

How big should a solar power system be





Overview

Most grid-tie homeowners choose to offset 100% of their energy needs with solar. But it is also possible to start with a smaller system for partial offset, and then expand down the line as the budget allows for it. If partial offset is your goal, you can account for that here. For example, let's say you want to start by offsetting half your energy .

Statistics show that most people consume more electricity during the summer and winter, when the A/C or heat is running. If possible, collect your last 12 months of electric bills, then tally up your kWh usage and divide by 12 to get a monthly average.

Next, divide your monthly kWh usage by 30 to estimate your average daily kWh usage. The average American home uses about 900 kWh per month, so we'll use that in our example: $900 \text{ kWh} / 30 \text{ days} = 30 \text{ kWh per day}$.

Sunlight availability affects how much energy your solar panels generate. Use NREL's GHI maps to see how many sun hours you can expect to get in your location. Below is NREL's map for average annual sun hours in the US: Take the daily kWh target from step 2 and divide it by the number of sun hours in your location. For example, in Anaheim, CA, where

From there, we need to add a bit of overhead to account for inefficiencies and degradation rate of the panels. The output of solar panels drops slightly each year, which is outlined by their performance warranty. If your solar panel's performance warranty guarantees 80% performance after 25 years, then their degradation rate is calculated as $20\%/25$.

What is solar system sizing?

Solar system sizing is the process of determining the right capacity to meet your energy needs while considering factors like location, energy consumption, and future expansion. In this post, we'll walk you through the basics of solar system sizing and design, helping you make informed decisions that maximize your solar investment.



How important is sizing a solar power system?

Accurate sizing directly influences installation costs, battery capacity, and inverter selection—and prevents the common issues of oversizing or underperformance. This guide will help you confidently plan and calculate your ideal system. [What Components Make Up a Solar Power System?](#)

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How many kW solar panels do I Need?

By following these steps, you've determined you need a 7.5 kW solar system to meet your daily energy consumption of 30 kWh, considering system losses. Select the type of solar panels that best suit your needs: [Monocrystalline Panels](#): Made from single-crystal silicon, offering high efficiency and space-saving benefits but at a higher cost.

How do I choose the right solar system size?

A couple of factors play a key role in determining the correct size for your system. They include your daily, monthly, or annual energy consumption, geographical location, solar potential, roof space, net metering, and performance variations during different seasons.



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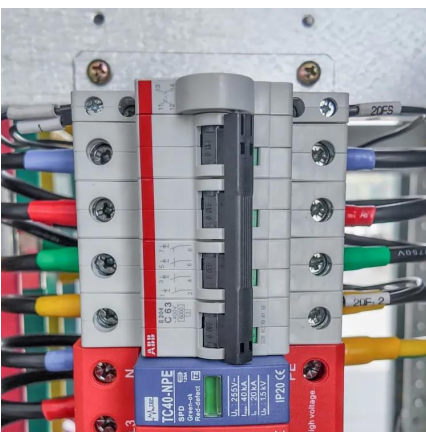
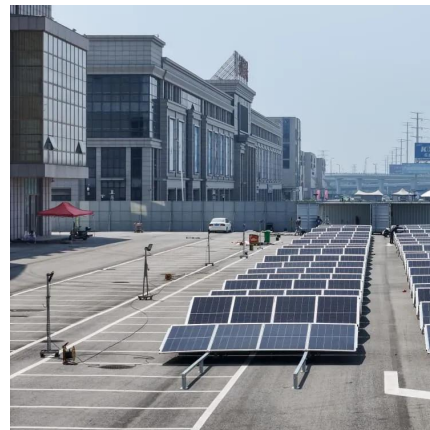


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