



Pv solar panels explained

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You've probably seen solar panels on rooftops all around your neighborhood, but do you know how they work to generate electricity? In this article, we'll look at photovoltaic (PV) solar cells, or solar cells, which are electronic devices that generate electricity when exposed to photons or particles of light. This conversion is called the photovoltaic effect. We'll explain the science of silicon solar cells, which comprise most solar panels.

A solar module comprises six components, but arguably the most important one is the photovoltaic cell, which generates electricity. The conversion of sunlight, made up of particles called photons, into electrical energy by a solar cell is called the "photovoltaic effect" - hence why we refer to solar cells as "photovoltaic", or PV for short.

Solar PV systems generate electricity by absorbing sunlight and using that light energy to create an electrical current. There are many photovoltaic cells within a single solar module, and the current created by all of the cells together adds up to enough electricity to help power your home. A standard panel used in a rooftop residential array will have 60 cells linked together. Commercial solar installations often use larger panels with 72 or more photovoltaic cells.

The photovoltaic effect is a complicated process, but these three steps are the basic way that energy from the sun is converted into usable electricity by solar cells in solar panels. A PV cell is made of materials that can absorb photons from the sun and create an electron flow. When electrons are excited by photons, they produce a flow of electricity known as a direct current. Below, we'll dive into each of these steps in more detail:

The photovoltaic effect starts with sunlight striking a photovoltaic cell. Solar cells are made of a semiconductor material, usually silicon, that is treated to allow it to interact with the photons that make up sunlight. The incoming light energy causes electrons in the silicon to be knocked loose and begin flowing together in a current, eventually becoming the solar electricity you can use in your home.

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There are two layers of silicon used in photovoltaic technology, and each one is specially treated (known as "doping") to create an electric field, meaning one side has a net positive charge and one has a net negative charge. This electric field acts as a diode, forcing loosened electrons to flow through it in one direction, generating an electrical current.

Once the loose electrons generate an electrical current, metal plates on the sides of each solar cell collect those electrons and transfer them to wires. At this point, electrons flow as electricity through the wiring to a solar inverter and then throughout your home.

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