generally level, with only agricultural furrows creating minor terrain roughness, the solar development can be accommodated without large-scale grading. The existing topsoil would not be removed. Final grades would be designed to provide for positive drainage. Measures for erosion and sediment control would also be implemented, as described in "Stormwater Management and Erosion Control" below.

Construction Staging Areas

Each project phase within each SGF would include a temporary staging area for construction support. The staging areas would occupy one or two acres each, and would include construction offices, a first aid station, areas of worker parking, areas for equipment storage, cleaning, and maintenance, a truck unloading area, and an area for storing and assembling the PV systems prior to installation. Portable chemical toilets would provide for sanitary needs and bottled drinking water would be delivered to the site. The staging areas would require a power source for temporary lighting, which would either be supplied by portable generators or existing local power lines. The staging areas would be enclosed by security fencing. During construction, the staging areas may periodically be relocated within the SGF sites, to maintain proximity to ongoing installation areas.

Temporary Internal Driveways

Construction access through each SGF site would be provided by temporary all-weather driveways composed of native compacted soil and treated with dust palliative as needed. Temporary project entrances would be composed of gravel, and tire wash racks would be installed at the project entries for washing wheels of construction vehicles prior to exiting in order to avoid tracking of mud and sediment onto public roadways.

Installation of Solar Arrays and Support Facilities

Prior to installation of solar arrays, the perimeter of each SGF or SGF phase would be securely fenced and gated to prevent unauthorized access. Construction of the solar arrays would begin with installation of the cylindrical steel posts (or H-beams) which would be driven into the ground using truck-mounted vibratory drivers. The posts would be installed at approximately 10 foot intervals to depths of 6 to 10 feet, with actual depths depending on localized soil conditions and load factors. Next, the torque tubes and motor drivers for the single-axis trackers would be mounted on the installed posts in a north-south orientation. This would be followed by placement of pre-fabricated metal racking systems on the trackers, and finally installation of solar modules on the racking systems. (For SGFs with fixed-tilt systems, the racking systems would be mounted directly on the support frames and posts, without motor-driven tracker systems.)

Within each SGF, the internal access driveways would be 20 feet wide, and would be spaced per Kings County Fire Department requirements. The completed solar arrays would be spaced approximately 10 to 20 feet apart and would be 4 to 5 feet above the ground, when the modules are in their horizontal resting positions.

Trenching would occur along each array to bury the electrical cables connecting the modules to the inverters and transformers distributed throughout each SGF. The trenches would be approximately 3 feet wide and 3 feet deep and would be backfilled with native material after cables are laid. The electrical output from the PV modules would be collected as DC (direct current) in combiner boxes at each array and delivered via underground the cables to the inverters and transformers.

Construction of support and ancillary facilities such as O&M buildings, telecommunications, met stations, signage, and lighting would be installed concurrently with the solar arrays.

Construction of Substations, Internal Gen-Ties, and Switching Stations

Substations

Substations would be constructed to serve each SGF within WSP. The construction of each substation would be completed in approximately 10 to 12 months. Since the initial PV solar arrays in each SGF would begin generating power soon after completion, the substations would need to be constructed in conjunction the early SGF construction phases in order to deliver the generated power to the transmission grid. Substation sites would occupy approximately 1 to 3 acres and would be graded and compacted to approximately level grade. At each substation site, one or more concrete pads and footings would be constructed as foundations for the transformers, switchgear, control house, and steel support structures. Below- and above-ground electrical conduits would be installed. The major substation components (e.g., transformers, control house, etc.) would be assembled on-site and installed on their foundations. The remaining areas of the substation sites would be graveled and would include area for parking. A gated 6- to 8-foot high chain link fence would be constructed around each substation site.

Internal WSP Gen-Ties

For each SGF, a segment of internal gen-tie line would be constructed to interconnect the SGF substation to one of the two PG&E switching stations planned to serve WSP solar development. These gen-tie segments would be installed concurrently with each SGF substation in order to provide for transmission of power from the initially-constructed solar arrays in each SGF, which would be energized incrementally as they are completed. The gen-tie conductors could be strung on either steel lattice towers or steel monopoles depending on right-of-way availability and other factors. Footings for gen-tie poles would be excavated to depths of 20 feet for more. The transmission corridors for the gen-ties would be about 80 to 100 feet wide. The construction details for the internal WSP gen-ties would be similar to those described subsequently for the off-site gen-ties connecting the WSP switching stations to the Gates Substation.

PG&E Switching Stations

As mentioned, interconnection to the State grid could occur at the WSP plan area, although this is not currently anticipated. The points of interconnection would be at one or more switching stations to be constructed within the plan area. The construction of each switching station would begin with site grading, construction of concrete foundations, and installation of underground conduits. Then the switching station equipment would be installed and tested prior to commissioning. The remaining areas of the switching station sites would be graveled. A gated 6- to 8-foot high chain link fence would be constructed around each switching station site.

Construction Workforce and Equipment

Workforce

During construction of each SGF, the number of workers would fluctuate depending on the construction stage. As shown in Table PD-2, the workforce numbers would be greatest during installation of the solar arrays, especially when this construction stage overlaps with the site preparation stage, when a workforce of 430 construction personnel would be on-site for construction of a typical 250 MW facility.

Typically, construction would take place between the hours of 7 AM to 5 PM, Monday through Friday, although it is expected that work would typically end by 4 PM daily. Work could take place outside these hours if needed to maintain schedules. For safety reasons, certain construction tasks, such as final electrical terminations, must be performed after dark when no energy is being produced.

The construction workforce would be largely drawn from the surrounding communities, with the possible exception of project management personnel. Based on a gravity model using population and distance factors for communities within commuting range, it was determined that the average round-trip commute length for construction personnel would be 90 miles. All workers would be encouraged to carpool. These trips would be distributed to communities throughout the region. (See Section *3.13. Traffic/Transportation* for a detailed discussion of project traffic generation and distribution.)

Construction Deliveries

The construction of the SGFs would involve the use of numerous pieces of construction equipment and support vehicles at various stages of construction. This would include grading and excavation equipment such as graders, dozers, compactors, trenchers, and backhoes; and general construction equipment like concrete mixers, asphalt pavers, cranes, hydraulic pile drivers, fork lifts, and water trucks. This equipment would be brought to the individual SGF sites when needed. When the pieces of equipment are not in use, they would be stored in designated staging areas for the duration of the activities for which they are needed.

Deliveries of solar modules and support structures, electrical components, concrete and aggregate would occur at various times during construction. The equipment and material deliveries would originate from various locations in central California and would follow designated truck routes to travel to the project site. It is anticipated that deliveries of solar modules, tracking systems, and major electrical components would originate from ports or distribution centers in the Bay Area and/or Southern California. It is anticipated that aggregate supplies would be obtained from the nearest source at Avenal Paving and Gravel located on Highway 33 between Avenal and Coalinga. Similarly, it is expected that concrete would be supplied from a ready-mix plant located outside Coalinga. All other construction deliveries are expected to originate from the Fresno area.

The estimated number of deliveries during all construction stages for a typical 250 MW solar facility is shown in Table PD-2. For the most intensive construction period, when the installation of solar arrays would overlap with the site preparation stage, the project would receive an average of 100 deliveries per day. Most construction deliveries would occur outside the morning and afternoon peak traffic periods.

TABLE PD-2
OFF-SITE CONSTRUCTION VEHICLE USAGE, BY CONSTRUCTION PHASE FOR TYPICAL 250 MW SOLAR FACILITY

Vehicles	Estimated Usage		
Phase 1 – Site Preparation *(210 work days or 43 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	5	85	1
Flat Bed Trucks	12	85	4
Gravel Trucks (End Dump)(Delivery)	18	56	210
Equipment Transport Trucks (Delivery)	24	85	30
Worker Vehicles[2]	140	90	210
Phase 2 – Installation of Solar Arrays *(300 work days or 61 weeks)(Overlaps with Phase 1 for 65 work days or 13 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	4	85	1
Freight Trucks (Delivery)[3]	19	400	275
Equipment Transport Trucks (Delivery)	7	85	10
Service Trucks	3	85	275
Worker Vehicles[2]	290	90	300
Phase 3 – Installation of Inverters, Transformers, Substation, Interconnection *(160 work days or 30 weeks)(Overlaps with Phase 2 for 85 work days or 17 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	1	85	1
Ready Mix (Delivery)	3	50	250
Freight (Delivery)[3]	1	400	150
Equipment Transport Trucks (Delivery)	1	85	18
Worker Vehicles[2]	40	90	160

[1] Water trucks are anticipated to be filled with water from the existing agricultural wells in the vicinity.
[2] No carpooling or transit use is assumed for workers' traveling to and from WSP.
[3] Freight delivery includes solar modules, racking systems, support structures, and major electrical components, all of which are assumed to originate in equal portions from ports or distribution centers in the Bay Area or Southern California.

Table PD-3
On-Site Construction Equipment Usage, by Construction Phase For Typical 250 MW Solar Facility

Equipment	Estimated Usage		
Phase 1 – Site Preparation *(210 work days or 43 weeks)*	**Units**	**Hours/Day (5 days/week)**	**Days/Unit**
Water Trucks	5	7	210
Bulldozers	3	7	210
Graders	5	7	108
Compactors	1	7	42
Skid Loaders	1	7	188
Asphalt Pavers	1	4	28
Front-End Loaders	1	7	83
Phase 2 – Installation of Solar Arrays *(300 work days or 61 weeks)(Overlaps with Phase 1 for 65 work days or 13 weeks)*	**Units**	**Hours/Day (5 days/wk)**	**Days/Unit**
Water Trucks	1	7	154
Tractors – post drivers	2	7	245
Forklifts	6	7	220
Trenchers	9	4	245
Flat Bed Trucks	12	7	220
Phase 3 – Installation of Inverters, Transformers, Substation, Interconnection *(160 work days or 30 weeks)(Overlaps with Phase 2 for 85 work days or 17 weeks)*	**Units**	**Hours/Day (5 days/wk)**	**Days/Unit**
Water Trucks	1	7	140
Forklifts	2	4	140
Trenchers	1	4	144
Backhoes	1	4	158
Cranes	1	2	94
Aerial Lifts	1	6	94

Table PD-3 shows estimated usage of construction equipment during the three main construction stages for a typical 250 MW SGF.

The estimated number of construction deliveries for a typical WSP switching station is shown in Table PD-4. One of the switching stations would be constructed in the initial stages of WSP buildout in order to facilitate delivery of power from the first solar facilities once they are energized.

Table PD-4
Off-Site Construction Vehicle Usage for Typical 230-kV Switching Station

Vehicles	Estimated Usage		
Duration – 170 work days	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	1	85	1
Concrete and Gravel Delivery	9	56	18
Equipment Transport Trucks (Delivery)	4	85	6
Freight Trucks (Delivery)	4	400	85
Worker Vehicles[2]	6	90	170

[1] Water trucks are anticipated to be filled with water from the existing agricultural wells in the vicinity.
[2] No carpooling or transit use is assumed for workers traveling to and from WSP.

Table PD-5 shows the estimated equipment usage for construction of each of the two WSP switching stations.

Table PD-5
On-Site Construction Equipment Usage for Typical 230-kV Switching Station

Equipment	Estimated Usage		
Duration – 170 days	**Units**	**Hours/Day (5 days/wk)**	**Days/Unit**
Water Truck	1	6	170
Grader	1	8	40
Scraper	1	8	14
Excavator	1	8	25
Roller	1	8	2
Asphalt Paver	1	8	25
Forklift	1	8	60
Generator Set	1	8	40
Crane	1	8	4

Site Management during Construction

Dust Suppression and Soil Conditioning

During construction, non-potable water would be used for dust control and soil conditioning during earthwork. The project soils would be conditioned to optimum moisture content and dust generation would be controlled through the application of water sprayed from tanker trucks. Based on a conservative (or high-end) water usage rate of up to 2.0 acre-feet per MW (i.e., 0.2 af/ac.) during site preparation and construction, it is estimated that a 250 MW facility would require a total of 500 acre-feet of water, although actual watering requirements would likely be less. It is anticipated that water for grading and construction would be obtained from existing agricultural wells in the vicinity of each SGF site.

Curtailment of groundwater pumping to meet the project demand for construction water is not currently foreseen. However, in the unlikely event that such unforeseen curtailment occurs, the relatively small volumes of untreated water that would be temporarily required during construction would be purchased from alternative sources and trucked to the sites.

Stormwater Management and Erosion Control

During grading and construction, soil stabilization and runoff control measures would be required to prevent erosion and sedimentation. The particular measures that would be appropriate for conditions within each SGF site would be specified in the Storm Water Pollution Prevention Plan (SWPPP), as required for all projects over 1 acre in size by the State Water Resources Control Board. The SWPPPs would specify Best Management Practices (BMPs) such as stormwater runoff control and hazardous waste management measures, and include monitoring and reporting procedures.

Typical measures would include: diversion of runoff away from disturbed areas, protective measures for sensitive areas, mulching for soil stabilization, straw-bale barriers, and siltation or sediment ponds. Specific BMPs would be determined during the final engineering design stage for each SGF. Approval of each respective project SWPPP by the Regional Water Quality Control Board would be obtained prior to initiation of ground disturbing activities for each SGF (see Section *3.8. Hydrology and Water Quality* for detailed discussion).

Construction Waste Recycling and Disposal

The waste generated during construction would primarily consist of non-hazardous waste materials such as packing containers and materials, wood pallets, scrap metal, glass and paper. These waste materials would be segregated on-site for recycling or disposal at a Class III landfill.

Some quantities of hazardous wastes would be generated during construction, primarily during construction of the SGF substations. These waste materials would include waste paint, waste solvents, waste oil, oily rags, used batteries, etc. Hazardous wastes generated during construction would be either recycled or disposed of at a Class I disposal facility, as required.

Revegetation of Completed SGF Areas

Upon completion of each increment of solar development, the exposed soils beneath and around the solar arrays would be vegetated to prevent erosion and provide dust control, as required by Kings County and the San Joaquin Valley Air Pollution Control District. The exposed areas would be planted with an approved seed mix that would contain only "low water use" plant species, thus minimizing water use, discouraging weed infestation, and providing habitat value for native wildlife species.

2.3.5. Operation of Solar Generating Facilities

The operation of each SGF would involve similar activities including: facilities operation and monitoring, facility maintenance, and security. These are described in turn below.

Facility Operation and Monitoring

Operational activities would primarily involve monitoring and management of solar generation, which would occur during daylight hours year-round. The SGF operators would likely contract with an off-site O&M provider with a facility in the area. Operations staff would likely not be stationed on the solar facility sites, but would manage the facilities remotely via SCADA systems. Operators would monitor and analyze the collected data to determine maintenance needs, respond to automated alerts from the monitoring systems (e.g., in the event of equipment failures or abnormalities), and communicate with customers and transmission facility operators.

Facility Maintenance

Equipment and Infrastructure Maintenance

Operators would also visit the solar facilities regularly to conduct visual inspections of equipment, internal driveways, and fencing, and perform maintenance or make repairs as necessary. Table PD-6 provides details for on-site equipment and vehicle usage for operations and maintenance purposes for a typical 250 MW solar facility. It is expected that two maintenance personnel would visit the site periodically, with more workers added when repairs or installation of replacement equipment is needed. (See 'Operations Personnel' below for an overview of staffing levels and functions.)

Table PD-6

Equipment and Vehicle Usage During Solar Facility Operations and Maintenance for a Typical 250 MW Solar Facility

Equipment	Estimated Usage (Annual)		
	Units	Hours/Day/Unit	Total Days/Unit/Year
All-Terrain Vehicle (ATV)	2	4	5
Tractor	2	8	100
Portable Generator	2	8	60
Portable Water Trailer w/Pump	5	8	80
Vehicles	**Units**	**Daily Miles/ Unit**	**Total Days/ Unit/Year**
Pickup Truck (Routine O&M)	8	30	130
Pickup Truck (Panel Washing)	15	40	80

Weed and Pest Control

As required under the Kings County Development Code, each SGF would implement a Pest Management Plan and a Weed Abatement Plan. The Pest Management Plans would be directed toward prevention and control of infestations by rodents such as rats, ground squirrels, gophers, and voles which can cause damage to project structures and spread diseases. The primary objective would be to avoid rodent infestations through preventative measures such as vegetation management (described below) in order to avoid impacts to protected wildlife species. Natural or ecological control through predation by hawks and owls would also provide incidental control of rodent populations. The use of eradication measures such as application of rodenticides would only be employed as a last resort. (For a detailed discussion on appropriate rodenticide use, see section *3.4 Biological Resources* [at Table BIO-3, item 7].)

The Weed Control Plans would specify measures to prevent infestation of invasive weed species which would reduce the grazing value of the site, pose a fire hazard, and potentially spread to neighboring farmland. Weed control would mainly consist of a combination of methods, including the use of weed-free seed mixes for site revegetation, and keeping vegetation low through sheep grazing and mechanical methods such as mowing, trimming, and hoeing. Herbicides would be used only selectively where needed to control noxious weeds using low impact chemicals and practices that minimize impacts to protected biological species. Herbicides would be applied by a licensed herbicide applicator in compliance with regulations set forth by the U.S. EPA and California Department of Pesticide Regulation (DPR). The use of herbicides would be kept to a minimum. The Pest Management Plans and Weed Abatement Plans would be submitted and subject to County approval prior to issuance of building permits for each SGF within WSP.

Vegetation and Agricultural Management

Approximately 1 percent or less of the surface area of each SGF would be covered with impervious surfaces such as concrete pads and footings for inverters, transformers, substations, O&M buildings, power storage, and small areas of paved parking area. Internal access driveways would occupy up to 9 percent of the site area of each SGF; and while these driveways would have permeable gravel surfaces, they would not support vegetation. At least 90 percent of each SGF would be devoted to solar arrays and adjacent open areas. The permeable soils beneath and around the solar panels would support vegetation and would be planted with an approved seed mix for dust and erosion control, as required by Kings County. The approved seed mix would contain only “low water use” species and would not require irrigation.

Vegetative cover at each SGF would generally be kept low to prevent shading of solar panels and to minimize buildup of combustible fuel loads. The short vegetation cover would also allow passage of emergency vehicles, and access for maintenance and panel washing vehicles between the solar arrays. This would be accomplished by planting slow-growing grasses, and by utilizing sheep grazing during the growing season. The grazing would be managed and controlled by temporary sheep enclosures which would be moved progressively through each SGF site. Grazing would occur from January until the end of the growing season in May, at which time the sheep would be removed. The details of the sheep grazing program would be further described in the Agriculture Management Plan (AMP) which is required by Kings County for every solar project and would implemented to ensure maintenance of sustainable agricultural operations throughout the life of each solar project. The detailed requirements of the AMPs are specified in Section *3.3. Agricultural Resources*, Mitigation Measure AG-1. The AMP for each SGF would be subject to County approval prior to issuance of building permits.

Hazardous Materials Handling and Storage

Limited quantities of hazardous materials would be used and stored at each solar facility for operation and maintenance. These materials would include oils, lubricants, solvents, degreasers, fire suppressants, dust palliatives, and transformer oil. With the exception of dielectric oil used in the transformers, these materials would be stored in the O&M buildings at each solar facility. Flammable materials, such as paints and solvents, would be stored in flammable storage cabinets with built-in containment sumps. Given the limited quantities involved, concrete floor of the O&M building would enable ready cleanup of any spilled hazardous materials. Each solar facility within WSP would be required to prepare and implement a Hazardous Materials Management Plan (HMMP) which would include specifications for hazardous materials handling, use and storage, as well as procedures for spill control and prevention, emergency response, and record keeping (see Section *3.7. Hazards and Hazardous Materials* for detailed discussion).

The solar facilities would generate hazardous waste materials during the project construction and facility operation phases. Hazardous wastes generated during construction and operation would include such as used oils and oil filters, hydraulic fluid, lubricants, oil rags and absorbents, hazardous materials containers, and spent batteries. All such hazardous waste would be collected by authorized contractors and disposed or recycled at facilities approved to accept hazardous waste.

Fire Safety

Each solar project within WSP would include a number of design and operational measures for fire prevention and suppression. Design measures would include incorporation of County design standards for minimum driveway widths, ground clearance, and accessibility to all areas of the project. Fire prevention measures would include vegetation management as described above to minimize the potential for grass fires. All electrical equipment (including inverters) not located within a larger structure would be designed specifically for outdoor installation, and all electrical equipment would be subject to product safety standards. Vehicles and equipment would be required to be parked or stored away from vegetated areas. All construction and operations personnel would be trained in fire prevention and suppression measures, including the safe shut-down of electrical equipment during emergency incidents. Portable carbon dioxide (CO2) fire extinguishers would be mounted at the inverter/transformer pads throughout the SGFs. Smoking would be permitted only in designated areas.

Prior to commencement of site work for each SGF, the fire prevention and emergency action plans to be implemented during project construction and operation would be prepared and formalized in coordination with the Kings County Fire Department.

Solar Module Cleaning

The PV modules would be washed periodically to remove dust in order to maintain efficient conversion of sunlight to electrical power. The cleaning interval would be determined by the rate at which electrical output degrades between cleanings. Periodic panel washing would likely be most needed during the dry summer months when there is an increased potential for deposition of windblown dust from nearby agricultural operations. It is anticipated that panel washing would be required up to four times per year, and would be accomplished using light utility vehicles with tow-behind water trailers. No chemical cleaners would be used for module washing. It is estimated that water demands for one complete cycle of panel washing would be approximately 2.5 million gallons for a fully operational 250 MW project. (This estimate is based on the following calculation: a water usage rate of 1/8 gallon per square foot of module area X 80,000 square feet of module area per MW = 10,000 gallons per MW.) Four panel cleaning cycles per year would use approximately 40,000 gallons per MW, or 10 million gallons (or 30.7 acre-feet) of water for a 250 MW facility. (While fewer than four panel cleaning cycles may be required annually, four cleaning cycles are assumed for the EIR analysis.)

Overall Operational Water Demands

General operational activities, such as washing and rinsing of equipment (other than solar panels), hand washing, and other non-toilet uses, are estimated to require of approximately 500,000 gallons (1.53 acre feet) of non-potable water annually for a 250 MW facility. This is based on a conservative (high end) consumption rate of 2,000 gallons per MW per year.)

In addition, the sheep used for grazing would each require up to 3 gallons of water per day. Based on a sheep grazing density of 0.5 sheep per acre over a 5-month (151-day) grazing period (January through May), on approximately 2,250 vegetated acres (2,500 acres minus 10% unvegetated area), yields a total annual requirement of 509,625 gallons for sheep watering, or 1.56 acre-feet per year for a 250 MW facility. (It is assumed for purposes of the EIR analysis that sheep grazing will be employed as a vegetation management practice for all WSP solar facilities, even though this practice would be required by Kings County only on site subject to active Williamson Act or Farmland Security Zone contracts.)

Based on the above annual water consumption estimates for a 250 MW solar facility, the combined operational water use for panel washing (30.69 afy), sheep watering (1.56 afy), and general operational uses (1.53 afy) would total approximately 33.78 acre-feet of water annually over a typical 2,500-acre solar project site (or 0.0135 afy/acre). This is equivalent to 2.16 acre-feet per quarter-section (160 acres). For comparison, the average irrigation rate for agricultural lands within Westlands Water District is approximately 2.5 acre-feet per acre per year, or 400 acre-feet per quarter-section per year (see Section *3.14. Utilities and Service Systems* for detailed discussion).

Operational water supplies would be provided by Westlands Water District (WWD) through its existing system of lateral pipelines for conveyance of imported surface water. The WWD has established an annual allocation of Municipal and Industrial (M&I) water deliveries for PV solar projects within its service area. PV solar facilities are eligible to receive up to 5.0 acre-feet per quarter-section per year of M&I water for operational uses. As noted above, the combined operational water usage rate for a typical WSP solar project is estimated to be 2.16 acre-feet per quarter-section per year, which is well within the WWD's maximum annual allowance of 5.0 acre-feet per quarter-section. During years when CVP surface water allocations are lower than contract amounts, the WWD prioritizes deliveries of M&I water even when agricultural water deliveries may be reduced to 0. Thus temporary periodic curtailment of surface water supplies to meet the project's operational demands is not currently foreseen, even under drought conditions that result in overall shortfalls in CVP delivered water. However, in the unlikely event that such unforeseen curtailment of M&I water deliveries may occur in the future, possibly in the event of a prolonged severe drought, the relatively small volumes of untreated water that would be required for project operations would be obtained from existing groundwater wells in the vicinity. In the unlikely event that such backup groundwater supplies to the project were also to be unavailable at the same time, the relatively small volumes of untreated water required would be purchased from alternative sources and trucked to the site (see Section *3.14. Utilities and Service Systems* for discussion). Small quantities of potable water would be required at the solar facilities for drinking and other uses. Bottled potable water would be delivered to each site by a water delivery service.

Operations Personnel

Facility operations would be conducted by remote monitoring of the facility, as mentioned above. It is estimated that maintenance activities on a 250 MW solar facility would require from 2 to 50 on-site workers at various times, as follows. About 2 workers would visit the solar facilities periodically to perform inspections, maintenance, and repair work, with as many as 20 additional staff added intermittently for major equipment repairs or replacement. Panel washing cycles would involve up to 25 workers for up to 2 weeks per wash cycle, which may to occur up to 4 times per year. During the growing season when sheep are grazing on site, an additional 1 to 3 workers could be required to manage the rotation of sheep flocks through the SGF. Over the course of a year, an average of 10 workers would be expected to be at a typical 250 MW solar facility on any given day. (This is based on a weighted average derived from the number of days each year that each type of worker would be at the site.) Upon WSP buildout in 2030, approximately 80 operational workers would be expected to be within the WSP plan area on any given day.

Deliveries

During SGF operations, regular deliveries would be necessary for replacement PV modules and equipment. For a 250 MW facility, an average of 10 deliveries per day would be expected.

Security

The perimeter of each SGF would be securely fenced and gated to prevent unauthorized access, as described under 'Perimeter Fencing' above. The solar facility operators would contract with private security companies to provide security services during construction and operation. It is not anticipated that security personnel would be permanently stationed at the SGFs. Security would be provided by electronic surveillance equipment such as infrared security cameras and motion detectors, which would be installed around the facilities, with video feeds transmitted in real time to the off-site security contractor for monitoring. In the event that the surveillance system detects a breach, a security representative would be dispatched to the SGF, as needed, and the County Sheriff's Department would be notified as appropriate.

2.3.6. DECOMMISSIONING AND SITE RECLAMATION

At the end of their useful lives, each solar facility would be decommissioned and the land returned to a farmable state. (The purchase contracts for solar generation typically have terms of 25 to 30 years, although the terms could be extended by several years through amendments to the purchase agreements.) Once the solar facilities are de-energized, the facilities would be decommissioned and the sites would be reclaimed in accordance with Soil Reclamation Plans as described in in this EIR (see Section *3.3. Agricultural Resources,* Mitigation Measure AG-1). The Soil Reclamation Plans would be subject to approval by Kings County prior to issuance of building permits for each WSP solar facility.

Under each Soil Reclamation Plan, the deconstruction process would involve removal of all solar arrays, equipment and pads, substations, electrical cables, fencing, and other material. Equipment and materials would be reused and/or recycled to the extent practicable. Since these decommissioning activities would involve exposure and disturbance of soils, measures for erosion and sediment control would be implemented in accordance with a Storm Water Pollution Prevention Plan (SWPPP) that would be required for decommissioning. Upon complete removal of equipment and salvageable material, the sites would be cleared of any remaining trash and debris.

After the last remnants of the solar facilities are removed and hauled off-site, the land would be tilled to restore the soils to a density and consistency suitable for farming. Finally, the sites would be reseeded with an appropriate weed-free seed mix in order to provide soil stability and moisture retention prior to the resumption of farming. Since the lands within WSP will have been retired from irrigated agriculture, the future farming operations would consist of grazing or dry farming.

It is expected that the decommissioning of each SGF would involve a similar level of activity as the original project construction, since it would essentially involve construction in reverse, or deconstruction. Decommissioning may involve less equipment use and fewer material deliveries, and the time required for decommissioning may be less than the duration of the original project construction. However, for purposes of presenting a reasonable worst-case analysis in this document, particularly for the quantitative analyses, it is assumed that the activity level and duration of decommissioning would be equivalent to that involved in project construction.

2.4. DESCRIPTION OF WSP GEN-TIE CORRIDORS PLAN

2.4.1. Introduction

Overview of Planned WSP Gen-Tie Routes

The Westlands Solar Park Generation-Interconnection Tie-Line (Gen-Tie) Corridors Plan includes two transmission corridors to convey WSP solar generated power to the electrical grid at Gates Substation. The WSP Gen-Tie Corridors Plan is shown in Figure PD-6 and described below.

WSP-South to Gates Gen-Tie Corridor – This planned double-circuit 230-kV transmission corridor would run adjacent and north of the Nevada/Jayne Avenue roadway right-of-way, commencing at the junction of the 25th Avenue alignment and Nevada Avenue in the central portion of WSP and running westward for 11.5 miles along the north side of the roadway to the Gates Substation. This transmission line would serve as a gen-tie providing delivery of solar power generated in the central and southern portions of the WSP to the Gates Substation where it would be transferred to the electrical grid. It is possible that a second transmission line would be added to this corridor to provide additional delivery capacity if needed in the future. If so, the 350-foot wide transmission corridor evaluated in this EIR would provide sufficient width to accommodate two adjacent transmission lines.

WSP-North to Gates Gen-Tie Corridor – This planned double-circuit 230-kV transmission corridor would run parallel and adjacent to the existing 230-kV Henrietta-Gates transmission line, commencing in the northern portion of WSP, and running southwestward for 11.5 miles to the Gates Substation. This transmission corridor would serve as a generation interconnection tie-line (gen-tie) providing delivery of solar power generated in the northern portions of the WSP to the Gates Substation where it would be transferred to the electrical grid. It is possible that a second transmission line would be added to this corridor to provide additional delivery capacity if needed in the future. If so, the 350-foot wide transmission corridor evaluated in this EIR would provide sufficient width to accommodate two adjacent transmission lines.

Definition of WSP Gen-Tie Corridors and Study Areas

At this time, the exact locations of transmission towers and lines, as well as access roads, staging areas, and pulling sites, have not been determined. To provide sufficient flexibility for transmission line routing, a corridor width of 350 feet is assumed for purposes of this EIR. The final right-of-way for each gen-tie line will likely be 100 feet wide for a single line of monopoles and up to 350 feet for a double gen-tie corridor with two parallel gen-tie lines. In addition, the EIR study area extends outward a distance of one mile from both sides of the 350-foot wide gen-tie corridors. This additional buffer area provides further flexibility for gen-tie routing, and would encompass the locations of other project components such as staging areas and pulling and tensioning sites that may extend outside the 350-foot gen-tie corridors.

Descriptions of Gen-Tie Corridors Vicinity

The routes of the two WSP gen-tie corridors are described below and shown in Figures PD-6 and PD-7.

WSP-South to Gates Gen-Tie Corridor

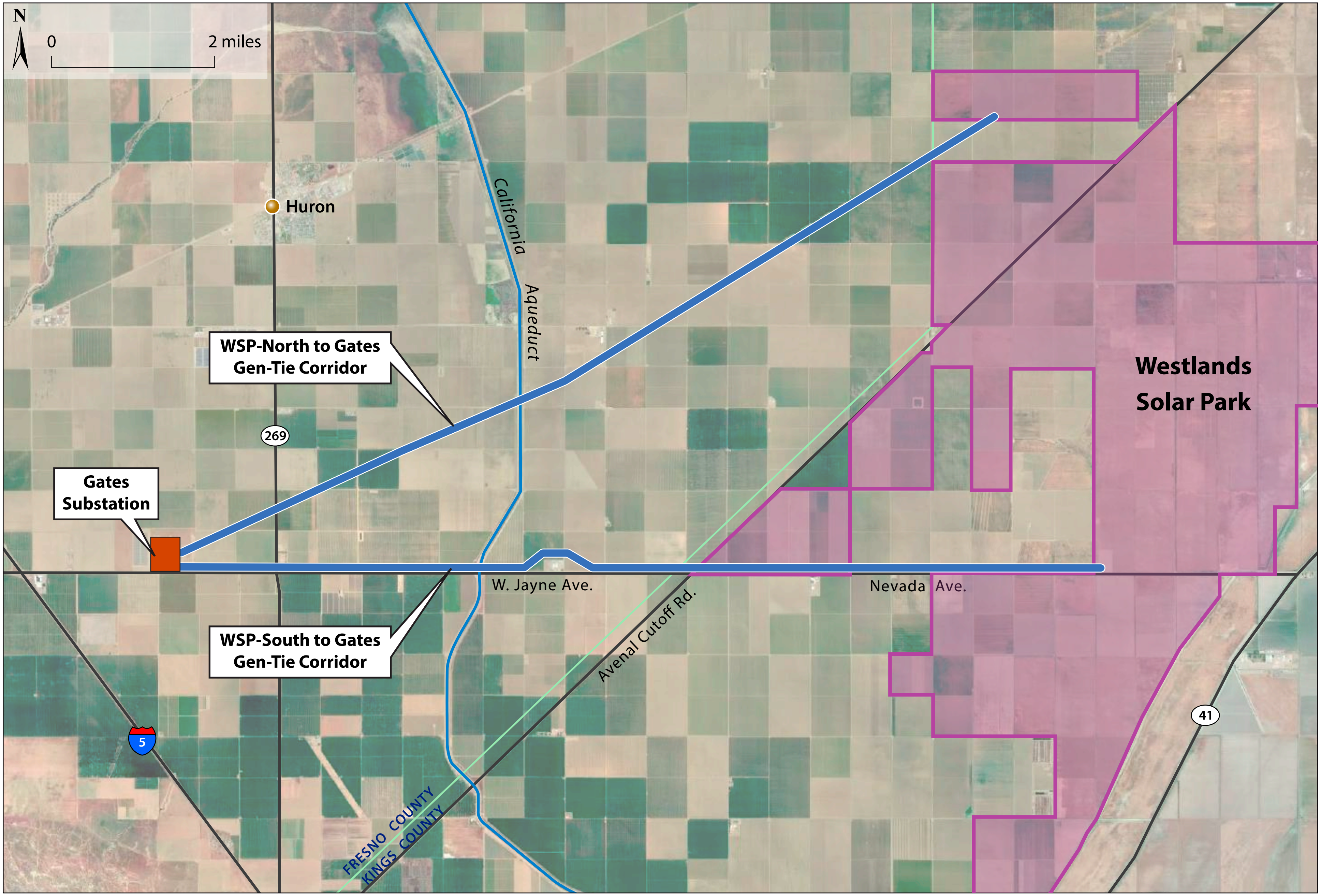
As shown in Figure PD-6, this approximately 11.5-mile long 230-kV gen-tie corridor commences from the junction of the 25th Avenue alignment and Nevada Avenue, approximately midway between Avenal Cutoff Road and SR-41, in the central portion of the WSP plan area. From this location, the corridor heads west along the north side of Nevada Avenue through agricultural fields for a distance of about 5 miles to Avenal Cutoff Road and the Kings/Fresno county line where the roadway becomes Jayne Avenue in Fresno County. Approximately 1 mile west of the county line, the corridor shifts northward about 800 feet to avoid the Giovannetti cooling facility and associated residences and then shifts south again to rejoin Jayne Avenue. The corridor continues westward across the California Aqueduct and on through agricultural fields along Jayne Avenue for 4 miles to the junction of Lassen Avenue/SR-269, and then extends an additional 1 mile to the Gates Substation.

WSP-North to Gates Gen-Tie Corridor

As shown in Figure PD-6, this approximately 11.5-mile long 230-kV gen-tie corridor commences from the northern portion of the WSP plan area and heads southwestward along the south side the existing Henrietta-Gates 230-kV transmission line. The corridor passes through agricultural fields and orchards, crossing the California Aqueduct after 7 miles, and then crosses Lassen Avenue/SR-269 after an additional 3 miles, and then extends another 1.5 miles to the Gates Substation on the north side of Jayne Avenue.

Existing Residences in the Vicinity of the WSP Gen-Tie Corridors

Along the total 23-mile length of the Westlands Transmission Corridors, there are 20 ranch dwellings and other rural residences within one mile of the corridor boundaries. Of this total, 10 rural dwellings are located within 1,000 feet of the corridor boundaries. These dwellings or groups of dwellings are identified by number on Figure PD-7. Table PD-7 provides further detail on each of these dwellings or groups of dwellings. This exhibit and table provide locational information for the analysis of potential impacts to these residences as discussed in several topical sections (e.g., aesthetics, air quality, land use, noise) in Chapter 3.



Base Map: Google Earth, 2017

WSP Gen-Tie Corridors Plan

Figure PD-6

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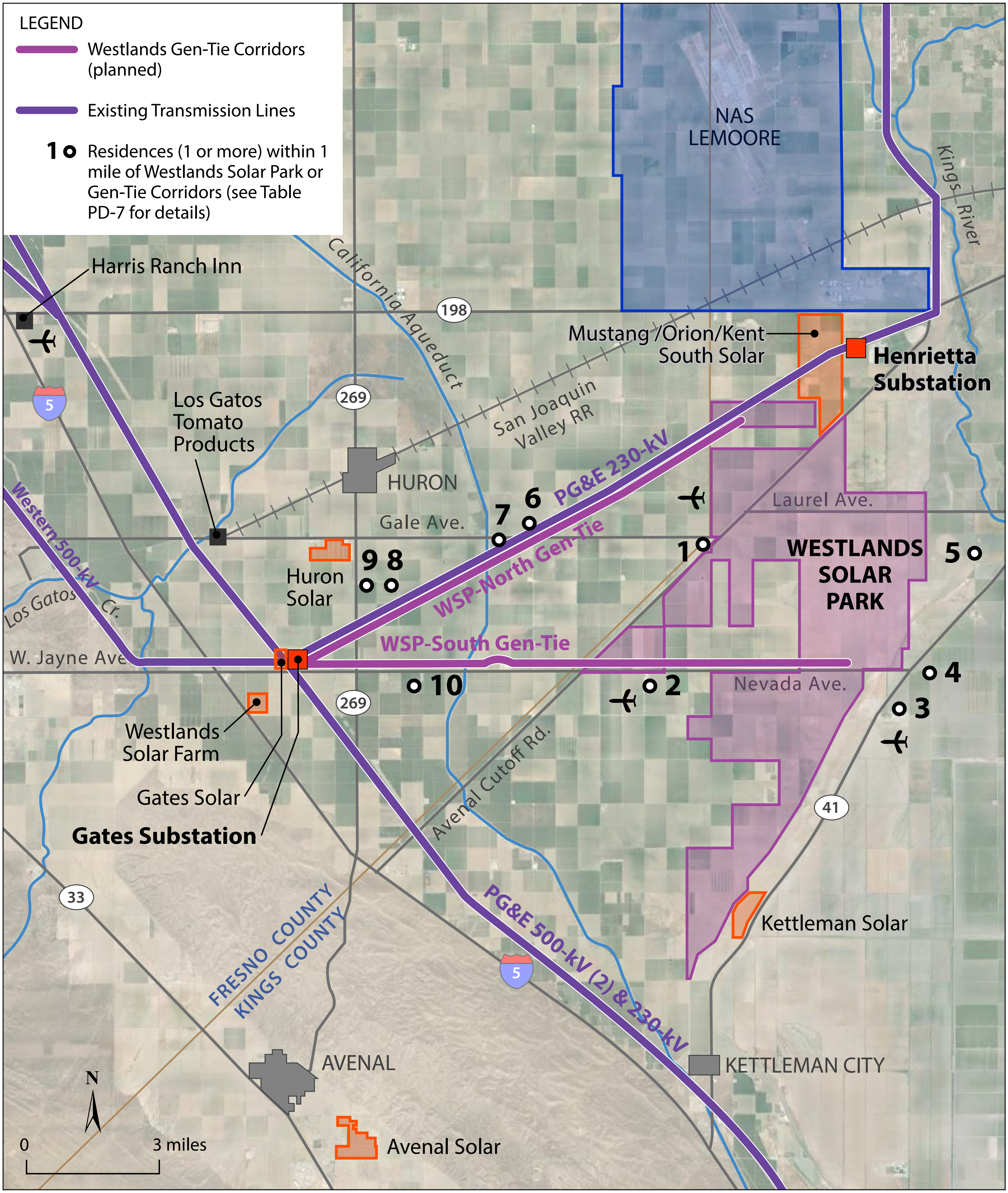

Base map: Google Earth, 2016

Gen-Tie Corridors - Existing Land Use

Figure PD-7

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TABLE PD-7

EXISTING RESIDENCES WITHIN 1 MILE OF WSP AND GEN-TIE CORRIDORS

Map Ref. (Fig. PD-7)	Residences	Location	Distance from WSP or Transmission Corridor*	Residences Within 1,000 feet*
	Westlands Solar Park			
1	20 ranch resid. (Shannon Ranch)	Avenal Cutoff Road/Lincoln Gale Ave.	65 – 600 feet	20
2	2 resid. (Stone Land Co. Ranch)	Nevada Av., 1.4 mi. E. of Avenal Cutoff	180 feet	2
3	4 ranch resid. (Westlake Farms)	SR-41, 1.3 mi. S. of Nevada Avenue	0.7 – 0.9 miles	0
4	2 ranch dwellings	Nevada Ave., just east of SR-41	0.5 – 0.6 miles	0
5	4 rural residences	22nd Ave., north of SR-41	0.9 – 1.0 miles	0
	WSP Gen-Tie Corridors			
	WSP-North to Gates Gen-Tie (11.5 miles)			
6	2 ranch dwellings	N. of Gale, 1.5 mi. E. of CA Aqueduct	0.4 – 0.5 miles	0
7	4 ranch dwellings	Gale Ave., 0.7 mi. E. of CA Aqueduct	0.3 – 0.4 miles	0
8	1 ranch dwelling	Tractor Ave., 1.0 mi. E. of SR-269	0.6 miles	0
9	3 ranch dwellings	Tractor Ave., 0.2 mi. E. of SR-269	0.9 miles	0
	WSP-South to Gates Gen-Tie (11.5 miles)			
2	2 resid. (Stone Land Co. Ranch)	Nevada Ave., 1.4 mi. E of Avenal Cutoff	180 feet	2
10	8 ranch dwellings	Jayne Ave., 1.3 mi. E of SR-269	125 feet	8

*0.19 miles = 1,000 feet.

Transmission Towers and Conductors

Transmission Towers

Throughout the gen-tie corridors, it is expected that the transmission structures would consist of tubular steel monopoles, while some may consist of steel lattice towers. Self-supporting tubular steel poles (TSPs) or monopoles would range in height from 95 to 180 feet and would have tower-to-tower span of up to 1,400 feet. If used, the lattice towers would be fabricated from galvanized steel members (see Figure PD-8). These towers could be single-circuit or double-circuit towers, although they would likely be double-circuit structures with one side left unstrung until additional transmission capacity is needed in the corridors. Depending on terrain conditions, the tower heights could range from 110 to 195 feet. The typical span between towers would likely be up to 1,400 feet, although spans of up to 1,900 feet are not uncommon.

Both types of transmission tower utilize concrete foundations. Steel-lattice structures require four footings (one for each leg), while TSPs would require single footings. In both cases, footings would consist of steel-reinforced concrete piers which would be cast in place. The depth and dimensions of the footings would vary depending on height and weight of the towers, the number of circuits supported, and soil conditions. For steel lattice towers, the typical concrete footing would range from 15 to 30 feet deep and 3 to 6 feet in diameter, while the TSP footings would be up to 20 to 60 feet deep and 6 to 10 feet in diameter. In each case, the concrete foundations would extend 2 to 4 feet above ground level.

Conductors and Tower Components

Each transmission tower carries conductors ("wires" or "cables"), insulators, and ground wires. Each circuit consists of three phases, each of which is carried on a separate conductor cable. Double circuit transmission towers typically have one circuit on each side of the tower, with the conductors for each three-phase circuit arranged vertically on their respective sides.

As noted, towers designed to carry two circuits are sometimes initially strung with only one circuit on one side of the tower and no circuit on the other. Conductors must meet minimum ground clearances (at the bottom of the conductor sag), typically 27 to 30 feet above the ground. Greater clearances may be required in certain areas to avoid tree crops or other vegetation that could pose a risk to operation of the transmission line. Minimum safety clearance requirements and local topography would dictate the exact height of each tower.

Insulators are used to connect the conductors to the tower structures while inhibiting the flow of electric current from energized conductors to the ground or other energized system elements. Insulators and their associated hardware are configured to support conductors while maintaining required distances between phases and grounded structures.

To protect conductors from the hazard of direct lightning strikes, overhead ground wires (shield wires) or fiber optic ground wire is installed on top of tower structures in order to transfer lightning currents into the ground.

Construction of Transmission Lines

Construction Overview

It is estimated that the construction of each gen-tie line would be completed within one year. The first gen-tie line would be constructed in conjunction with completion of the first SGFs in WSP, and the second gen-tie line would be constructed in the later phases of WSP buildout. It is expected that the WSP-South to Gates Gen-Tie would be the first gen-tie line to be constructed.

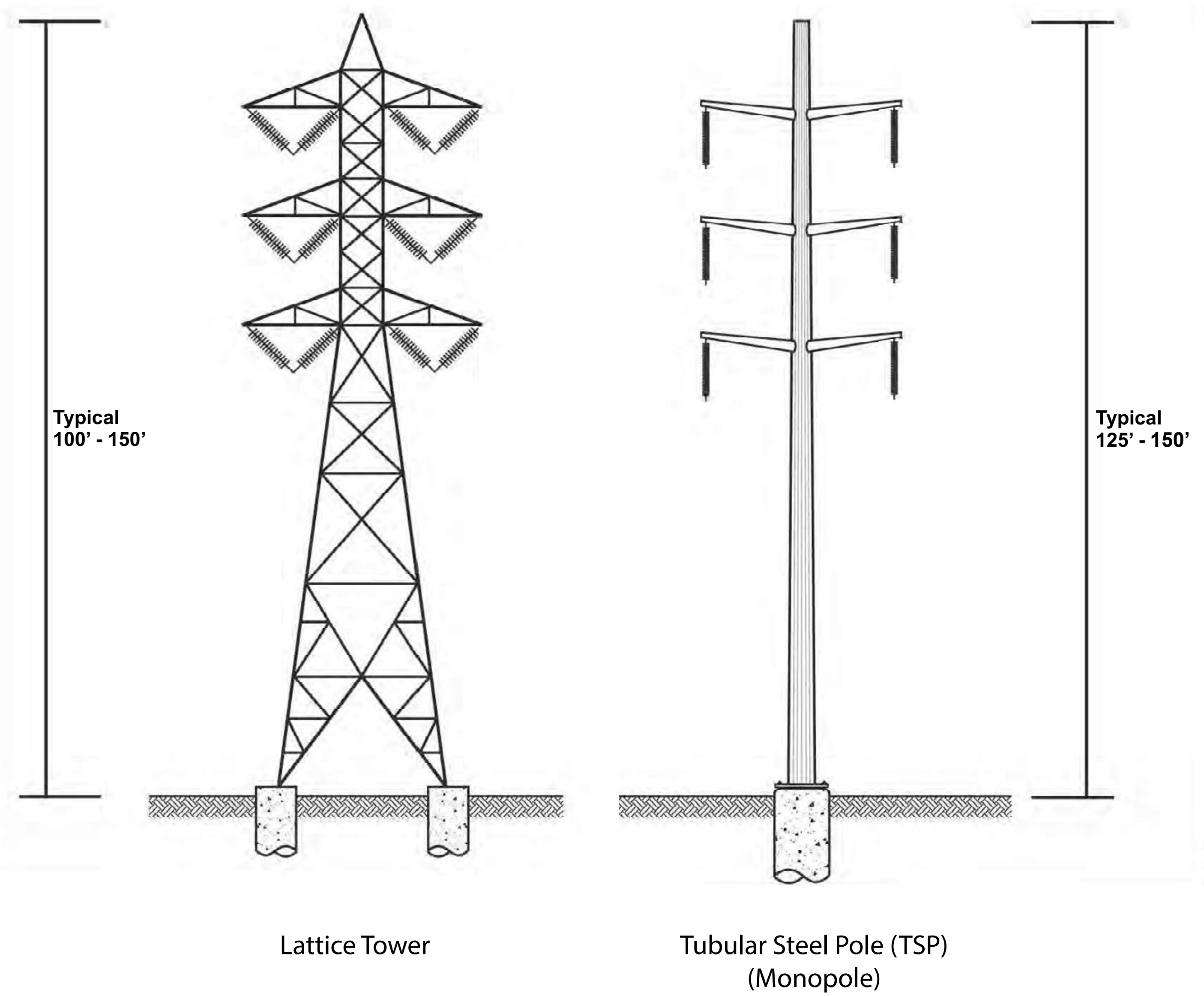
Construction of the gen-tie lines would follow a general sequence of activities, as follows: right-of-way acquisition; surveying and pre-construction activities; construction of temporary access roads, preparation of staging areas; tower installation; conductor installation; installing substation tie-ins; and site reclamation. Each of these activities is described below.

Right-of-way Acquisition

The new gen-tie corridors would require the acquisition of right-of-way (ROW) from the landowners whose properties are traversed by the corridors. Approximately 11.5 miles of ROW would be acquired for each gen-tie line. The ROW would likely be in the form of easements, which would allow agricultural activities to continue within the right-of-way. The easements would range in width from 100 feet to 300 feet depending on whether the gen-tie included a single or double row of transmission towers.

Surveying and Pre-Construction Activities

For surveying on private lands, the project proponent would negotiate rights-of-entry with the affected landowners. Construction survey work would consist of locating the centerline, tower locations, ROW



Typical 230-kV Transmission Towers

Figure PD-8

boundaries, and temporary tower access roads. Once the centerline and access roads are surveyed and clearly marked in the field, preconstruction surveys for cultural and biological resources would be conducted. Geotechnical investigations would also be conducted to determine soil densities and strength for use in geotechnical engineering and structural design.

Construction of Access Driveways

Each transmission tower site would require vehicular access during construction, and also during transmission line operation to allow access for inspection and maintenance. Along the WSP South to Gates Gen-Tie Corridor, the gen-tie right-of-way would run adjacent to Nevada and Jayne Avenues, so access would be gained directly from these county roads without the need for tower access driveways. Along the WSP North to Gates Gen-Tie Corridor, some towers would not be located directly adjacent to existing roads or farm lanes, and thus would require temporary access driveways to support heavy construction vehicles and equipment. Existing paved and unpaved driveways would be used to the maximum extent practical. Existing farm lanes and public roads would provide adequate access to towers in many instances, although modifications may be needed in some areas to improve drivability. During the design phase, the transmission towers would be sited as near to existing roads and farm lanes as practicable in order to avoid creating new access driveways or having to traverse cultivated fields.

Clearing Transmission Right-of-Way

In order to reduce hazards associated with direct contact with trees and vegetation, minimum electrical safety clearances would be required as specified by national electrical safety standards. As such, some trimming or removal of mature vegetation within the transmission ROW may be required. Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures would be top or remove large trees and not disturb smaller trees.

The lands with permanent crops such as nut and fruit orchards would be most affected. Site clearing would be required at the tower sites including a specified permanent clear area surrounding each tower. The clearance area, including tower pad, would be up to 70 feet square (0.1 acres) for lattice towers and less for monopoles. To the extent feasible, the towers would be sited at the edges of fields near existing roads and farm lanes to avoid cultivated lands. In some locations, taller towers would be required in order to provide the higher than standard conductor ground clearances in order to avoid removal of existing orchard trees beneath the conductor sags.

Preparation of Staging Areas

It is anticipated that one construction yard or staging area would be required for each gen-tie project to provide for storage of materials (e.g., tower steel, conductor reels, structure hardware, etc.), construction equipment and vehicles, parking areas for crew vehicles, temporary construction offices, and portable sanitation facilities. These staging areas would be approximately 5 acres in size and could be located within unused portions of existing substation sites, or on previously disturbed private land or existing vacant commercial sites in the corridor vicinity. The precise locations and dimensions of the temporary construction yards would be determined during the engineering phase; however, it is anticipated that the sites selected would well away from any existing residences.

Tower Installation

After the access to each tower location is completed, a cleared work area at the tower site would be required to accommodate the construction of the tower footings, laydown areas for materials, work areas for the assembly of the tower structure, and sufficient area to allow necessary crane maneuvers for tower installation. Depending on the size and type of tower, the cleared work area would average approximately one acre in area. Vegetation would be mostly crushed, and the sites would only be cleared, graded, and compacted where necessary to accommodate heavy vehicles.

Next, the holes for tower foundations would be bored or augured, and concrete poured in place over the pre-assembled reinforcing steel cages set into the holes. Depending on tower type and soil characteristics, up to 100 CY of concrete would be delivered to each tower site to install footings. Once the concrete has cured, the towers would be bolted to the footings. For steel lattice towers, each portion of tower would be assembled at the tower site and lifted into place by cranes and then fastened to the previously installed section below. For tubular steel poles, sections of pole would be hauled to each tower site and similarly lifted into place and bolted together.

It is expected that the soils excavated from the tower foundation holes would be distributed over the adjacent lands and would not be exported from the tower sites.

Given the deep soils of the valley floor that characterize the gen-tie corridors, it is expected that standard excavation methods would be adequate to prepare holes for the tower footings in the valley. No special construction techniques, such as rock blasting, are anticipated.

Helicopters are often used for tower construction in rugged terrain that is inaccessible by road. Given that the gen-tie corridors are readily accessible, it is anticipated that all tower sites would be accessible by heavy construction equipment such as cranes and flatbed trucks. However, it is possible that limited use of helicopters may be needed for conductor stringing over SR-269 or the California Aqueduct. Any tower or stringing locations that may require helicopter construction would be determined at the engineering design stage. However, for purposes of this program-level evaluation, it is conservatively assumed that some helicopter construction would be required. Helicopter services would be obtained on a short-term contract basis from aviation firms in the region. Any landing zones or refueling areas along the gen-tie corridors would be identified at the engineering design stage at the time when the locations of helicopter construction and staging areas, if any, are identified.

Upon completion of construction activity, a permanent setback area would be kept clear around each tower structure for maintenance access and fire safety purposes. It is expected that the typical finished tower pad, including clearance area, would be up to 70 feet square (0.1 acres) within 100-foot wide easement.

Conductor Installation

After the towers are completed, the conductors and ground wires would be installed. This would begin by stringing pilot lines from tower to tower by boom lifts or aerial man-lifts. The pilot lines would guide the pulling of conductors and ground wires, which would be kept under tension to prevent contact with the ground and obstacles.

Conductors and ground wires would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Pulling and tensioning sites would be spaced about 3 miles apart and would temporarily occupy areas of areas of 2 acres on average. These stringing equipment sites would mainly be located within the transmission corridors. In locations where the transmission alignment changes course, the pulling and tensioning sites could extend beyond the 300-foot-wide transmission corridor at these angles or corners, but would not extend more than 1,000 feet from the corridors. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. As with the transmission towers, the precise locations and dimensions of the pulling and tensioning sites would be determined at the engineering design stage.

It is expected that most of the entire length of the transmission corridors would be accessible by trucks and equipment. Thus it is anticipated that most conductor installation would be accomplished from the ground by use of aerial man-lifts/bucket trucks. In some instances, it is possible that helicopters may be needed for cable stringing over the California Aqueduct or SR-269. If so, it is expected that helicopter services would be obtained on a short-term contract basis from aviation firms in the region. Any landing zones or refueling areas along the transmission corridor would be identified at the engineering design stage at the time when the locations of helicopter use, if any, are identified.

There are several of locations along the gen-tie corridors where the conductors would cross over public roads and highways, aqueducts, and electrical distribution and transmission lines. To protect these underlying features during conductor stringing, guard structures are typically installed to intercept cables and prevent them from dropping below a specified height. Typical guard structures consist of standard wood poles, 60 to 80 feet high, connected by a similar wood cross member to form an “H-frame.” Depending on the overall footprint of the transmission line, guard structures can consist of several poles on either side of a crossing, creating a series of connected H-frames on each side. Typically, guard structures would be placed on either side of the protected feature, with protective netting strung from the cross members on one guard structure to the cross members on the opposite structure. (In some instances, the use of guard structures would be substituted with the use of boom-type trucks equipped with heavy outriggers.) At each crossing location, the guard structure would be removed once the overhead conductors have been secured to towers. The WSP gen-tie lines would involve a several such crossings, including one over State Highway 269, at least 2 over county roads, 2 over the California Aqueduct, and 2 or more over existing transmission lines, as well as a number of crossings over electrical distribution lines. At each crossing, guard structures would be designed and installed in accordance with the safety requirements applicable to each.

It should be noted that Kings County may require undergrounding of gen-tie lines where they cross Kings County roads such as Avenal Cutoff Road. If the gen-tie lines are owned by a public utility (e.g., PG&E) which has a franchise agreement with the County, then overhead crossings of County roads would be permitted. If the gen-tie lines are privately-owned, the County would require undergrounding of the gen-tie lines at County road crossings. At this planning stage of the Westlands Solar Park, it has not been determined whether the gen-tie lines will be owned by a public utility or privately owned.

Substation Tie-ins

The WSP gen-tie lines would extend to the point of interconnection to the State grid at the Gates Substation. Within the substations, modifications may be required to accommodate the new gen-tie lines. The modifications would include addition of new bays, circuit breakers, capacitor banks, shunt capacitors, and other electrical equipment. The details of the substation tie-ins would be determined during the engineering design phase, and any associated impacts would be addressed during the course of project-specific environmental review for the substation modifications. However, any required upgrades would occur within the fence line of the Gates Substation.

Site Management During Construction

Dust Control

During construction, water trucks would be used for regular application of water to minimize dust generation. It is also expected that transmission construction would include compliance with the fugitive dust measures specified in Regulation VIII of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Drainage and Erosion Control

Measures to prevent erosion during construction would be specified in the Storm Water Pollution Prevention Plans (SWPPPs) required for the transmission line projects by the State Water Resources Control Board. The SWPPPs would specify Best Management Practices (BMPs) for erosion control and hazardous material containment to be implemented during construction. Drainage control features would be installed, as appropriate, to minimize stormwater runoff from construction areas. (See Section *3.8. Hydrology and Water Quality f*or a detailed discussion of SWPPPs and BMPs.)

Construction Waste

During construction, the waste generated would primarily consist of non-hazardous waste materials such as waste lumber, scrap metal, greenwaste, sanitation waste, and common trash. These waste materials would be segregated on-site for recycling or disposal at the appropriate facilities.

Soil excavated for tower footings would be spread over the area immediately surrounding the tower sites. Soil disposal would not be permitted on slopes exceeding 10 percent or within 100 feet of a stream or water body.

Some quantities of hazardous wastes would be generated during construction. These waste materials would include fuels, lubricants, and cleaning solvents, etc. Hazardous wastes generated during construction would be either recycled or disposed of at a Class I disposal facility, as required.

Land Disturbance and Restoration

The construction of the transmission lines would result in temporary and permanent land disturbance at tower locations and in temporary land disturbance at work sites and staging areas. Table PD-8 contains estimates of land areas that would be permanently and temporarily disturbed. Lands subject to temporary disturbance would be restored as described in the following paragraph.

Upon completion of each segment of transmission line, the areas disturbed during construction would be restored as appropriate. The disturbed areas would include: construction yards and staging areas; work pads and laydown/assembly areas at tower locations; pads created for pulling and tensioning; and guard structure sites. Reclamation would involve the regrading and restoring soil density the disturbed areas with the objective of returning them to pre-construction conditions. A detailed reclamation plan would be prepared at the engineering design stage and incorporated into the plans and specifications for each gen-tie project.

Cultivation of row crops and tree crops are anticipated to continue within the transmission rights-of-way. Within the WSP gen-tie lines would pass through approximately 7.5 miles of existing tree crops. In order to provide adequate clearance between the tree tops and the conductor sags, it is anticipated that taller towers would be used to provide greater ground clearance for conductors and avoid removal of tree crops along the conductor sags. Thus it is not anticipated that any permanent tree crops would be removed beneath the conductor sags.

TABLE PD-8

WSP GEN-TIE CORRIDORS - LAND DISTURBANCE ESTIMATES

Transmission Project Feature	Quantity	Land Disturbance (Acres)		
		Total Disturbance Area	Temporarily Disturbed/ To be Restored	Permanently Disturbed
Tower Sites	115	115	113	2
Tower Access Spur Roads	33	8	8	0
Pulling/Tensioning Sites	8	16	16	0
Staging/Material Storage Sites	2	10	10	0
Totals	--	149 acres	147 acres	2 acres

Assumptions:

1. Total length of transmission corridor = 23.0 miles.
2. Towers per mile of corridor = 5.0 average.
3. Temporary disturbance area at each tower site = 1.0 acres.
4. Permanent disturbance area at each tower site = 0.02 acres for monopoles; 0.1 acres for lattice towers. All towers are assumed to be monopoles.
5. Temporary tower access roads: average length = 500 feet; temporary width = 20 feet (0.23 ac No temporary access roads needed along WSP-South to Gates Gen-Tie. Approximately 33 temporary access roads needed along WSP-North to Gates Gen-Tie, assuming towers are placed adjacent to existing 230-kV towers. No permanent tower access roads will remain after construction.
6. Pulling/tensioning sites: spacing = 3 miles; average temporary disturbance area = 2.0 acres.
7. Staging/material storage sites: spacing = 15 miles; temporary disturbance area = 5.0 acres.

Construction Workforce, Vehicles, and Equipment

Workforce

Based on similar transmission projects in the region, each WSP gen-tie project is expected to have a total workforce of approximately 100 construction workers. It is expected that most of construction personnel would be drawn from the communities in the region, although some specialized workers may need to be brought in from outside the area and be temporarily lodged in local hotels. Given the dispersed nature of the construction activities along the gen-tie corridors, with relatively few employees traveling to any given work site, it likely would not be practical to provide shuttle service; likewise, opportunities for carpooling would be limited. Although some ridesharing would likely occur, it is assumed that all construction workers would be solo commuters.

During construction, the work activities would be distributed along the gen-tie corridors, with various crews engaged in surveying, ROW clearing, access driveway construction, staging area preparation, tower foundation installation, tower assembly and erection, conductor installation, guard structure installation and removal, and reclamation. The peak of construction activity at any given site would be tower assembly and erection by a 22-person crew. Assuming that these workers would all commute solo, the peak traffic generated by construction personnel would be 22 AM peak-hour trips and 22 PM peak-hour trips. In addition, the tower construction activities would move fairly quickly from one tower site to the next (i.e., no more than 2 days at any tower site).

Typically, construction would take place during the hours of 7 AM to 5 PM, Monday through Friday, although work could take place outside these hours if needed. For example, highway crossings may be scheduled during nighttime hours to minimize traffic disruption. In such instances, night lighting would be required for safe working conditions, but the lights would be oriented away from any sensitive receptors nearby.

Construction Deliveries

Equipment and Materials

The transmission projects are expected to use approximately 70 pieces of construction equipment and support vehicles at various stages of construction. This would include equipment such as excavators, back-hoes, graders, dozers, compactors, auger trucks, concrete mixer trucks, cranes, fork lifts, puller trucks, tensioner trucks, hydraulic man-lifts, winches, water trucks, fuel trucks, dump trucks, flat-bed trucks, semi flat-bed trucks, pole trucks, pick-up trucks/crew cabs, and generators. Most equipment would be brought to the individual sites when needed and would remain at those sites throughout the duration of the activities for which they are needed.

Deliveries of tower steel, hardware, conductor spools, concrete, and equipment would occur throughout the construction period. The equipment and material deliveries would originate from various locations in central California and would utilize regional highways and local roads to reach the work sites along the gen-tie corridors.

Concrete and Steel Deliveries

Concrete would be delivered to tower sites by concrete mixer trucks for use in construction of the tower footings. It is expected that concrete would be supplied from ready-mix plants located near Coalinga. It is estimated that up to 100 CY of concrete would be required at each tower location, assuming steel lattice towers with deep footings throughout. Given a concrete mixer truck capacity of 10 CY, and conservatively assuming that the four footings for each tower would be completed in one day, a total of 10 concrete deliveries would occur at each tower site over the course of one day. Deliveries of tower steel and other materials for tower installation would involve approximately 22 round trips by trucks per day. The combined truck deliveries of concrete, steel, and other tower materials would total approximately 32 round trips per day (or 64 trip ends) at any given tower site. Since installation of tower foundations and tower construction represent the peak of construction activities at any given site along the gen-tie corridors, these 64 one-way trips represent the peak daily truck traffic generation for the gen-tie projects at any given location on the roadway network.

Operation and Maintenance of Transmission Lines

After completion, the transmission facilities would be inspected, maintained, and repaired in accordance with the proponent utilities' procedures and regulatory requirements. Transmission components would be inspected at least once per year for corrosion, equipment misalignment, loose fittings, and mechanical problems. The access driveways and spur driveway would be inspected, maintained, and repaired as necessary to ensure continuity of access.

Vegetation, landscaping, and agricultural crops in the vicinity of the towers and conductors would be maintained at clearance distances as required by applicable regulations and safety standards.

2.5. APPROVED AND PENDING PROJECTS / INTRODUCTION TO CUMULATIVE IMPACTS ANALYSIS

Analysis of Cumulative Impacts under CEQA

The impact analyses for the environmental topics in Chapter 3 are primarily focused on the evaluation of impacts associated with WSP solar development and gen-tie line construction. At the end of each topical section is an evaluation of potential cumulative impacts, or the impacts associated with the WSP solar development and gen-tie line construction when combined with the impacts of other projects in the vicinity. The CEQA provisions for the analysis of cumulative impacts are summarized below, together with a description of the methodological approach used in evaluating cumulative impacts in this EIR.

CEQA Guidelines Section 15355(b) states: "An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(a)(3)." As stated in Section 15065(a)(3) of the CEQA Guidelines: "'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects…" The discussion of cumulative impacts may consist of either: "(A) A list of past, present or reasonably anticipated future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, or which described or evaluated regional or areawide conditions contributing to the cumulative impact" (CEQA Guidelines §15130(b).)

As mentioned, the cumulative impact analysis for each environmental topic (e.g., biological resources, traffic, noise, etc.) appears at the end of each topical section in Chapter 3. Since the buildout period for WSP extends to 2030, the cumulative evaluation includes separate analyses for near-term cumulative impacts and far-term cumulative impacts. In general, the evaluations of near-term cumulative impacts rely on the list approach, which considers the approved, pending and foreseeable projects within the vicinity of WSP and the gen-tie corridors. The evaluations of far-term cumulative impacts are generally based on the assumed buildout of all General Plan land uses in the vicinity.

The evaluation of cumulative impacts for each topic area begins with a description of the geographic scope of that particular cumulative analysis. The geographic scope varies for each topic area. In some instances, the geographic scope is highly localized (e.g., noise) and for some topics it extends to a wider area (e.g., biological resources).

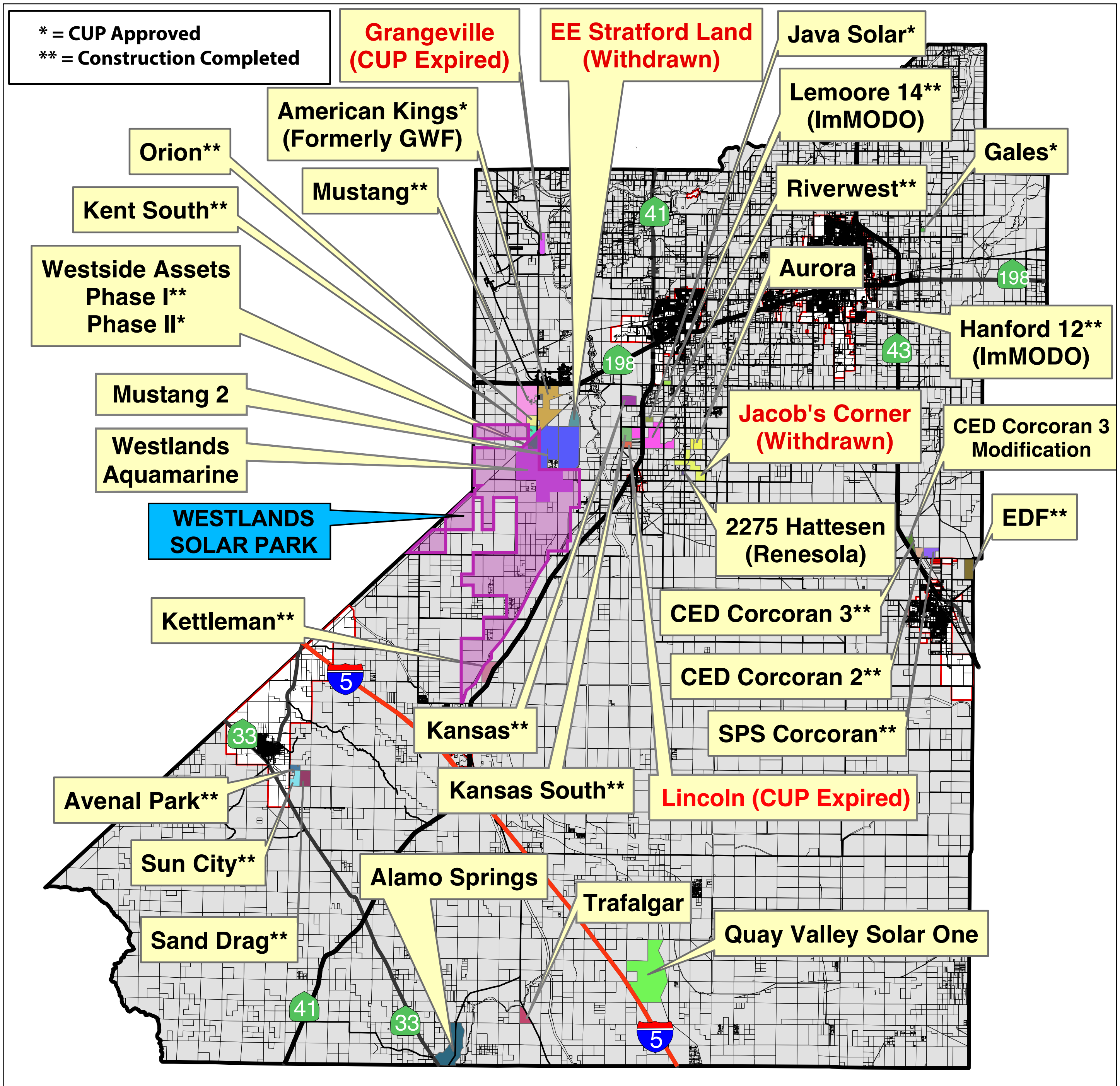
The approach to assessing the significance of a cumulative project impact is based on the provision of Section 15065 of the CEQA Guidelines which states that the effects of a project must be "cumulatively considerable" to be considered significant. Accordingly, CEQA requires a two-step analysis for cumulative impacts, with the first step resulting in a determination of whether a significant cumulative impact would occur for each environmental topic, and the second step resulting in a determination of whether the project contribution to the cumulative impact is "considerable." An affirmative finding is required for both steps in order to conclude that a project impact is cumulatively significant.

Approved, Pending, and Reasonably Anticipated Future Projects

The list of approved, pending, and reasonably anticipated future projects in the vicinity is contained in Tables PD-9 and PD-10. Table PD-9 includes all solar PV projects that are pending, approved, or completed in Kings County (see Figure PD-9). According to Kings County staff, there are no other substantial projects in the County, with the exception of Quay Valley project discussed below. Other projects that have been proposed and approved in Kings County over the past several years have consisted solely of minor projects such as cell towers or adaptive reuse projects that involve minimal or no impacts. As such, these minor projects were not included on the list in Table PD-9 since there is no potential that they would contribute to a cumulatively significant impact that may be associated with the project.

The Quay Valley project is a large mixed-used development on an approximately 7,500-acre site along Interstate-5 just north of the Kern County line. The Quay Valley project includes 25,000 dwelling units plus hotels, restaurants, a business park, a research park, a Hyperloop demonstration track, and a 150 MW solar PV generating facility.

Table PD-10 includes all pending, approved, and recently completed projects in the vicinity of WSP and the WSP Gen-Tie Corridors located in southwestern Fresno County. These projects are shown in Figure PD-10, and consist mainly of solar PV projects, but also include two planned transmission projects. The first transmission project is the planned 230-kV Gates to Gregg transmission project, known as the Central Valley Power Connect (CVPC) project. The CVPC project is currently in the route planning stage, in which three alternative transmission routes are under consideration in the WSP vicinity, as shown in Figure PD-10. (Note: In late 2026, the CVPC project was placed on hold by the California ISO and PG&E pending reassessment on whether to proceed with the project as originally planned. However, the CVPC project is retained as a cumulative project for purposes of this EIR.) Another transmission project planned in the vicinity is the Westlands Transmission Project, which consists of a planned 500-kV transmission line extending from Gates Substation north to the Dos Amigos Pumping Plant. This transmission project is also in the very early route planning stage, and the preferred route and alternatives have not yet been formally identified. However, it is assumed for purposes of this analysis that the preferred route would run parallel to the existing PG&E transmission corridor along the east side of Interstate 5, as shown in Figure PD-10.



Legend for Solar PV Application in unincorporated areas of Kings County: Total - 1,424.70 MW

- 2275 HATTESEN - 1.83 MW
- ALAMO SPRINGS - 130 MW
- AMERICAN KINGS (Formerly GWF) - 125 MW
- AURORA - 20 MW
- AVENAL PARK - 9 MW
- CED CORCORAN 2 - 19.75 MW
- CED CORCORAN 3 - 20 MW
- CED CORCORAN 3 MODIFICATION - 3.12 MW
- EDF - 20 MW
- EE STRATFORD LAND (Withdrawn)
- GALES 3 MW
- GRANGEVILLE (Expired)
- HANFORD 12 (ImMODO) - 3 MW
- JACOB'S CORNER (Withdrawn)
- JAVA - 15 MW
- KANSAS - 20 MW
- KANSAS SOUTH - 20 MW
- KENT SOUTH - 20 MW
- KETTLEMAN - 20 MW
- LEMOORE 14 (ImMODO) - 8 MW
- LINCOLN (Expired)
- MUSTANG - 160 MW
- MUSTANG 2 - 150 MW
- ORION - 20 MW
- QUAY VALLEY SOLAR ONE - 150 MW
- RIVER WEST - 136 MW
- SAND DRAG - 19 MW
- SPS CORCORAN - 20 MW
- SUN CITY - 20 MW
- TRAFALGAR - 20 MW
- WESTLANDS AQUAMARINE - 250 MW
- WESTSIDE ASSETS, LLC - 22 MW

- Arterial
- Collector
- Highway
- Interstate
- Major Collector
- Minor Road

Source: Kings County Community Development Agency, April 2017

Pending, Approved, and Completed Solar PV Projects in Kings County

Figure PD-9

TABLE PD-9

PENDING, APPROVED, AND COMPLETED SOLAR PV PROJECTS IN KINGS COUNTY

Project	Acreage	Generating Capacity (MW)	Status (As of 9/1/17)
Sun City	180	20	Constructed
Sand Drag	240	19	Constructed
Avenal Park	86	9	Constructed
CED Corcoran Solar 2	124	20	Constructed
SPS Corcoran	228	20	Constructed
American Kings (former GWF)	978	125	CUP Approved
Sunpower Henrietta (Riverwest)	836	136	Constructed
Kansas South	230	20	Constructed
Aurora	186	20	Pending
Kansas	200	20	Constructed
Mustang	1422	160	Constructed
EDF	200	20	Constructed
Orion	200	20	Constructed
Kent South	200	20	Constructed
Kettleman	220	20	Constructed
CED Corcoran Solar 3	138	20	Constructed
Quay Valley Solar One	1500	150	Pending
Hanford 12 (ImMODO)	19	3	Constructed
Westside Solar Project*	187	22	Partially Constructed
Lemoore 14 (ImMODO)	60	8	Constructed
2275 Hattesen (Renesola)	16	2	CUP Approved
Java Solar	96	15	CUP Approved
Mustang 2	2459	150	Pending
Alamo Springs	985	130	Pending
Westlands Aquamarine*	1860	250	Pending
CED Corcoran Solar 3 (Modification)	17	3	CUP Approved
Totals	**13,797**	**1,536**	

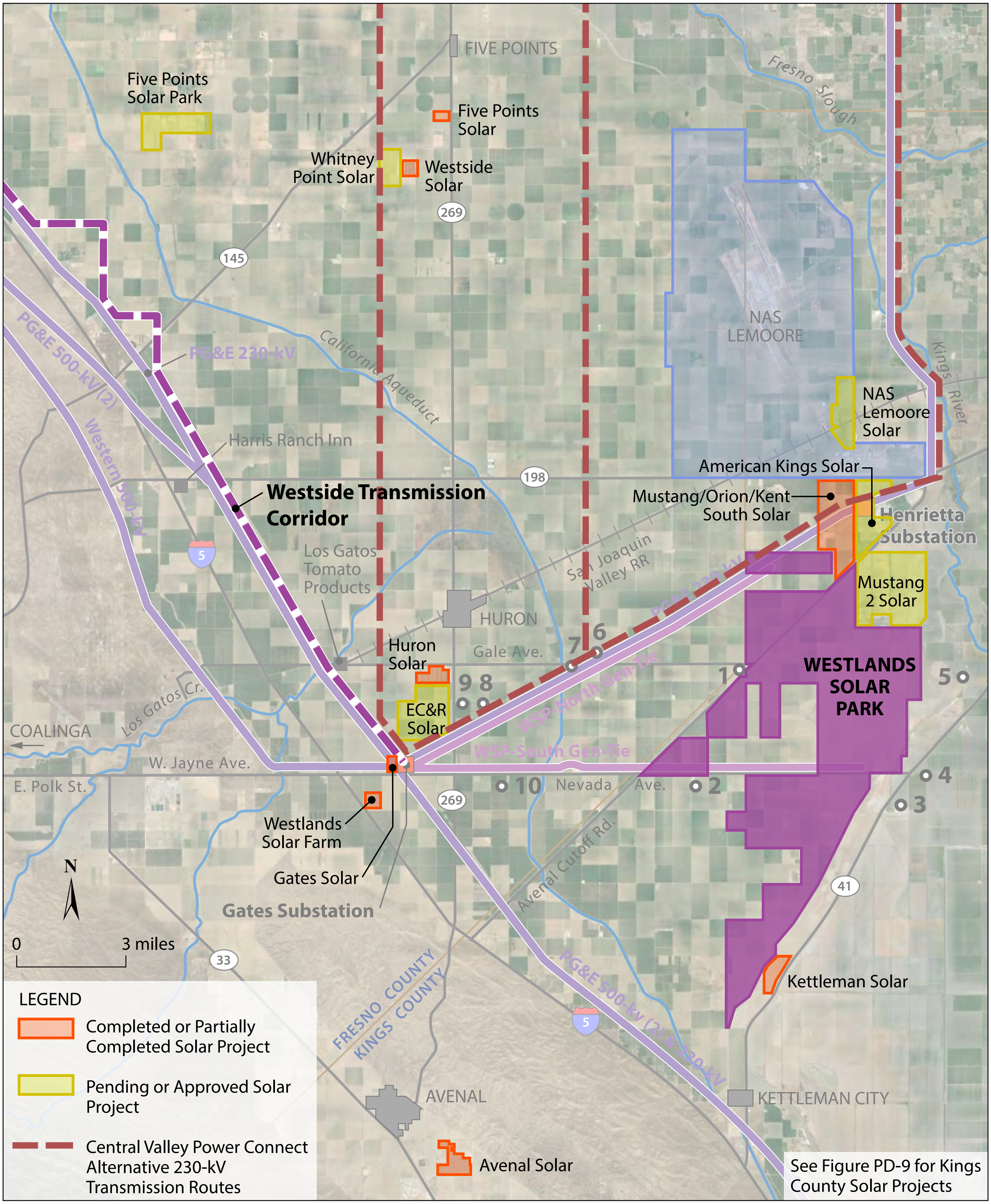
* Projects located within Westlands Solar Park.
Sources: Kings County CDA, WSPH LLC, 2017.

TABLE PD-10

PENDING, APPROVED, AND COMPLETED PROJECTS IN SOUTHWEST FRESNO COUNTY AND NAS LEMOORE

Project	Acreage/ Miles	Generating Capacity (MW)	Status (As of 7/1/17)
Fresno County Solar Projects			
Gates Solar (PG&E)	70 ac.	20	Constructed
Westlands Solar Farms	90 ac.	18	Constructed
Huron Solar (PG&E)	274 ac.	20	Constructed
EC&R Solar	2450 ac.	190	CUPs Pending
NAS Lemoore Solar Project			
NAS Lemoore Solar	930 ac.	134 (167 DC)	Approved (NASL)
Transmission Projects			
Central Valley Power Connect (Gates to Gregg Substation)	63 mi.	NA	Route Planning Stage (On Hold)
Westside Transmission Project (Gates to Dos Amigos Pumping Plant)	69 mi.	NA	Route Planning Stage

Sources: County of Fresno, 2017; CVPC, 2016.



Base map: Google Earth, 2016

Gen-Tie Corridors - Pending, Approved, and Completed Projects

Figure PD-10

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