

Little Bear Solar Project Description

Prepared for
Fresno County Public Works and
Planning Development Services Division
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Little Bear Solar Project Description

1.0 Introduction

The Little Bear Solar Project (referred to hereafter as the “Project”) will consist of the development of a solar photovoltaic (PV) power generating project on approximately 1288 acres of private agricultural lands in western Fresno County. The Project will consist of five individual facilities, ranging from approximately 157 to 322 acres, on the Project site and generally referred to hereafter as “Facility”, or by individual Facility name (“Little Bear 1,” “Little Bear 3,” “Little Bear 4,” “Little Bear 5” and “Little Bear 6”)¹. The Project’s electric power will be produced during daylight hours when electricity demand is highest. The Project will generate greenhouse gas-free electricity that will offset tons of carbon dioxide and other emissions that would have resulted from producing an equivalent amount of electricity from fossil fuel-fired electric generators. As presently designed, the Project is expected to have an electric generating capacity of up to approximately 180 megawatts AC (MWac)².

The applicants for the proposed Project (collectively referred to as “Applicant”) are seeking up to five Unclassified Conditional Use Permits and other ministerial approvals to construct, operate, and decommission the Project.

For purposes of environmental review under the California Environmental Quality Act (CEQA), based on the scope of the Project and the Applicant’s understanding of the environmental resources and potential impacts to those resources, it is anticipated that the County will prepare an Environmental Impact Report (EIR) and Mitigation Monitoring and Reporting Program (MMRP).

1.1 Project Objectives

The proposed Project will help California meet its Renewable Portfolio Standard (RPS) goal, which is currently 50 percent of electrical power retail sales by 2030 under Senate Bill (SB) 350. The Project will also help the State achieve and comply with the 2006 Global Warming Solutions Act (Assembly Bill [AB] 32) GHG reduction targets, as amended by SB 32 in 2016, which require California’s GHG emissions to be reduced to 40% of 1990 levels by 2030. The Project would further support the County’s energy

¹ There is no “Little Bear 2” Facility.

² Although 180 MWac is the expected nominal generating capacity of the Project, it should be noted that the generating capacity depends on the size and efficiency of the photovoltaic panels, as well as the layout and tracking technology used at the time of construction. It may be possible to achieve greater generating capacities without any substantial changes to environmental effects.

policy goal to contribute to California's long-term renewable energy development and GHG reduction goals.

The Applicant's primary objective is to generate renewable solar electricity from proven technology, at a competitive cost, with low environmental impact, and deliver it to market as soon as possible. This objective has driven the choice of PV technology and location for the Project. The specific objectives for the Project are as follows:

- Construct an approximately 180 MWac of electricity in order to assist the State of California in achieving the Renewable Portfolio Standards and SB 350 greenhouse gas reduction goals by providing a significant new source of renewable energy.
- Produce and transmit electricity at a competitive cost.
- Locate the generating facility in a rural portion of western Fresno County in proximity to an available connection to the existing electrical distribution system.

Minimize environmental impacts by:

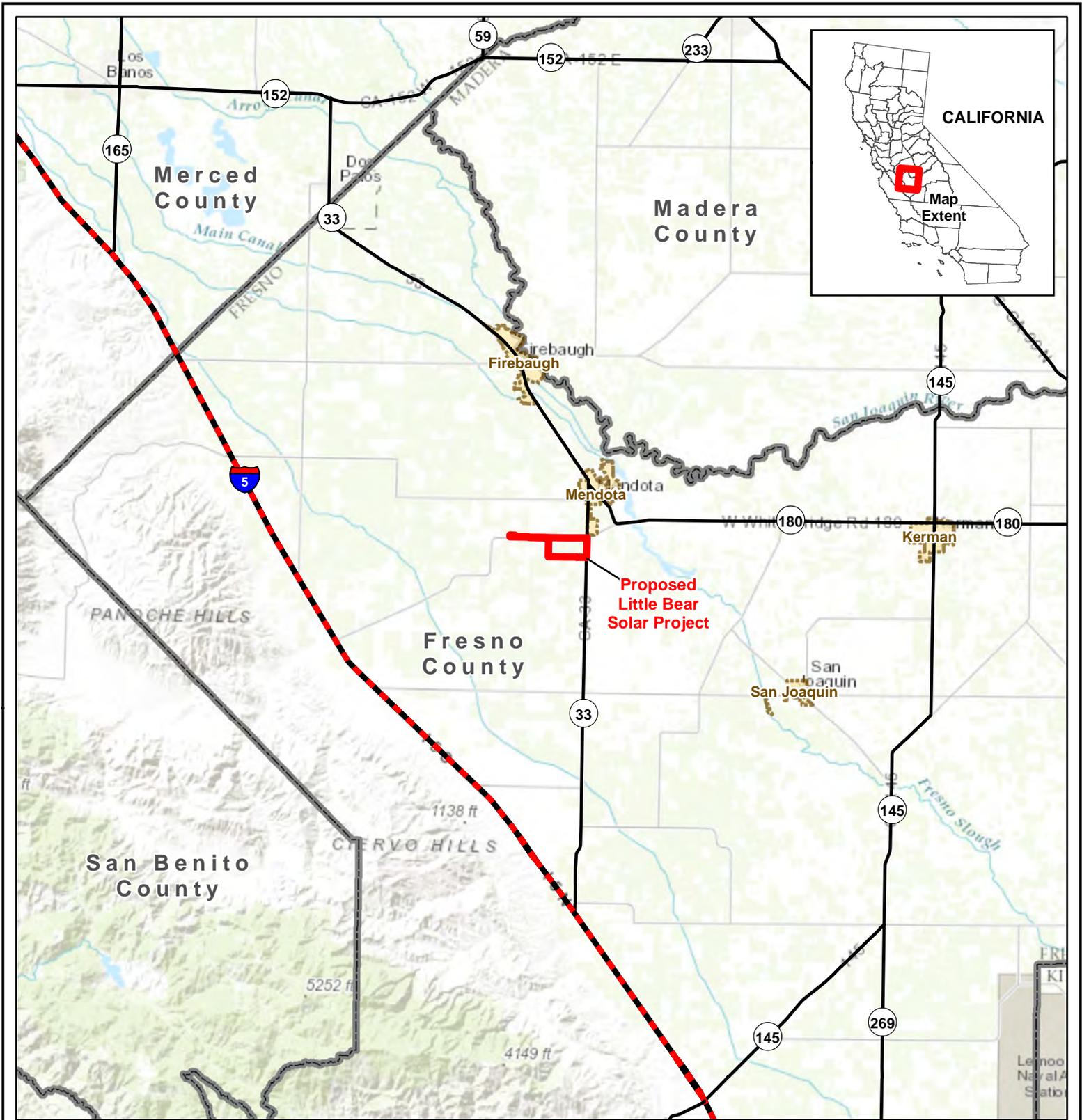
- Utilizing land that is disturbed or previously degraded;
- Using existing electrical distribution and transmission facilities, right-of-way, roads, and other existing infrastructure where practicable;
- Minimizing water use;
- Reducing greenhouse gas emissions; and
- Using technology that is available, proven, efficient, easily maintained, recyclable, and environmentally sound.

2.0 Project Description

As described above, the proposed Project will consist of approximately five solar PV power generating Facilities that will be capable of producing up to approximately 180 MWac of power. The Project will interconnect to the electrical grid at Pacific Gas and Electric's (PG&E) Mendota Substation, located approximately two miles west of the Project site.

2.1 Project Location

The Project site is located in the San Joaquin Valley, approximately 13 miles east of Interstate 5 (I-5), approximately 2.5 miles southwest of the City of Mendota, and immediately west of State Route 33 (SR-33), in the western portion of the San Joaquin Valley, in unincorporated Fresno County, Sections 13 and 14, Township 14 South, Range 14 East, Mount Diablo Base and Meridian (MDBM). Specifically, the Project site is bounded by West California Avenue to the north, West Jensen Avenue to the south, San Bernardino Avenue to the west, and SR-33 to the east. **Figure 1 – Regional Location** and **Figure 2 – Project Vicinity** show the location of the proposed Project on a regional and local basis, respectively.



Legend

-  Interstate
-  State Highway
-  Proposed Project
-  Municipality
-  County Boundary



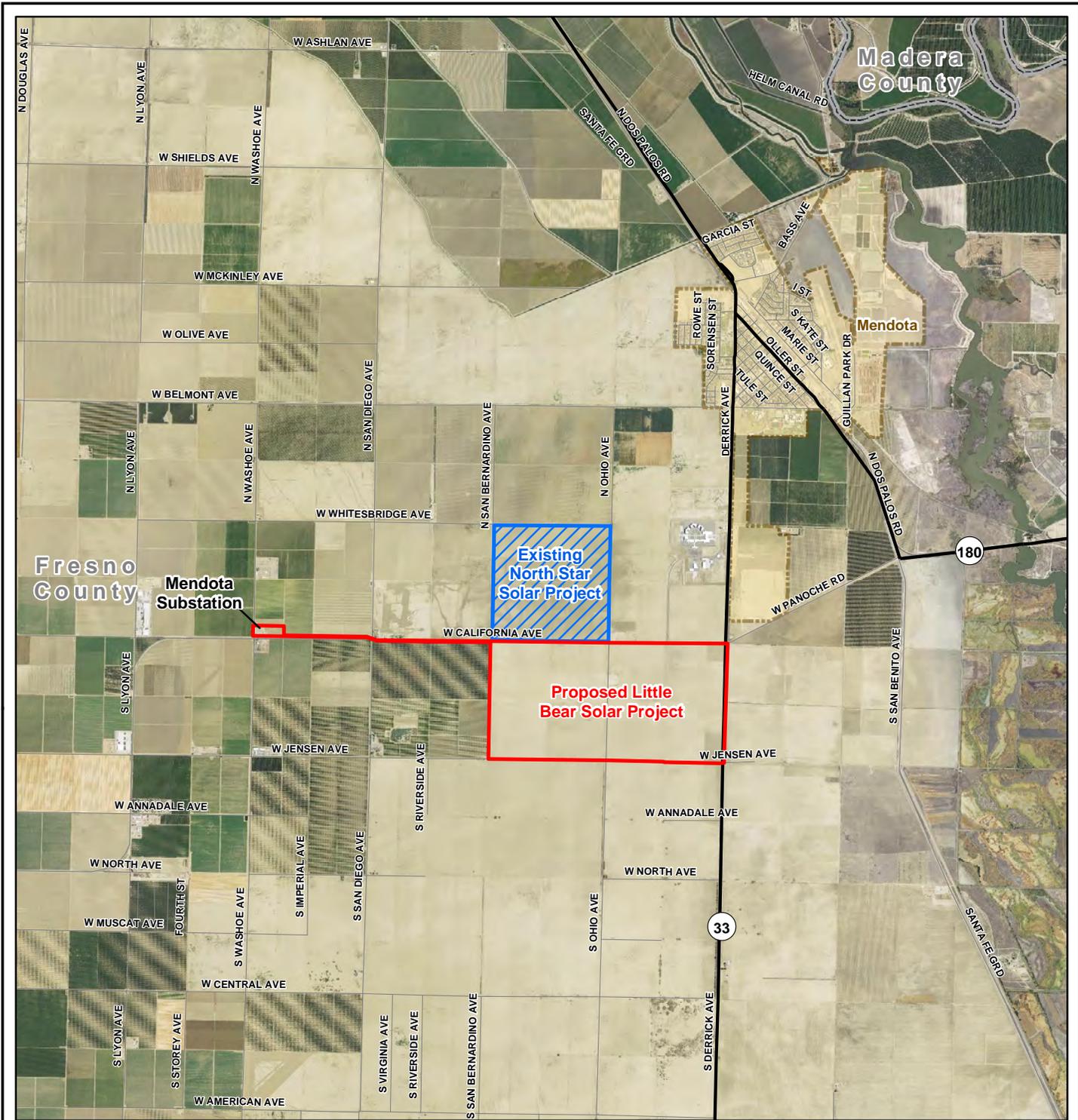
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 Universal Transverse Mercator
 North American Datum 1983
 Zone 11 North, Meters

LITTLE BEAR SOLAR PROJECT

Figure 1-- Regional Location

Map Extent: Fresno County, CA

Date: 09-08-16		Author: rnc
G:\Little Bear Solar Project\MXD's\Project Location		



Legend

- State Highway
- Road
- Proposed Project
- Existing North Star Solar Project
- Municipality
- County Boundary

Miles
 Universal Transverse Mercator
 North American Datum 1983
 Zone 11 North, Meters

LITTLE BEAR SOLAR PROJECT

Figure 2 -- Project Vicinity

Map Extent: Fresno County, CA

Date: 09-08-16	Author: rnc
G:\Little Bear Solar Project\MXD's\Project Location	

The Project site is located within Fresno County’s Census Tract 83.02, Block Group 2, which has an estimated population of 13 residents per square mile of land area.³ The Project site is currently under agricultural production with winter wheat and barley crops according to the National Agricultural Statistics Service (NRCS) CropScape website. There is an approximately 5000 square-foot metal storage shed with neighboring metal storage silos (approx. 2500 sq. ft.) located on parcel 019-110-06ST, just east of S. Ohio Avenue, that will be removed as part of Project construction. The Project site is comprised of the following parcels, totaling approximately 1288 acres:

Facility	Assessor’s Parcel Number (APN)	Approximate Acreage	Approximate Generating Capacity (MWac)
Little Bear 1	019-110-04ST	161	40
	019-110-05ST	161	
Little Bear 3	019-110-06ST	161	20
Little Bear 4	019-110-03ST	322	50
Little Bear 5	019-110-13ST	322	50
Little Bear 6	019-110-13ST	161	20
TOTAL		1288	180

Land use in the vicinity of the Project is largely agricultural production with a few, scattered residences—the closest of which is approximately three-quarters of a mile from the Project site. The Project will be immediately adjacent to the North Star Solar Power Project and approximately one-half mile south of the Mendota Federal Correction Institute.

2.2 Project Land Use and Zoning Characteristics

The land use designation for the Project site is Agriculture according to the Fresno County 2000 General Plan. The Agriculture land use designation provides for the production of crops and livestock, and for location of necessary agriculture commercial centers, agricultural processing facilities, and certain nonagricultural activities.⁴

³ U.S. Census Bureau, American Fact Finder, Total Population Universe: Total Population 2009-2013 American Community Survey 5-Year Estimates. Available at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_B01003&prodType=table. Accessed February 16, 2017

⁴ Fresno County 2000 General Plan, Agriculture and Land Use Element, October 2000, page 2-7.

The County Zoning Ordinance establishes the basic regulations under which land is developed. This includes allowable uses, building setback requirements, and development standards. Pursuant to state law, the Zoning Ordinance must be consistent with the General Plan. The basic intent of the County Zoning Ordinance is to promote and protect the public health, safety, and welfare via the orderly regulation of land uses throughout the unincorporated area of the County.

This Zoning Ordinance applies to all property in unincorporated portions of the County, except land owned by the United States or any of its agencies.

The Project site is currently zoned AE-20 (Exclusive Agricultural District, 20-acre minimum parcel size). The purpose of the AE-20 zone designation is intended to be an exclusive district for agriculture and for those uses which are necessary and an integral part of the agricultural operation. The designation is also intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses which by their nature would be injurious to the physical and economic well-being of the agricultural district. Uses under zone designation AE-20 are limited to primarily agricultural uses and other activities compatible with agricultural uses.⁵

It should be noted that the Project site is not subject to any Williamson Act contracts. The Williamson Act does not apply to the Project site as the current property owner, Westlands Water District, acquired the Project site in lieu of eminent domain proceedings for a public purpose, improving drainage, as part of the Peck Settlement in 2002. The Williamson Act and the standard Williamson Act restrictions and conditions adopted by the County expressly provide that Williamson Act contracts are null and void upon acquisition of such property by a public agency, in this case Westlands Water District, in lieu of eminent domain proceedings for a public purpose.

2.3 Proposed Action

The Unclassified Conditional Use Permit (CUP) allows the County to consider special uses which may be essential or desirable, but which are not allowed as a matter of right within a zoning district. Certain uses of land or types of businesses specified in the Fresno County Zoning Ordinance require an Unclassified CUP application. PV solar power generation facilities may be permitted in any zoning district through the Unclassified CUP discretionary application process. The Project applicant is seeking five Unclassified CUP approvals to allow construction and operation of the Project on approximately 1288 acres, which is zoned AE-20. The five Facilities are considered a single "Project" for purposes of CEQA to ensure coordinated and comprehensive analysis of potential environmental impacts. However, it is anticipated that the Facilities may be developed, owned and operated individually, under individual Power Purchase Agreements.

⁵ The Ordinance Code of the County of Fresno, Chapter 1 General Provisions Sections 800-803.19, Part VII Land Use Regulation and Planning Division VI Zoning Division, Section 816.1 "AE" Exclusive Agricultural District Uses Permitted, Last Date Amended: March 2, 2004.

2.4 Project Components

The proposed Project will consist of various components and features. **Figure 3a – Project Design** shows the overall site plan for the proposed Project. The plans for each individual Facility are shown on **Figures 3b through 3f**. The Project's main components are discussed further in the sections below.

2.4.1 Solar PV Generating Components

The Project will install arrays of solar PV modules to convert solar energy directly to electrical power to supply the existing electrical grid. The solar PV modules will convert the sunlight striking the modules directly into low voltage direct current (DC) power, which is collected at high voltage DC and subsequently transformed to alternating current (AC) power via an inverter.

The Project will be constructed using thin film or other PV solar modules (each approximately 50 inches wide by 80 inches long) mounted on either fixed-tilt mounting systems, horizontal tracker structures, or a combination thereof. The mounting system for the modules is proposed to be supported by steel posts driven into the ground.

- **Fixed-tilt:** Fixed-tilt arrays, which do not track the sun, would be positioned in a south facing orientation at a tilt between 20 and 25 degrees from horizontal (ground surface) to receive optimal solar energy throughout the year. The rows in each array would be oriented in an east west direction. The maximum height for fixed-tilt arrays would be approximately thirteen feet above the ground.
- **Tracker:** A single-axis horizontal tracking system would entail the installation of PV modules on a rack with a rotating-gear drive that tracks the sun. When the sun is directly overhead, the modules will be at a zero-degree angle (level to the ground). The tracking units will be arranged in north to south oriented rows, and will be powered by a drive motor to track the east-west path of the sun on a single axis throughout the day. At a horizontal position, the modules will be approximately six to ten feet off the ground. The highest point for a horizontal tracker occurs during the early morning and evening hours and is approximately a maximum of thirteen feet above the ground surface. **Figure 4 – Typical PV Solar Tracker** shows the detail of a typical PV solar single axis horizontal tracker that will be installed as part of the Project.

Each Facility will include several solar arrays along with associated interior access ways and perimeter roads. Each solar array will include PV modules installed in rows up to 1500 V DC and will be connected to an up to 2-4 MWac Power Conversion Station (PCS). The PCS will include inverters which will convert the DC power into AC power and transformers that will increase the AC power output to 34.5 kV for collection to the photovoltaic combining switchgear (PVCS). **Figure 5 – Typical PV Array** shows the typical solar array that will be constructed on the Project site. Each Facility will include a combination underground and overhead 34.5 kV AC collection system to convey electricity from the arrays to the Facility PVCS and substation.

LITTLE BEAR 4
 SOLAR
 MENDOTA, FRESNO COUNTY
 CALIFORNIA
 50MWac

REV	DATE	DESCRIPTION	BY	CHK	APP

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 PROJ. MGR:
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 SHEET TITLE

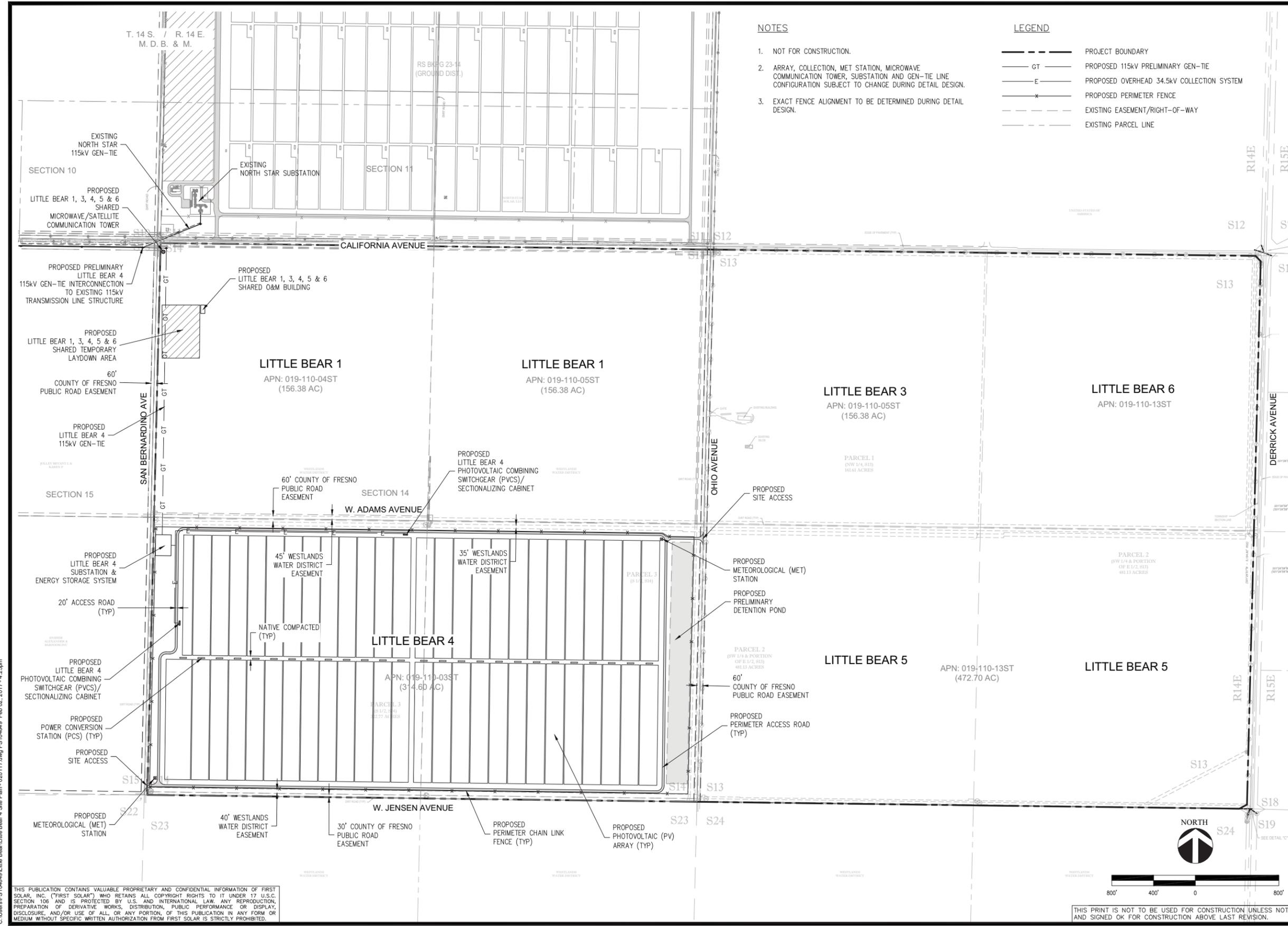
SITE PLAN
 (2/1/17)

NOTES

1. NOT FOR CONSTRUCTION.
2. ARRAY, COLLECTION, MET STATION, MICROWAVE COMMUNICATION TOWER, SUBSTATION AND GEN-TIE LINE CONFIGURATION SUBJECT TO CHANGE DURING DETAIL DESIGN.
3. EXACT FENCE ALIGNMENT TO BE DETERMINED DURING DETAIL DESIGN.

LEGEND

- PROJECT BOUNDARY
- GT --- PROPOSED 115kV PRELIMINARY GEN-TIE
- E --- PROPOSED OVERHEAD 34.5kV COLLECTION SYSTEM
- x --- PROPOSED PERIMETER FENCE
- - - EXISTING EASEMENT/RIGHT-OF-WAY
- EXISTING PARCEL LINE



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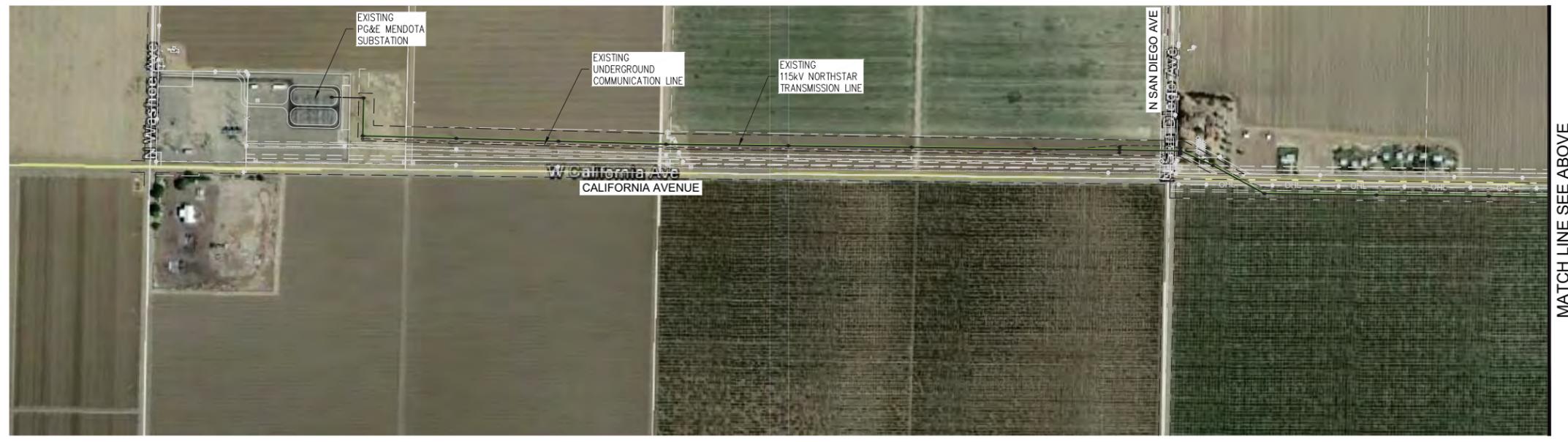
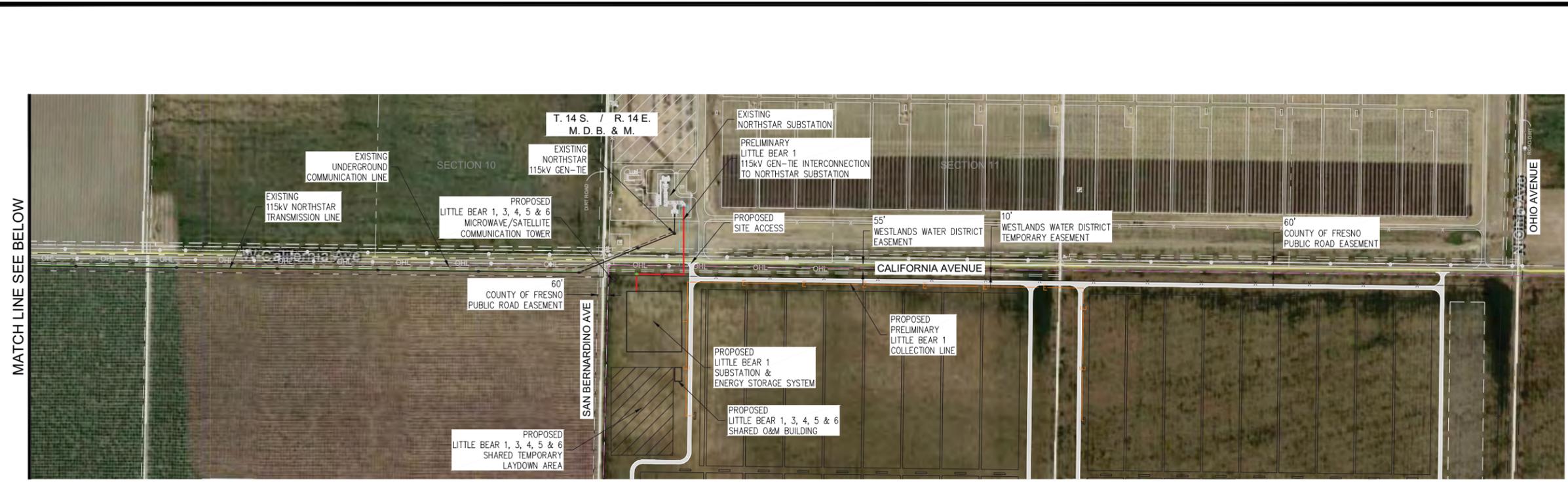
FIGURE 3d -- LITTLE BEAR 4 SITE PLAN

LITTLE BEAR 1
 SOLAR
 MENDOTA, FRESNO COUNTY
 CALIFORNIA
 40MWac

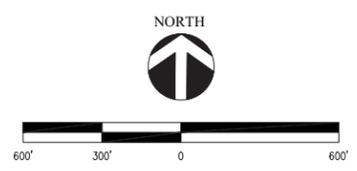
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SHEET TITLE
 PROPOSED DESIGN
 LITTLE BEAR 1
 INTERCONNECTION
 (2/16/17)



- LEGEND**
- PROJECT BOUNDARY
 - PROPOSED OVERHEAD 115kV PRELIMINARY GEN-TIE
 - PROPOSED OVERHEAD 34.5kV COLLECTION SYSTEM
 - x- PROPOSED PERIMETER FENCE
 - - - PROPOSED EASEMENT
 - EXISTING 115kV NORTHSTAR TRANSMISSION LINE
 - - - EXISTING UNDERGROUND COMMUNICATION LINE
 - - - EXISTING EASEMENT/RIGHT-OF-WAY
 - - - EXISTING PARCEL LINE



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FIGURE 3g -- LITTLE BEAR 1 INTERCONNECTION PLAN

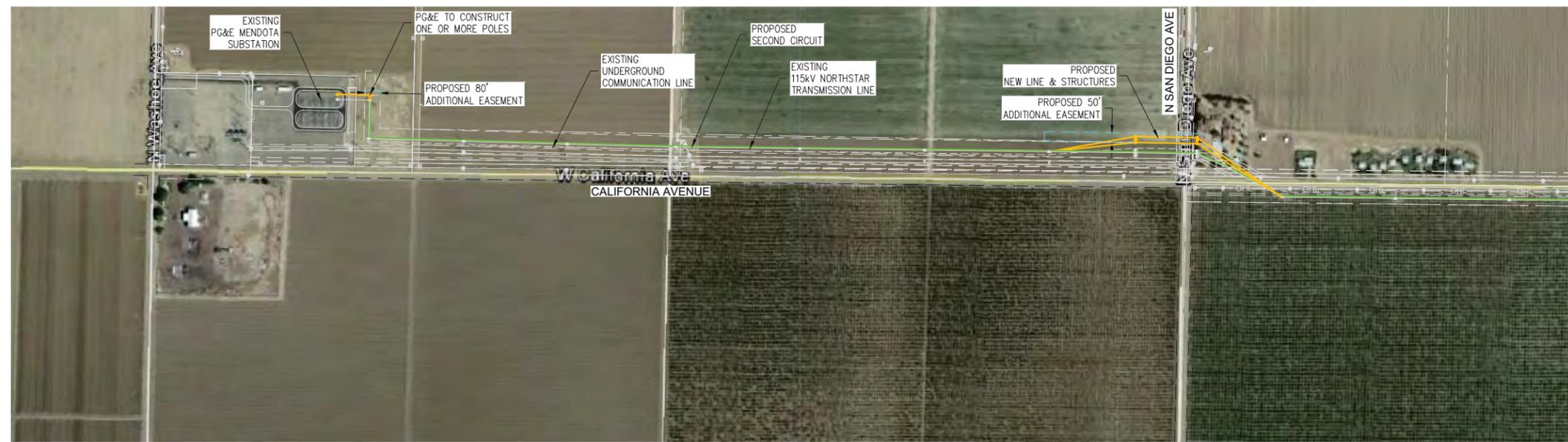
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MATCH LINE SEE BELOW

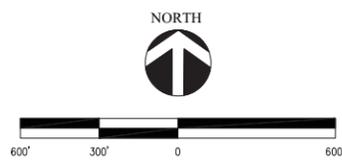


LITTLE BEAR 3, 4, 5 & 6
SOLAR
MENDOTA, FRESNO COUNTY
CALIFORNIA
140MW_{DC}



MATCH LINE SEE ABOVE

- LEGEND**
- PROJECT BOUNDARY
 - PROPOSED NEW LINE AND STRUCTURES
 - PROPOSED OVERHEAD 115KV PRELIMINARY GEN-TIE
 - PROPOSED SECOND CIRCUIT
 - PROPOSED OVERHEAD 34.5KV COLLECTION SYSTEM
 - PROPOSED PERIMETER FENCE
 - PROPOSED EASEMENT
 - EXISTING 115KV NORTHSTAR TRANSMISSION LINE
 - EXISTING UNDERGROUND COMMUNICATION LINE
 - EXISTING EASEMENT/RIGHT-OF-WAY
 - EXISTING PARCEL LINE



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SHEET TITLE
PROJECT DESIGN
 LITTLE BEAR 3, 4, 5 & 6
 INTERCONNECTION
 (2/16/17)

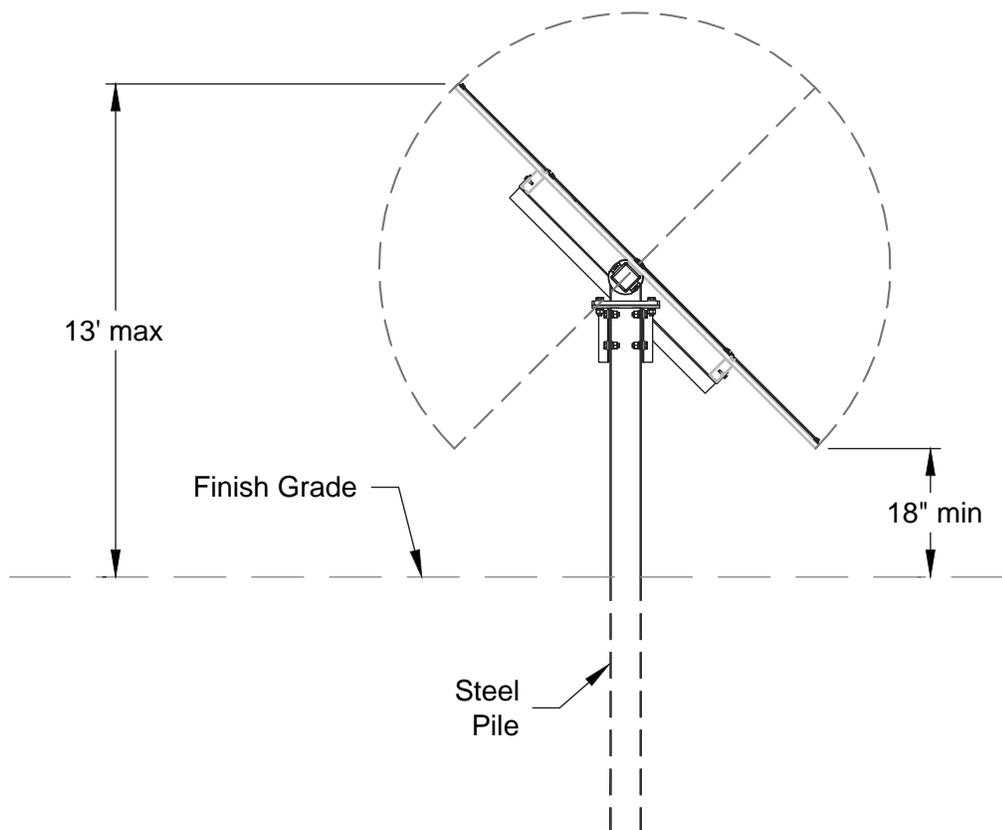
SHEET 1 OF 1

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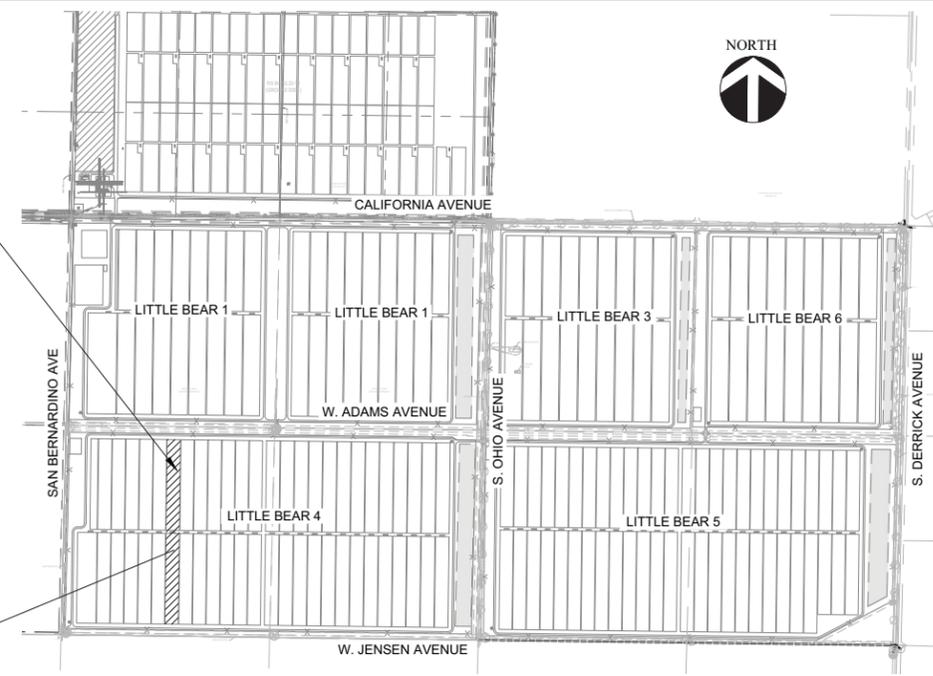
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FIGURE 3h -- LITTLE BEAR 3, 4, 5 & 6 INTERCONNECTION PLAN



Note:
The distance from the ground to the edges of
PV module table may vary depending on the
topography.

Figure 4 – Typical PV Solar Tracker



Little Bear Solar Project
 Scale: 1"=1000'

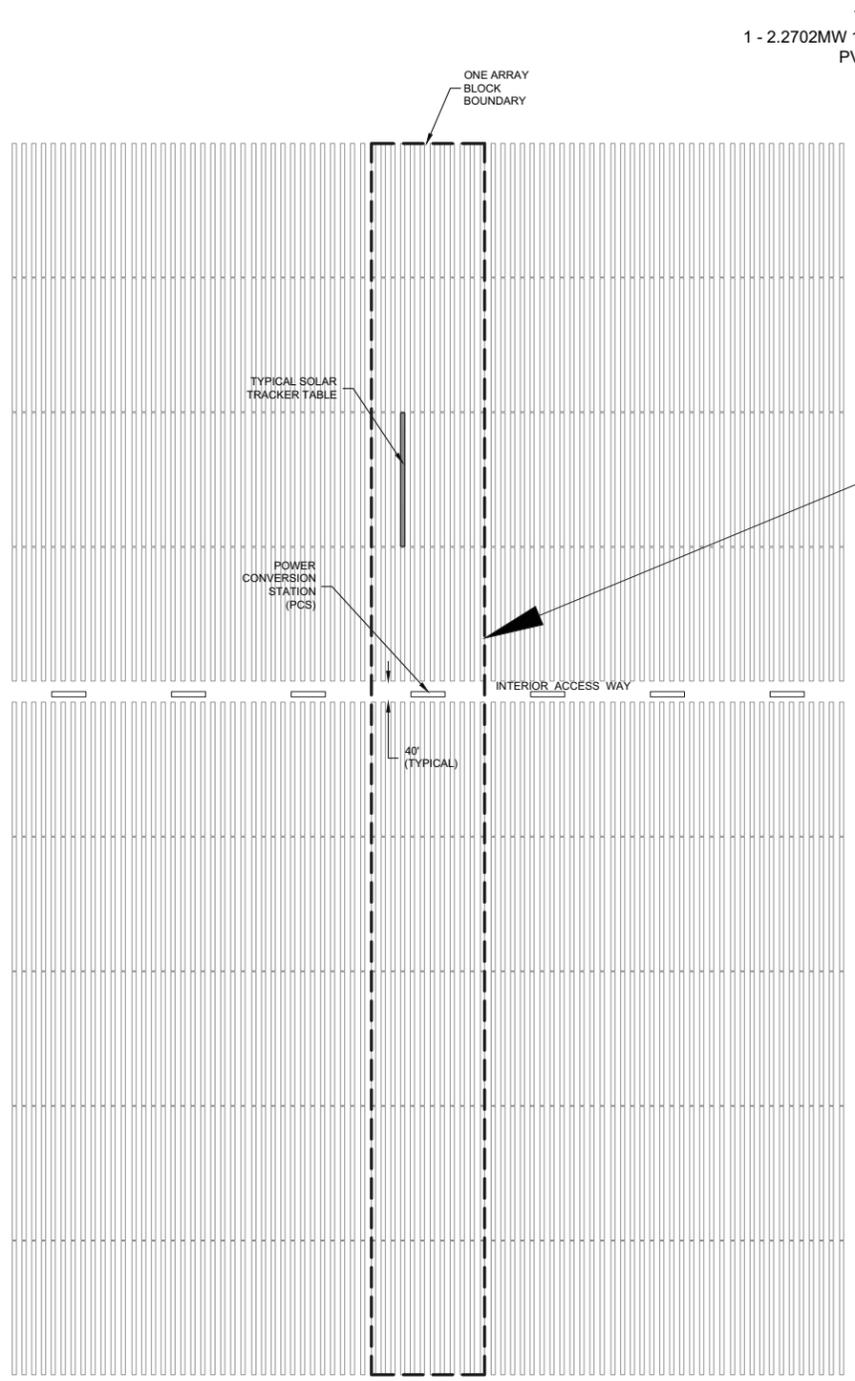


Figure 6 - Typical 2.2702MW 1500vdc PV Array Layout
 Scale: 1"=150'

LITTLE BEAR 1, 3, 4, 5 & 6
 SOLAR
 MENDOTA, FRESNO COUNTY
 CALIFORNIA

REV	DATE	REVISION DESCRIPTION	BY (CHK APP)

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 SCALE: AS SHOWN
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SHEET TITLE
 FIGURE 6
 TYPICAL 5MW
 1500VDC PV ARRAY
 LAYOUT

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Each Facility will include an onsite substation that will contain one or more 34.5 kV to 115 kV step-up transformers, breakers, buswork, protective relaying, meters, Site Control Center (SCC) building, backup power, and associated substation equipment, and a dedicated perimeter fence.

Each Facility may optionally have an Energy Storage System (ESS) that will provide up to four hours of electrical storage. The ESS will be sited on an approximately one-acre area next to the onsite substation in separate outside rated enclosures and will consist of self-contained battery storage modules placed in racks, converters, switchboards, integrated heating, ventilation, and air conditioning (HVAC) units, inverters, transformers, and controls in prefabricated metal containers or in a building. The battery storage modules would use proven storage technologies such as Lithium Ion, Sodium-Sulphur, or Vanadium-Redox-Flow batteries. The final ESS design will be completed after the completion of the facility. The enclosures or building would have appropriate fire suppression systems built to code. The final design would include an apron incorporating containment features to prevent the escape of liquids or spills from the ESS site.

The five Facilities may share a single operations and maintenance (O&M) building, of up to approximately 2,000 square feet, along with a parking area and other associated facilities. The O&M building is depicted on the Little Bear 1 site in **Figure 3a – Project Design**. If a Facility does not require use of the shared O&M building, storage enclosures may be installed on concrete pads within the Facility site.

The Project may have one or more aboveground water storage tank(s). Water for Project operations will be supplied from a combination of Westlands Water District (WWD) allocations, existing water from the North Star Solar Project, or trucking water to the Project site from offsite sources (if needed). A water line may be installed on the Project site connecting to the North Star Solar Project and/or WWD. The water line, if installed, will cross West California Avenue.

2.4.2 115 kV Generation Tie-Line

The Project will, where possible, share the existing two-mile-long 115 kV gen-tie line and underground communication lines between the North Star Solar Project substation and PG&E's Mendota substation. Little Bear 1 will include construction of a new 115 kV gen-tie line from the onsite substation that will connect to the North Star Solar Project substation. The new gen-tie line will cross over West California Ave and the existing PG&E distribution lines. Little Bear 1 will then utilize the existing North Star circuit, transmission poles, and underground communication line from the North Star substation to Mendota Substation. Little Bear 1 will install new underground communication lines to connect into the existing North Star underground communication line which will cross County right of way.

The remaining generation facilities will each connect to the Mendota Substation by way of a new, second circuit added to the existing North Star gen-tie line. The new circuit will originate on the Project site and run approximately 1.25 miles on approximately eighteen new transmission poles prior to being added as the second circuit of the North Star gen-tie

line. **Figure 3f – Project Design: Little Bear 1 Interconnection** and **Figure 3f – Project Design: Little Bear 3, 4, 5 & 6 Interconnection** show the proposed interconnection paths for the Project.

The expansion work of a second circuit on the North Star gen-tie line will require installation of approximately ten to twelve additional gen-tie transmission poles to complete the interconnection. There will be additional gen-tie line transmission poles installed near San Diego Avenue to allow the second circuit to cross the existing PG&E transmission line and near the Mendota Substation to complete the connection into that substation's switchyard. The additional gen-tie transmission poles, along California Avenue at the Mendota Substation and San Diego Avenue will not require further CEQA analysis or approval. Construction of gen-tie facilities along California Avenue has been previously studied under CEQA (Initial Study No. 6718) and approved for development of the North Star Gen-Tie Line, Substation, and Related Facilities Project (CUP No. 3413, approved November 14, 2013). Because the Project would not cause new or substantially more adverse significant environmental impacts than the approved North Star Gen-Tie Line, no further CEQA analysis or approval on the installation of the additional transmission poles along this corridor would be required for this Project. **Figure 6 – Typical Transmission Structures** shows typical transmission poles that will be installed for the proposed Project.

2.4.3 Project Access and Internal Circulation

The Project will have private perimeter roads, and interior access ways for construction and operation. Perimeter roads and interior access ways are proposed to be composed of native compacted soil. The Project will have driveways that will be located at up to ten points off of West California Avenue, South Ohio Avenue, West Adams Avenue and San Bernardino Avenue and which will meet applicable County standards. The five proposed photovoltaic solar power generation Facilities will require a total of approximately 40-42 acres of internal roads. The final design for internal access roads and driveways will be subject to Fresno County Fire Department review prior to construction. The locations of driveways and internal roads are shown on **Figure 3a – Project Design** and the individual Facility figures.

2.4.4 Security

Security at the Project site will be maintained by a combination of perimeter security fencing, controlled access gates, electronic security systems, and remote monitoring.

2.4.5 Telecommunications

Telecommunications will be provided by a local provider or a microwave/satellite communications tower that will be approximately 60 feet tall. The proposed location for the communications tower is shown on **Figure 3a – Project Design**.

The Project will include underground and/or overhead fiber optic cables on site and along the gen-tie lines for plant and substation communications.

2.4.6 Meteorological Station

The Project will have meteorological stations within the solar field, and each Facility may have between two and five approximately 20-foot tall steel lattice meteorological towers mounted on concrete foundations and installed around the perimeter of the solar field. Representative locations for the meteorological towers are shown **Figure 3a – Project Design** and individual Facility figures.

2.5 Project Construction

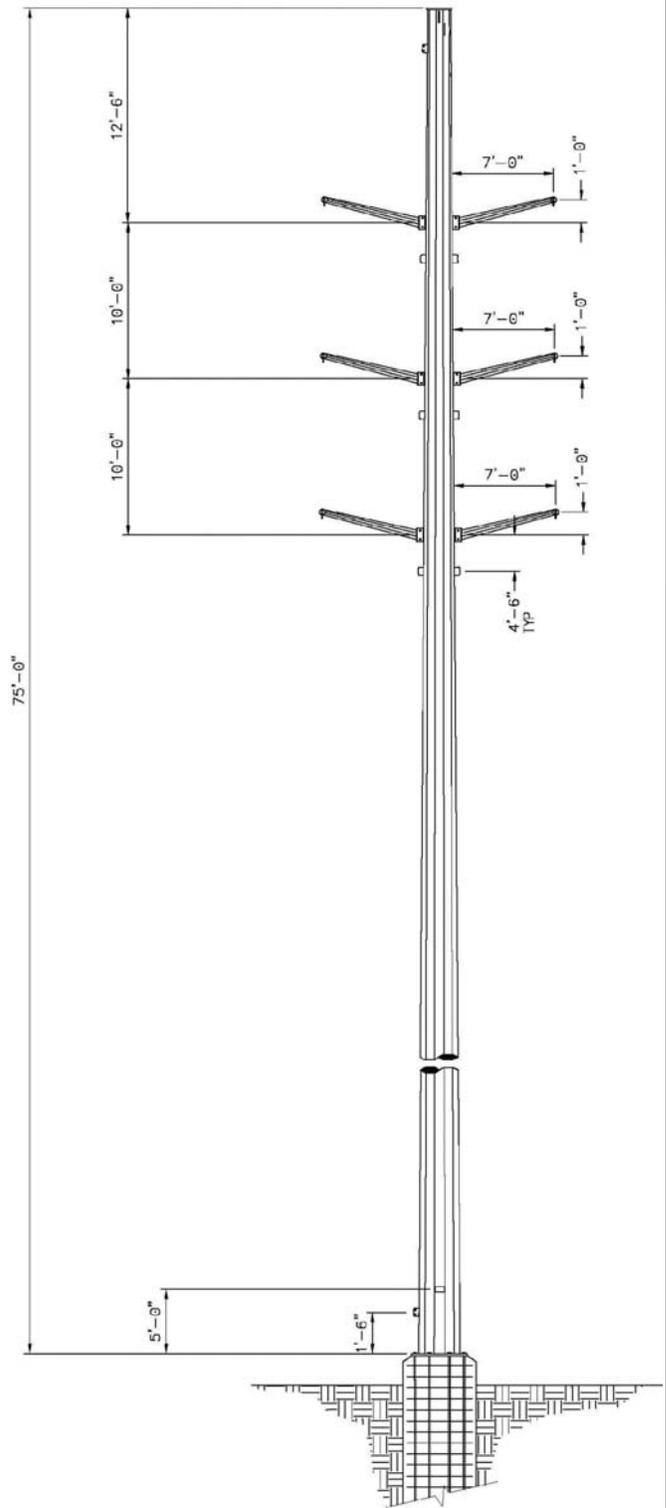
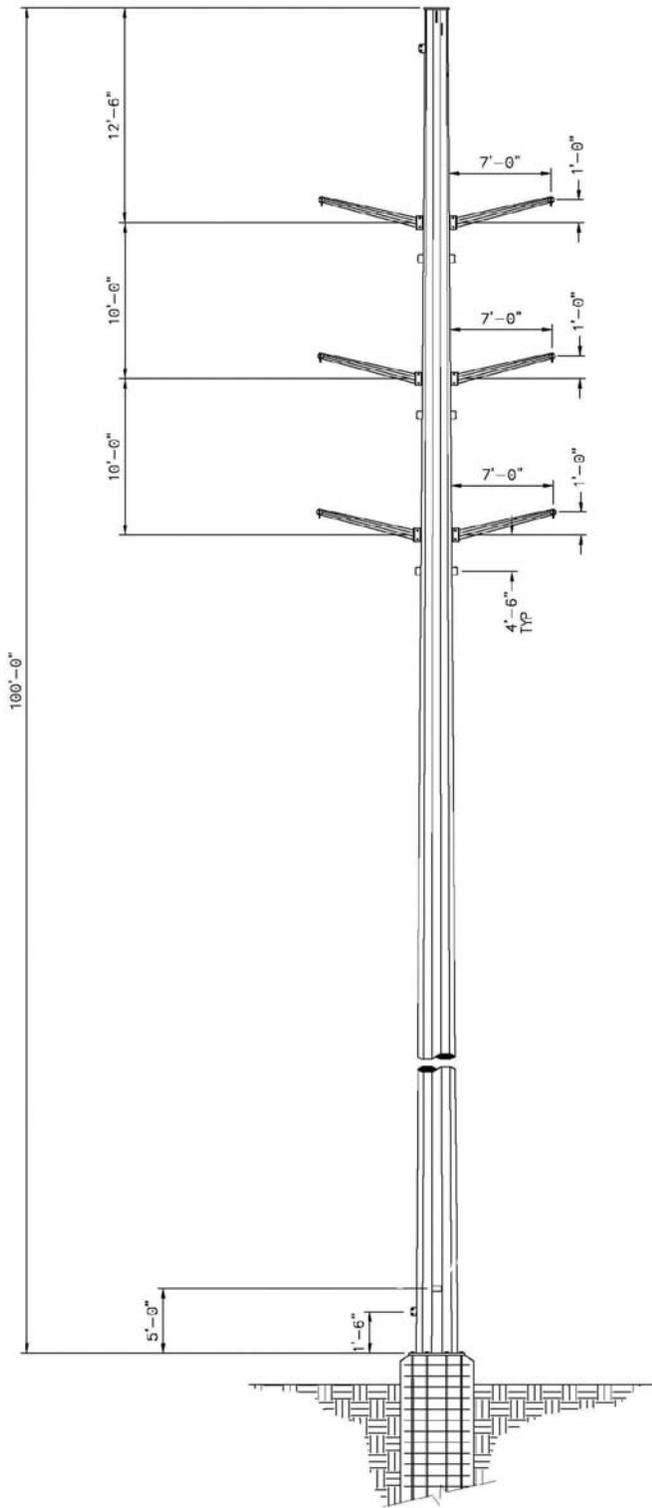
As discussed above, the Project will consist of solar PV power generating Facilities with the combined capability of generating approximately 180 MWac of power. Project construction activities will include site preparation and clearing/grading, underground work, PV system installation, testing, and site cleanup/restoration work.

2.5.1 Construction Schedule, Workers, Hours, and Equipment

The construction period of an individual Facility constructed alone is anticipated to be 6 to 10 months. The entire 180 MWac Project could be constructed in approximately 10 to 14 months. Construction of the first Facility(ies) is expected to begin in late 2019 and construction of the final Facility(ies) is expected to be completed within approximately 12-14 months. The on-site construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The maximum onsite construction workforce for the Project is anticipated to total up to 700 personnel.

Construction will generally occur during daylight hours, Monday through Friday. Non-daylight work hours and work on weekends may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid work during high ambient temperatures. Further, construction requirements will require some nighttime activity for installation, service or electrical connection, inspection and testing activities. Nighttime activities will be performed with temporary lighting, which will be directed downward to minimize impacts to neighboring properties and wildlife in the Project vicinity.

Project construction activities will include site preparation, foundation installation, transmission pole installation, gen-tie line installation and connection, switching station equipment and related facilities installation and Project start-up and commissioning. Construction activities will be done in accordance with a Stormwater Pollution Prevention Plan (SWPPP), which incorporates Best Management Practices (BMPs) for runoff and erosion control.



NOTES:

- (1) FOUNDATION TYPE HAS NOT BEEN DETERMINED. DIRECT EMBED, DRILLED SHAFT AND VIBRATORY CAISSON FOUNDATIONS ARE POSSIBLE OPTIONS.

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

Figure 6 --Typical Transmission Structures

2.5.2 Site Access and Transportation

Local construction access to the Project site is expected to occur mostly from West California Avenue with less frequent use of San Bernardino and South Ohio Avenues. No driveway encroachments onto State Route 33 are planned. Approximate locations of driveways for the individual Facilities is shown on **Figure 3a – Project Design**.

Most construction workers are expected to arrive at the Project site in the morning and leave during the afternoon each weekday. The majority of workers are expected to use State Route 180 (SR-180) to commute from the Fresno area, although some commutes from the north and south using SR-33 are also expected. Construction workers will be encouraged to carpool in order to minimize vehicle trips.

Deliveries of equipment and material will occur throughout the day. It is expected that deliveries will use SR-33 to reach W. California Avenue from the south. Deliveries from the Fresno area will likely reach the site by way of SR-180.

No heavy loads are expected to arrive at the site from the west, by way of West Panoche Road/ West California Ave.

2.5.3 Temporary Construction Facilities

Construction of the Project will require the following temporary facilities. These facilities will be removed once construction is completed:

- One or more construction staging areas consisting of construction trailers, parking, portable toilets or septic system, aboveground water tanks and/or ponds, materials receiving, and materials/ tools/ trash/ recycle storage;
- Construction workforce parking area with adequate parking spaces for the workforce necessary for construction of the Project;
- Construction utilities, including aboveground power and communication connection to the local distribution system adjacent to the Project, power generator, microwave/satellite communication tower, septic system, and aboveground or underground water line(s) to the North Star Solar Facility; and
- Construction of the second circuit and the additional transmission poles for the 115 kV gen-tie line will require temporary construction areas at each new structure and at locations required for conductor stringing and pulling operations.

2.5.4 Site Preparation

Within the solar field areas, a combination of mowing, "disk-and-roll techniques," and, where necessary, conventional grading may be used to prepare the site for post and PV module installation. Disk and roll site preparation involves using tractors pulling disking equipment to till under vegetation. Grading will be minimized to the extent reasonably possible. In areas where mowing will not yield the satisfactory work surface, disk-and-roll techniques may be utilized. Conventional grading techniques may be used for access roads, parking areas,

substation, energy storage system, building or equipment foundations, detention and retention ponds, and laydown areas.

Construction work will begin with the installation of fencing around the perimeter of the Project site. The site will be fenced with an approximately six-foot-high chain-link security fence topped with three strands (one foot) of barbed wire. The perimeter fence will also include signs for construction access.

Construction staging areas will consist of construction offices, a first aid station and other temporary buildings, worker parking, truck loading and unloading areas, and an area for assembling the support structures. Road corridors, buried electrical lines, PV array locations, and the locations of other facilities may be flagged and staked in order to guide construction activities.

The Project site will have retention ponds to manage storm water runoff, as identified in **Figure 3a – Project Design** as well as individual Facility figures. During site preparation, a Stormwater Pollution Prevention Plan (SWPPP) will be implemented and initial erosion and sedimentation controls will be installed. In addition, Best Management Practices (BMPs) which may include the use of water trucks for dust control will be implemented during Project construction. Project construction will comply with all applicable San Joaquin Valley Air Pollution Control District rules and regulations, including Rule 9510 (Indirect Source Review) and Regulation VIII (Fugitive Dust Rules).

In addition to incorporation of dust control requirements, First Solar has developed a standard Valley Fever Management Plan (VFMP) that it implements during construction of projects in *Coccidioides immitis* endemic areas, such as the Project. The VFMP identifies best management practices including:

- Develop an educational Valley Fever Training Handout for distribution to onsite workers and nearby residents
- Conduct Valley Fever training sessions to educate all Project construction workers regarding appropriate dust management and safety procedures, symptoms of Valley Fever, testing and treatment options
- Develop job-specific Job Hazard Analyses (JHA), in accordance with Cal/OSHA regulations, to analyze the risk of worker exposure to dust, and maintain and manage safety supplies identified by the JHA

If determined to be needed based on the applicable JHA, provide and/or require National Institute for Occupational Safety and Health-approved half-face respirators equipped with a minimum N-95 protection factor for use during worker collocation with surface disturbance activities, following completion of medical evaluations, fit-testing, and proper training on use of respirators

2.5.5 Solar PV Generating Facility Installation

Facility installation will include earthwork, grading, and erosion control, as well as construction of the switchyard and erection of the solar PV modules, supports, and associated electrical equipment.

Some earthwork, including grading, fill, compaction, and erosion control will be required to accommodate the placement of PV arrays, concrete for foundations, access roads, and drainage features. Grading and fill activities may result in sheet flow over the entire Project site, and may increase storm water velocities and affect drainage patterns on the property. Any changes to existing drainage patterns will be made in accordance with Fresno County and California State requirements. In accordance with the SWPPP, control of erosion during construction may include implementation of BMPs that would consist of the use of silt fencing, straw bales and temporary catch basins, inlet filters, and truck tire muck shakers, which may be installed to reduce the adverse effects of erosion and sedimentation. Construction activities associated with installation of the solar fields will include the following:

- Installation of overhead or underground cable;
- Installation of steel posts and table frames;
- Installation of PV modules;
- Installation of concrete pads or precast vaults for PCS, PVCS or other electrical equipment;
- Installation of PCS, PVCS and other electrical equipment on skids or within shelters. PCS may contain the inverter, medium voltage transformer, communications, tracker control or other equipment possibly with back-up power source; PVCS will contain switchgear, communication and metering equipment possibly with back-up power; and
- Installation of collection system poles and lines.
- Concrete will be required for the footings, foundations, pads for the transformers, substation equipment, and the O&M buildings. Final concrete specifications will be determined during detailed design engineering in accordance with applicable building codes.

Construction activities are not anticipated to require significant use of hazardous materials or result in releases of hazardous materials into the environment. However, during the short-term period of Project construction, there is a possibility of accidental release of hazardous substances, such as spilling petroleum-based fuels used for construction equipment. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration that will be utilized during the construction phases. The construction contractor will be required to use established construction controls and safety procedures in order to avoid and minimize the

potential for accidental release of such substances into the environment. Standard construction practices will be observed such that any materials released are appropriately contained and remediated as required by federal, State, and local regulations.

2.5.6 Substation Construction

The proposed Project is anticipated to have up to five onsite substations (one for each Facility). Each substation will be separately fenced to provide increased security around the medium-and high-voltage electrical equipment. Each substation area will be excavated, a copper grounding grid will be installed, and the foundations for transformers and metal structures will be installed. The area will first be backfilled, compacted, and leveled, followed by the application of an aggregate rock base. Equipment installation associated with the transformers, breakers, bus-work, and metal dead-end structures will follow. The transformers have an oil tank that either will be filled at the manufacturing facility and safely shipped to the Project site or the transformers may be shipped with the oil tank empty and filled onsite. The substations will have a Site Control Center (SCC) equipment building(s) which will house substation and plant control equipment, meters, battery or generator backup and other electrical equipment which will be located in or next to the substations.

2.5.7 Gen-Tie Line Construction

As described above, the Project will use the existing North Star gen-tie line, to the extent possible and add new poles as previously described in Section 2.4.2. As part of the final design of the proposed Project, the locations of the transmission poles that will be installed for the new 115 kV gen-tie line will be identified and finalized. During construction of the new 115 kV gen-tie line the location of each transmission pole will be surveyed and staked. Foundations for each transmission pole will be constructed, the transmission poles erected, and transmission pole arms and insulators installed. After transmission pole installation occurs, conductor stringing and terminations will be performed to ensure the new 115 kV gen-tie line is operating correctly. The new 115 kV gen-tie line may also require the installation of underground communication lines.

2.5.8 Energy Storage System

As described above, the Project may have up to five onsite Energy Storage Systems (ESS) (one for each Facility developed) using one of the technologies described above. Final selection of an ESS technology may not occur until after a Facility is constructed and operating. Each ESS will occupy approximately one acre of land within the Project site and the ESS will be composed of battery storage modules placed in multiple prefabricated enclosures or a building near the on-site substation. The construction will include moving the ESS enclosures with a crane or forklift to the appropriate location. The final location is dependent on final design and may require construction of a vault or other form of supporting foundation.

Each ESS used on site will be designed in compliance with Section 608 of the International Fire Code (IFC), which has been adopted by the State of California and Fresno County, to

minimize risk of fire from stationary storage battery systems and contain fire in the event of such an incident.

Under California law, the ESS also must comply with Article 480 of the Electrical Code, which presents requirements for stationary storage batteries. Article 480 provides the appropriate insulation and venting requirements for these types of systems, further preventing associated risk of fire from the ESS on the Project site.

All batteries are considered hazardous waste in California when they are discarded whether rechargeable or not under Title 22, California Code of Regulations §§ 66273.9 (definition) and 66273.2 (applicability). Therefore, when the ESS has reached the end of its useful life, disposal must be conducted in accordance with these provisions. This characterization will also result in either opening a “hazardous materials business plan” (HMBP) with the local Certified Unified Program Agency (CUPA) or amending an existing HMBP accordingly.

2.5.9 Construction of O&M Area

The Project will include a common O&M area which may be shared by each of the five Facilities. The O&M area may include a permanent building that will house administrative, operation, and maintenance equipment. Concrete foundations will be poured to support the permanent building, and an area adjacent to the building may be graveled or paved for employee parking. The design and construction of the O&M building will comply with applicable County building standards.

2.5.10 Construction Water Requirements

Construction activities for the proposed Project are anticipated to require up to approximately 200 acre-feet of water. Construction water will be received from a combination of existing WWD allocations, existing water from the North Star Solar Project, or trucking water to the Project site from offsite sources (if needed). A temporary aboveground and/or underground pipeline may be used to deliver construction water to the Project site. Temporary lined storage ponds may be constructed/excavated or aboveground water storage tanks may be used to store the water used for construction onsite. Water storage tanks for domestic water may also be installed onsite.

2.5.11 Construction Waste

During the construction phase, the Project will involve the transport of general construction materials (i.e., concrete, wood, metal, fuel, etc.) as well as the materials necessary to ship the solar PV modules. The great majority of construction waste is expected to be non-hazardous and to consist primarily of cardboard, wood pallets, copper wire, scrap metal, common trash and wood wire spools. Construction waste materials will be recycled whenever feasible. It is expected that non-recyclable construction waste will be delivered to the American Avenue Landfill, which is anticipated to be in operation until 2031. Although equipment used during construction activities could contain various hazardous materials in the ordinary course of use (i.e., hydraulic fluid, diesel fuel, grease, lubricants, solvents, adhesives, paints, etc.), these materials are not considered to be acutely hazardous and

would be used in accordance with the manufacturers' specifications and all applicable regulations.

The existing metal shed and storage silos will be demolished, in accordance with applicable County requirements, and removed from the Project site. The resulting demolition products such as steel and concrete will be recycled to the extent feasible. Non-recyclable demolition waste will be disposed of at the American Avenue Landfill.

2.6 Project Operations and Maintenance

The operation and maintenance of the Project will require up to eight full-time equivalent (FTE) personnel (or personnel hours totaling eight FTE positions) consisting of plant operators and maintenance technicians. Operations and maintenance staff will typically work during regular business hours Monday through Friday. During periods when non-routine maintenance or major repairs are in progress, the maintenance staff will typically work nights when the Project is not generating power to the grid. The Project will also receive service power from PG&E and have emergency generators for operations.

Preventive maintenance kits and certain critical spare equipment will typically be stored on-site, while all other components will be readily available from a remote warehouse facility. Other operational details are summarized as follows:

2.6.1 Maintenance

Maintenance work will consist of equipment inspection and replacement, and will occur primarily during daylight hours. Maintenance work during nighttime hours and weekends may be necessary to complete critical maintenance activities.

2.6.2 Fencing

To ensure the safety of the public and the facility, the Project site will be fenced, and signs will be posted. Access to the Project site will be controlled and gates will be installed at Project site entrances.

2.6.3 Operational Water Requirements

The Project's annual operational water consumption is expected to be approximately five acre-feet (one acre-foot needed for each Facility, on average) to be used for O&M buildings and potentially used for PV solar panel washing. Water for Project operation will be supplied from a combination of Westlands Water District (WWD), existing water from the North Star Solar Project, or trucking water to the Project site from offsite sources (if needed). A water storage tank may be installed at the O&M area to provide water for fire protection and operations. Additional potable water may be delivered for O&M staff consumption.

2.6.4 Operational Waste

Once operational, the Project would generate a small amount of waste associated with operational (maintenance) activities, including: broken and rusted metal, defective, or

malfunctioning equipment, electrical materials, empty containers, other miscellaneous solid waste, and typical refuse from the O&M staff.

This nominal solid waste would be stored in the O&M building. The solid waste would be recycled whenever feasible and any non-recycled material would be transported to the American Avenue Landfill, or an alternative landfill constructed and operated in compliance with all applicable laws, for disposal as necessary.

2.7 Project Decommissioning

The Project applicant will sell the renewable energy produced by each Facility through long-term Power Purchase Agreement(s) (PPA). Upon completion of the PPA term, the Project applicant may, at its discretion and in conformance with applicable County permitting requirements, choose to enter into a subsequent PPA(s), change the use of energy generating technology on the site, or decommission the Project. If the Project applicant chooses to decommission the Project, the site could then be returned to agricultural uses or converted to other uses in accordance with applicable land use regulations in effect at that time. The Project will prepare a Closure, Decommissioning and Reclamation Plan, in accordance with Fresno County's Solar Facility Guidelines, to provide for the eventual deconstruction of each Facility, recycling/disposal of structures and equipment, and restoration of the site within six months after the end of commercial operation of each Facility.