Cost to install solar battery

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Founded in 2005 as an Ohio-based environmental newspaper, EcoWatch is a digital platform dedicated to publishing quality, science-based content on environmental issues, causes, and solutions.

Note:In July 2024, SunPower notified dealers it would be halting all new shipments and project installations. The company also noted it would "no longer be supporting new Leases and PPA sales nor new project installations of these financing options."

Solar panels can only provide electricity when the sun is shining, but you can offset this limitation by adding an energy storage system. Considering equipment and installation costs, a solar battery can cost upwards of $12,000 before incentives. In a large home with a high electricity consumption, the installed cost of a battery bank can exceed $20,000.

The potential savings and payback period of a battery can vary widely depending on local electric tariffs and regulations. Here we will discuss the typical costs of solar batteries in the U.S. and the cases where the equipment offers an attractive return on investment. We will also review the main incentive programs and financing options available for solar batteries and offer buying tips when comparing solar battery providers.

The cost of solar batteries can vary widely depending on the manufacturer, battery chemistry and energy storage capacity. The National Renewable Energy Laboratory (NREL) analyzed the typical market price of an 8 kilowatt (kW) home solar system with and without batteries:

In the NREL cost analysis, the 12.5 kWh solar battery added $16,160 to the project budget. This means you can expect to pay around $1,293 per kilowatt-hour of a battery"s total energy storage capacity.

The NREL also analyzed how the market price of a typical home solar system is divided among solar photovoltaic (PV) panels, the battery bank, structural components, wiring, labor and other costs.

Solar batteries have simple maintenance requirements since they do not have any moving parts exposed to mechanical wear. However, residential solar batteries have a typical lifespan of 10 to 15 years, while high-quality solar panels can last for 25 to 30 years. So if you install solar and want continuous battery power, you will have to purchase a replacement battery after 10 years.

Most home batteries in the market have a lithium-ion chemistry, which is ideal for frequent charging and discharging. You can also find lead-acid batteries, which are better suited for off-grid applications and backup power systems. Lead-acid batteries are more affordable, but only last for 500 to 100 recharging cycles. On the other hand, the best lithium-ion batteries can exceed 4,000 cycles.

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The exact savings achieved by a solar battery will vary widely depending on local electric tariffs and incentives. For this reason, we cannot provide a "typical" savings value and payback period. However, we can discuss how a battery saves money in the two scenarios above. Once you contact a solar battery provider, the company can calculate more accurate savings based on your home energy needs and local tariffs.

Many electric companies charge time-of-use (TOU) tariffs or increased prices at times of high demand, which is normally during the evening. For example, an electric company may charge a peak tariff of 40 cents per kWh between 5 p.m. and 9 p.m., but a lower tariff of 15 cents per kWh during the work day when people are less likely to be home. Here is a breakdown of how you can save money in this scenario:

In a few words, you can use a battery to store solar electricity and use it exactly when your electric company is charging the highest tariffs. However, this is only possible if your company charges a TOU tariff.

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