



How Much Power Does a Solar Panel Produce

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Sharing our thoughts about solar energy and a sustainable future

How much solar power does a solar panel produce per square foot? This isn't just a trivia question. It goes to the heart of figuring out what size solar panel system a homeowner needs. And it factors into the cost because the price of a photovoltaic (PV) solar system is partly determined by the kilowatt hours (kwh) of the system — how much power the solar panels can produce.

You might think it's a simple math question: If a solar panel is rated to produce, say, 360 watts, and it's about 3-and- ¼-feet wide by 5-and- ½- feet long, then each square foot must produce about 20 watts, right? Not exactly. The real test of a photovoltaic (PV) solar system is how well it works in real world conditions. To produce the maximum amount of power per square foot, a solar panel has to be well designed to handle temperature, spectrum, angle and amount of light.



Temperature: Some people associate solar power with heat because heat is associated with lots of sunlight, but if there's too much heat, your solar panels may not work as effectively. Once temperatures rise higher than about 77 degrees Fahrenheit, there's always some drop-off in power production. But solar panels are designed to minimize these losses in energy production.

Spectrum: Cloudy days are a fact of life, but – contrary to what some think – [solar panels do work on cloudy days](#). That's because there's a [wide spectrum of light](#). Some of it is visible to the human eye, and some of it, like infrared and ultraviolet light, is invisible. Clouds may block a lot of the visible light, but they don't block out the entire spectrum (which, incidentally, is why you still get sunburned on a cloudy day).

Angle: Each solar installation is unique because your home has a specific orientation to the sun. Solar installers usually install solar panels facing due south to capture the most direct sunlight. But even the sun's rays will always hit at different angles some of the time.

Amount of light: Solar panel production peaks around noon, but this can vary based on your location. [Shading from trees, dust, leaves and other obstacles can obscure light, affecting solar panel power output](#). Shading can not only hurt power production, it can damage a solar panel over time.