

Solar System

How does a Solar PV (Photovoltaic) System work?

First, Solar panels installed on the roof or elsewhere convert sunlight into electricity. How?

Typically, you'll need a south-facing roof that is not shaded by trees or other obstructions. We have device (called a Solar Pathfinder) that can tell if shade is present on your roof at any time of the year.

This power from the solar panels, generated as Direct Current, is sent to a device called an inverter.

An inverter has several jobs.

1 - It converts the Direct Current from the solar panels into Alternating Current, which is what your household appliances use.

(Some systems, such as 'off-grid' systems in houses that are too remote for the utility to reach do not need an inverter because all of their devices run on direct current). RV's and boats often have direct current devices, too.

2 - It matches the alternating current to the alternating current (AC) that is coming from the utility grid. Inverters must meet exacting standards in order to be approved for use. The California Energy Commission manages a list of approved inverters here: http://www.consumerenergycenter.org/cgi-bin/eligible_inverters.cgi

3 -The Inverter sends the electricity to the main circuit breaker panel in the house. From there, the electricity can go into the house to run appliances or, if there is more electricity being generated than is being used, it will go back into the utility grid. If permitted by local Net-Metering laws, this will spin your electrical meter backwards... effectively selling power back to the utility.

4 - The inverter 'watches' the utility grid so that it can shut down, immediately, if the utility grid shuts down. This way, if a storm or accident breaks an overhead electrical wire then your solar system will not send power into the electrical system and endanger people. Photovoltaic PV solar systems will only keep your lights on during a power failure if you have batteries attached to the system.