



# Solar panels and batteries for home

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Solar and battery systems offer homeowners an unprecedented opportunity to own and control the production, storage, and consumption of their essential electricity needs.

While installing solar panels is relatively straightforward, pairing them with battery storage is a little more nuanced given the various types of batteries available and what they're able to do.

So, in this article, we'll explore which batteries pair best with solar panels to accomplish the three most common energy goals: Cost savings, essential backup, and whole-home backup.

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Let's start with a quick recap of the different types of batteries on the market.

There are three distinguishing features that determine a battery's "type."

There are no fewer than five types of battery chemistries that could be used (theoretically or practically) for residential energy storage. However, Lithium-ion (Li-ion) and Lithium Iron Phosphate (LFP) have emerged as the dominant chemistries today, as they provide an ideal balance of energy density and efficiency.

Side note: The "F" in LFP is for "ferro," which is a synonym for iron.

Compared to Lithium-ion, LFP batteries generally last longer, allow greater depth of discharge, handle a wider range of temperatures, and have a virtually non-existent risk of thermal runaway.

On the other hand, Lithium-ion batteries tend to cost less and are less affected by maintaining a high state of charge, which is common for essential backup systems.

Another distinguishing feature to consider is whether a battery is AC- or DC-coupled. Certain batteries can charge on Direct Current (DC) electricity while others charge on Alternating Current (AC) electricity.

In general, DC batteries are more efficient while AC batteries are much easier to configure into existing solar systems.

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