

## How Many Solar Panels Do I Need For My Home? A Complete Guide To Help You Decide

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Are you considering [going solar](#) and wondering how many solar panels you need for your home? You're not alone. Many homeowners ask this question when embarking on their solar journey.

This guide will shed a bright light on the factors influencing the [number of solar panels your home needs](#). From the size of your house to your daily energy consumption, regional sunlight exposure and more, we'll cover all the details.

### How Much Solar Energy Do You Need?

When calculating the number of [solar panels to install](#), you'll need to take a variety of elements into account. These include your household's current energy usage, the amount of sunlight your area produces, the efficiency and output of your solar panel system and your overall energy goals for your home.

The guide below will help you determine how much solar energy your home needs, but speaking with multiple solar panel pros about your home's unique needs will always be a good idea.

### Factors That Determine How Many Solar Panels You'll Need

Figuring out the number of many solar panels you'll need isn't a one-size-fits-all answer. The answer depends on several factors, such as how much sun your place gets, how much power you use, the size and [output of the solar panels](#) you buy, your roof size and more.

### Your Home's Electricity Usage

A key factor in deciding the number of solar panels your household will need is to learn your home's energy consumption usage. Electricity usage is measured in kilowatt-hours (kWh) and you can find how much your home currently uses on your utility bill for each billing cycle.

For instance, a household using 900 kWh per month with an average of five peak sunlight hours per day would need a larger solar setup than a home that only consumes 400 kWh monthly. The more energy your household consumes, the more solar power you'll need to generate, which means the installation of more solar panels.

If you have an energy-efficient home with LED light bulbs, energy-saving appliances and proper insulation, and you budget the amount of electricity you use, especially during peak rate hours, you'll likely need fewer solar panels than a house of the same size that runs the AC and heating systems at full capacity at all hours, doesn't use LED lights and energy-saving appliances and has a poorly insulated attic and windows.

### Solar Panel Size

The [standard solar panel size](#) for a house measures around 65 by 39 inches but can vary by brand. If your roof is compact or features an unconventional design, the dimensions and quantity of your solar panels become critical factors.

For roofs offering a substantial usable space, you might have the flexibility to forgo a bit of efficiency and opt for larger, less expensive panels to achieve your desired energy production. However, if the space on your roof is restricted or partially shaded, you'll likely want to opt for fewer and smaller panels while maximizing efficiency.

### **Solar Panel Wattage**

At first glance, all solar panels appear the same, but they have inherent differences. One critical consideration when choosing the [best solar panels](#) is their wattage. The wattage refers to the electrical output generated by a panel. Most solar panels generate between 250 and 400 watts of power, making 300 watts a typical average for many models. Thus, it's essential to be mindful of the panel's wattage before deciding on an installation.

### **Production Ratios**

A solar panel system's production ratio is measured by the estimated energy output of a system over time in kWhs to the actual system size in watts (W). One might assume that the ratio would be equal, such as a 1 to 1 ratio, or the input determines the output of [solar energy](#). But this isn't so because the amount of sunlight that hits your roof isn't always consistent. Therefore, we must use the actual solar system size for an accurate production ratio.

A 10 kW solar system generating 16 kWh of electricity annually will achieve a production ratio of 1.6 ( $16/10 = 1.6$ ). Locations with ample sunlight, like Florida, can easily reach such a ratio. In contrast, areas in the Northeast that experience rain and cloudy climates could experience a lower average production ratio, around 1.2. More on this in the next section.

### **Sunlight and Climate In Your Area**

The climate in your region has a major impact on [how many hours of sunlight](#) and energy your solar panels produce. Plus, you'll need more solar panels in areas that lack consistent and bright sunlight.

In Hawaii, for example, you can get away with installing fewer panels on the roof than you would on a home in New England with the sun largely limited to the spring and summer months.

### **Size of Your Home**

The size of a house plays a major role in knowing how many kilowatts of solar power your panels will consume. A 1,500-square-foot home would use an estimate of 630 kWh, whereas a 3,000-square-foot house would consume 1,200 kWh per month, twice as much.

### **Budget**

The national average for [solar panels costs](#) around **\$16,000**. However, some systems can run **\$35,000** or more. Remember that you'll also need to budget for additional equipment, such as solar batteries that store energy during rainy days. You'll also want to factor in maintenance costs that can ultimately increase the lifespan of your solar panels as well as boost efficiency and savings.

### **Looking For Hassle-Free Solar Installation**

Find a network of trusted installers for solar system, solar panels and electricity needs. Find a solar panel installer today!

## How to Calculate the Number of Solar Panels Required to Power Your Home

The following formula, used by EnergySage, is a valuable tool when you're seeking to calculate the number of solar panels needed for your house.

Quantity of panels = system capacity/production ratio/panel wattage.

Using the following figures, you can determine the calculation:

Quantity of panels = 11,000 kW / 1.6 / 300 W.

After doing the math, you'll discover this equals approximately 20 to 25 solar panels to get the job done in this particular example. You can use the same equation to determine how many solar panels you'll need to power your house. Take a look at your utility bills to determine the output you need and keep this in mind when researching solar panels.

## Other Ways to Calculate the Number of Solar Panels You Need

If doing the math isn't your cup of tea, there is a slightly easier way. Look at your electric bill to learn how much energy your home uses monthly. Then multiply the hours of ample sunlight by your energy usage and divide that product by the wattage of the panels you're considering installing.

The type of appliances and products you use in your home can also determine how many solar panels your house needs. The following table provides an estimate of the annual kWh and the number of solar panels your house requires per appliance.

## How Much Can You Save by Going Solar?

The average homeowner spends around **\$125 per month** on their electric bill. That equals **\$1,500 per year**. These [solar savings will start](#) after you pay off your investment, which takes around 16 years. You can receive additional savings if your state participates in a program known as [net metering](#), a policy that allows homeowners to sell their unused energy to the electric company.

## Are Solar Panels Right For Your Home?

Solar energy panels provide clean, renewable energy and offer great savings for some homeowners. However, they're not suitable for every house. But if your home has the following factors, switching to solar can provide an abundance of environmental and financial benefits.

- You live in a climate that produces ample sun
- You have a clear, unobstructed view of the Southern sky
- Your state offers solar tax incentives
- Your energy bills are high
- You want to own your solar panels

## Bottom Line

[Solar panel installation](#) can be a smart financial move for many homeowners when the conditions are right. However, it comes with a high upfront investment and may not be worth it for people that don't own their homes or can take advantage of net metering and [solar tax incentives](#).

You can also check out our [best solar panel installation companies](#) guide to help you decide which solar company is right for you.

<https://www.forbes.com/home-improvement/solar/how-many-solar-panels/>