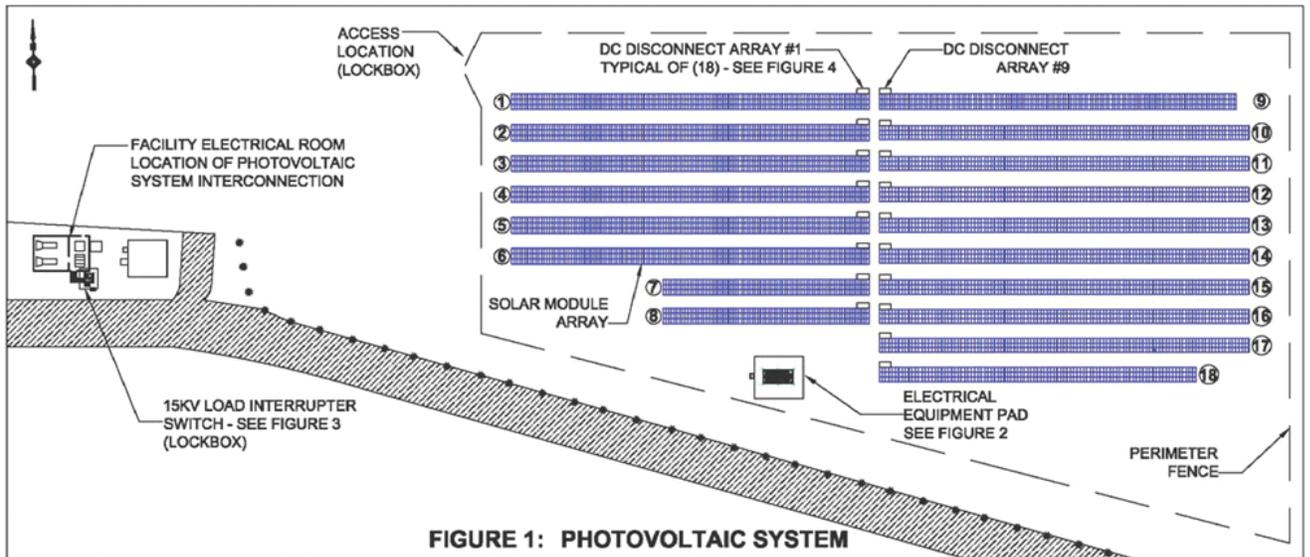


**Chuckawalla Valley State Prison
Blythe, CA
Solar PV Project
Completed Project Photos**



Location: Chuckawalla Valley State Prison, Blythe, CA

Project Description: 6,816 solar photovoltaic modules in south facing fixed arrays with the capacity to generate 1 MW of peak power and 1,936,480 kilowatt hours of energy for the first year of operations was installed by SunEdison under the Department of General Services Solar Power Purchase Program, and in conjunction with the California Department of Corrections and Rehabilitation. The solar photovoltaic system encompasses approximately 5 acres on the grounds of the state prison located near the town of Blythe in Riverside County. The electricity generated from this system will be delivered directly to the Chuckawalla Valley State Prison under a power purchase agreement with SunEdison, who will own and maintain the system. The project was completed and began delivering power on June 30, 2006.



Solar PV System Layout

12 solar modules are connected in series to create a source circuit. Each source circuit then is routed to a combiner box, which can combine up to 12 source circuits. This is how the voltage and amperage is built up from the power generation of each individual solar module.

These groups of 12 solar modules are then configured into arrays. This solar PV system has 18 solar module arrays. At the end of each array is a DC disconnect breaker where the solar module combiner boxes in each array are brought together. There are two combiner boxes per array for this solar PV system. The DC disconnect breaker allows for the array to be disconnected from the rest of the system for maintenance and servicing.

Each DC disconnect then routes the power to the inverter combiner box for delivery into the power inverter. The power inverter “converts” the DC power into AC power which is the required form for delivery to the facilities distribution grid.



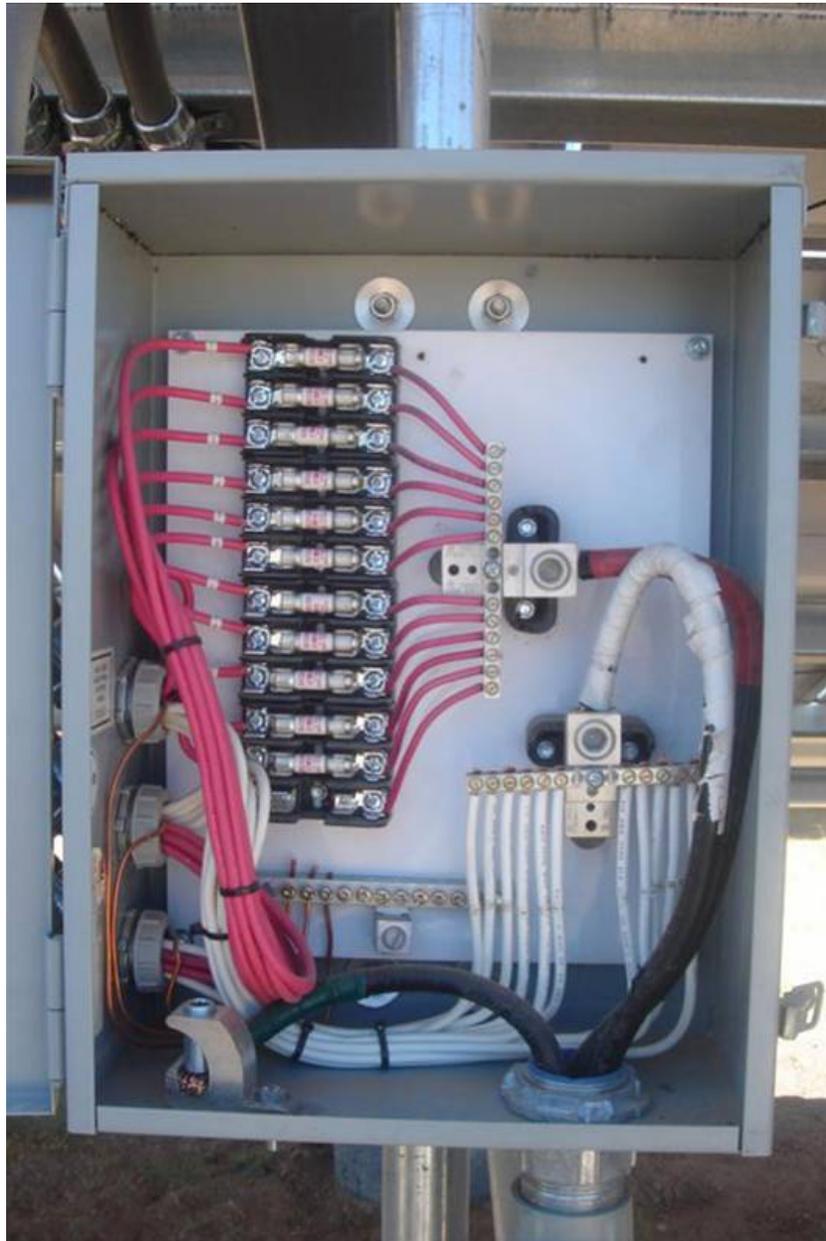
Looking north along the center aisle of the solar arrays. The total number of solar modules involved required sourcing from two manufacturers, Kyocera and Solarworld. The solar module arrays are tilted at approximately 24 degrees from horizontal, facing south. The arrays are laid out east to west.



Backside of a solar module array. The end of one solar module array with a source circuit combiner box and DC disconnect breaker.



A closer look at the source circuit combiner box and DC disconnect breaker.

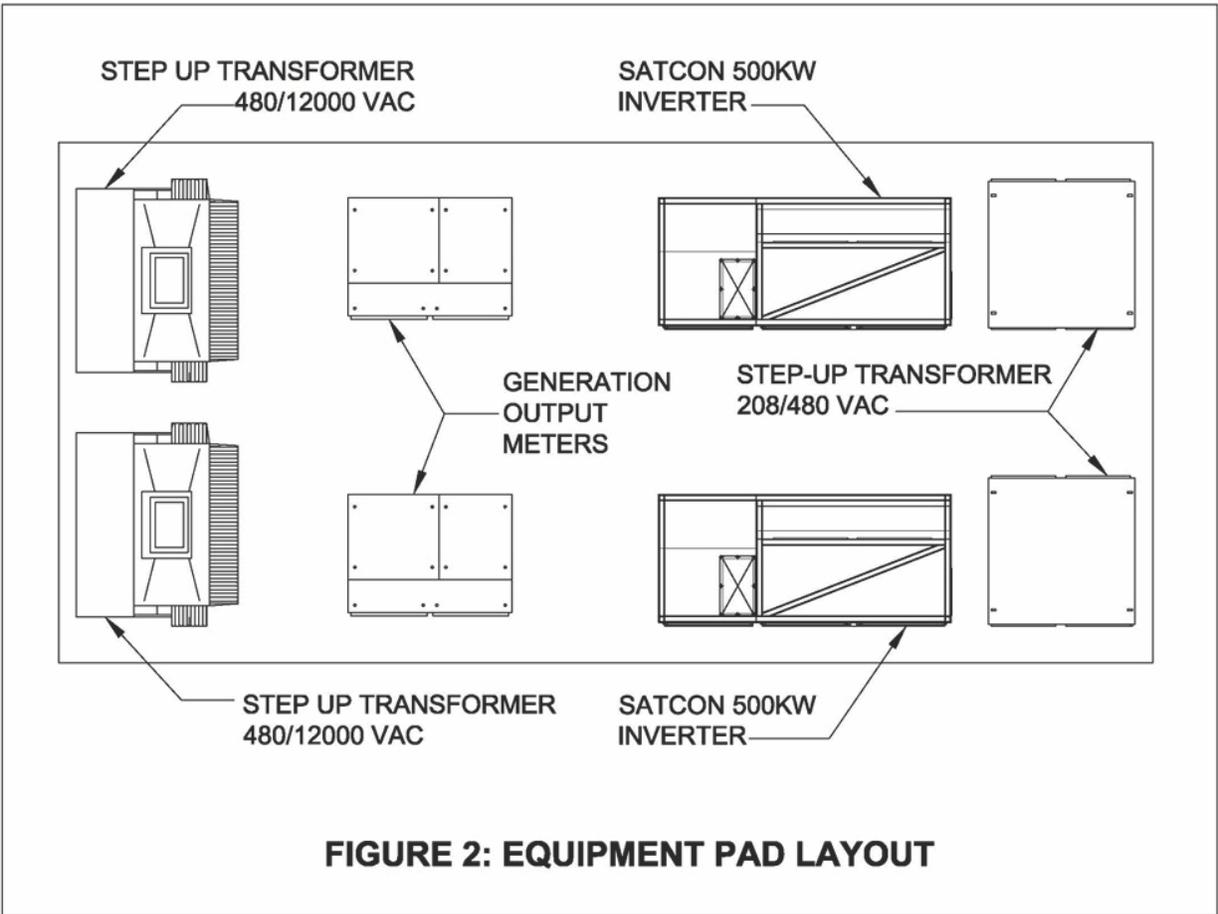


A look inside one of the source circuit combiner box. This one shows that 11 source circuits have been combined in this combiner box, with each source circuit linking 12 solar modules in series. Therefore this combiner box is gathering the power generation from 132 solar modules.



State project principals. From left to right is: Patrick McCoy, Solar Power Purchase Program project manager, Department of General Services; Harry Franey, Chief, Energy Management Section, Department of Corrections and Rehabilitation; and Lee Lanahan, Correctional Plant Supervisor, Chuckawalla Valley State Prison.

Reached 113 deg F that day in the desert near Blythe. The solar modules were very hot to the touch...



Inverter Equipment Pad Layout

The output from the solar modules are gathered through the combiner boxes and DC disconnect breakers and brought to the power inverter. For this solar PV system there are two 500 kW SatCon power converters. The DC power is converted to AC power which is then delivered to the facility's distribution grid for consumption. The inverter is located as shown in the diagram above.

The power output from the inverter is then stepped up from 208 volts to 480 volts AC, as shown in the diagram above (the step up transformer is located to the right of the inverter). From there, the power is metered (cabinets labeled Generation Output Meters) and then stepped up a second time from 480 volts to 12,000 volts AC as shown in the diagram above. 12,000 volts is the voltage service level of the electrical distribution grid for Chuckawalla Valley State Prison.



A picture of the inverter equipment pad.



A closer look at the power inverters.



This is the 15 kV load interrupter switch. The power generated from the solar PV system is brought to the facility's electrical switchgear room and interconnected through this device, which serves as the AC disconnect breaker.



Finally, a panoramic shot of the solar PV system from the far southeast corner of the project premises. The solar modules themselves have a 25 year warranty from the manufacturers and are guaranteed to generate approximately 80% to 85% of its rated output after 20 years. The expected life of the solar modules is 30 to 35 years. The inverters will have to be replaced several times during the life of the solar modules (the inverters currently have a 10 year warranty from the manufacturer).

As the technology advances, it is likely that this system could be re-powered at some future date with solar modules that can generate greater amounts of power, thereby increasing the solar PV system's generation output.