



Understanding how solar panels work

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As subject matter experts, we provide only objective information. We design every article to provide you with deeply-researched, factual, useful information so that you can make informed home electrification and financial decisions. We have:

Sourced the majority of our data from hundreds of thousands of quotes through our own marketplace.

Incorporated third-party data and information from primary sources, government agencies, educational institutions, peer-reviewed research, or well-researched nonprofit organizations.

Built our own database and rating system for solar equipment, including solar panels, inverters, and batteries.

We won't charge you anything to get quotes through our marketplace. Instead, installers and other service providers pay us a small fee to participate after we vet them for reliability and suitability. To learn more, read about how we make money, our Dispute Resolution Service, and our Editorial Guidelines.

You probably already know that solar panels use the sun's energy to generate clean, usable electricity. But have you ever wondered how they do it?

At a high level, solar panels are made up of solar cells, which absorb sunlight. They use this sunlight to create direct current (DC) electricity through a process called "the photovoltaic effect." Because most appliances don't use DC electricity, devices called inverters then convert it to alternating current (AC) electricity, the form that your home can use. This is the electricity that ultimately saves you money on electric bills.

Don't worry--we're not here to overwhelm you with the nitty-gritty details. But if you want to go a bit deeper into the process of how solar panels create electricity, we'll explain what you should know.

Solar cells are typically made from a material called silicon, which generate electricity through a process known as the photovoltaic effect.

Solar inverters convert DC electricity into AC electricity, the electrical current appliances run on when plugged into a standard wall socket.

Other types of solar technology include solar hot water and concentrated solar power. They both use the sun's energy but work differently than traditional solar panels.

Solar energy is the light and heat that come from the sun. To understand how it's produced, let's start with the smallest form of solar energy: the photon. Photons are waves and particles that are created in the sun's core



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(the hottest part of the sun) through a process called nuclear fusion. The sun's core is a whopping 27 million degrees Fahrenheit. This extreme temperature and pressure causes hydrogen atoms to collide and fuse, creating helium. The reaction releases massive amounts of energy in the form of photons.

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