Cost to buy solar battery

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Despite a 30% tax credit and fast-falling prices, the price of lithium-ion solar batteries still gives many homeowners sticker shock, despite the clear long-term benefits of cost savings and peace of mind.

The average cost of a fully installed standalone 12.5 kWh solar battery is $18,791 (or $13,154 after claiming the 30% tax credit), according to the latest data from the National Renewable Energy Laboratory (NREL).

However, that cost drops to around $15,000 ($10,500 with the tax credit) when the battery is installed at the same time as a solar system since much of the labor, configuration, and permitting costs overlap.

It"s worth noting that the NREL"s latest data is from early 2022 when lithium prices were climbing to a record high and around twice as high as they are today. Lithium-ion battery prices decreased in 2023 due to falling lithium prices, and are expected to continue falling (more on that later).

If we apply this cost per kWh to various-sized solar battery projects, we find that fully-installed solar batteries cost between $5,000 and $19,000, depending on the size and scope of the project.

In fact, based on the NREL"s breakdown, the actual equipment (battery, inverter, and balance of system) costs around $7,400 — 39% of the total cost of a standalone project — while soft costs like supply chain costs, installation labor, taxes, permitting/inspection/interconnection (PII), customer acquisition, and overhead make up the other 61%.

So, theoretically, two identical Enphase IQ 10 batteries could cost the same coming off the assembly line, but the installed cost to the homeowners will vary based on the soft costs specific to their installer and area.

While solar batteries come in many shapes, sizes, and chemistries, a handful have emerged as the best batteries of 2024 and the most sought-after by homeowners.

*Estimate project cost after 30% tax credit with balance of system, sales tax, labor, engineering, and PII making up 28% of total project cost per the NREL.

One thing to note is that the cost per kWh of solar batteries decreases as the project size gets larger, which is also true of solar panel costs. So, it"s often more cost-effective to install enough battery storage at once to cover your current and future needs than to gradually add more capacity over time.

There are a handful of factors that influence the price of solar batteries, but perhaps the greatest reason they are expensive is simply because residential-scale batteries are a new technology, and new technologies tend to be expensive at first before rapidly falling in price as the market matures.

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It"s also important to put the cost of solar batteries into perspective. Sure, $27,000 for a solar and battery system sounds like a lot of money - and it is - but it"s far less expensive than paying for grid electricity over time.

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