

Going Beyond Solar Panels – The Electrical System is Critical Too

by Richard Hartung May 08, 2024

When homeowners and businesses think about installing solar energy, they often focus on the solar panels. More than just solar panels may be necessary, though, as homes and buildings need the right electrical panel and more. This is the first in a series of articles that reflect Solar Washington's new focus on building electrification: Here's how to go beyond the solar panel.

Solar takes more than Panels – The Electrical Panel

Many people looking at installing solar energy probably don't think much about how electricity reaches our appliances and devices. Here's how it works, [Panasonic explains](#). Electric power flows from utility company's grid to our homes. From there, the electrical panel routes power safely to keep lights on and appliances working, keep the food cold and the building at the right temperature, and keep cellphones charged.



Whether your home is ready to go solar or not depends largely on the condition and capacity of the electrical panel. The electrical panel's capacity is measured in amps - short for amperes. The higher the amperage, the more electricity the panel can handle. Until fairly recently, many homes had 100-amp or perhaps 150-amp panels and that was plenty. As people have started to move from gas electrical heating and cooling systems, water heaters and stoves, and as they have installed more devices as well as EV chargers, electricity requirements have shot up. Only in the past several decades have 200-amp panels become common. Along with needing that level to power all your electric appliances and devices safely, you will often need a 200-amp panel to be able to connect your solar panels to the wiring in your home. [Nonprofit research organization Pecan Street estimates](#) that as many as 48 million homes in America have electrical panels that will need an upgrade.

Figuring out what you need as you plan to install solar panels and use more electric appliances can be complex. One option for determining the requirements is to engage an electrician who

can calculate your needs and lead you through possible solutions. Another is to use a [Personal Electrification Planner \(PEP\) from Rewiring America](#), which it says can generate a customized plan to help U.S. homeowners go electric by estimating the upfront cost, annual bill savings, annual emissions reductions, and air pollution and health impacts for a series of electrification upgrades, including heat pumps, heat pump water heaters, induction stoves, electric dryers, EV chargers, and rooftop solar.

It's important to realize that upgrades can cost thousands of dollars and that a shortage of panels, an undersupply of electricians and delays caused by supply chain issues means it can take months to get a new panel installed. It is also important to note that you may need to rewire parts of your home to meet current electrical codes and safely distribute the electrical load, depending on your existing wiring. In some cases, the wires connecting the utility grid to the house may also need to be upgraded as well as part of this process, [according to Canary Media](#), further upping the cost and time involved.

Increasing Efficiency

Along with considering the electrical panel you'll need for solar and everything else, you may benefit from new technologies and other solutions that can make your electricity usage more efficient. To do that, [the US Department of Energy suggests](#), consider any planned changes before moving forward. Your electricity needs may increase if you plan to purchase an electric vehicle, replace your oil or gas furnace or other appliance with electrical ones, or expand your home, or you may need less electricity if you improve your home's energy efficiency.

One technology solution is a smart panel, which [the Washington Post describes](#) as a traffic cop that tracks and adjusts the energy demand of devices from toasters to electric cars so you don't trip any circuit breakers. One example is [Span's](#), which can detect electrical devices in your home, distinguish individual devices, and track and forecast how you use each one. It uses that information to orchestrate your home's energy consumption and turn circuits on or off when they are near capacity, such as pausing EV charging. It can lower your utility bill by taking advantage of rates that vary by the time of day and picking the cheapest time to charge your devices. The smart panel can also let you monitor and control your electrical system from anywhere in the world, such as analyzing energy usage patterns and changing thermostat settings. However, the Span smart panel can cost more than \$4,000 just for the equipment.

You might be able to reduce your energy usage with energy-efficient upgrades, which can affect the amperage of the panel you need and the number of solar panels you'll install. Upgrading appliances to newer electrical models that use less power can reduce your carbon footprint and your utility bills. Upgrades such as installing better insulation can also make your home more energy-efficient and reduce energy usage. Those upgrades to home efficiency can help lower the amount of electricity drawn from the grid at night and may reduce the number of solar panels needed, which can help offset the costs of installing solar panels more quickly.

Grants and Credits can make it more Affordable

While the changes can be costly, the federal and state governments have a variety of financial incentives for installation of solar panels and a new electrical panel as well as other changes.

[The US Department of Energy \(DoE\) lists](#) a variety of clean energy tax credits available to consumers under the Inflation Reduction Act. Along with a credit equal to 30 percent of the cost

of solar, homeowners may be eligible for a credit of up to \$600 for an electrical panel as well as a variety of credits for heating, cooling, water heating and other appliances.

In Washington State, [the Department of Commerce \(DoC\) plans](#) to provide rebates totaling about \$77,600,000 under the Inflation Reduction Act once it receives approval from the US DoE. While the details still need to be finalized, DoC says that entities eligible for rebates include non-profit organizations, local governments, tribal governments and electric utilities. Eligibility extends to low- & moderate-income single- & multi-family households, small businesses with fifty (50) or fewer employees and licensed adult family homes. Eligible items include electrical panels, wiring upgrades, heat pumps and more.

While installing solar energy may seem like it just takes solar panels, there is much more to consider and – fortunately – some money to pay for some of it too.

First published by Solar Washington at https://www.solarwa.org/going_beyond_solar_panels_the_electrical_system_is_critical_too