



130 kWh home energy storage battery

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As home energy storage options advance, homeowners with residential solar face an exciting decision: invest in a dedicated home battery, like the Tesla Powerwall 3 or Enphase 5P, or wait for the emerging potential of bidirectional EV charging. We get asked about this a lot, so here's a whole article dedicated to answering that question.

The idea of using an electric vehicle (EV) battery to power your home is, in my opinion, the ideal scenario. EVs have massive batteries compared to home storage batteries, cost way less per kWh, and you can drive it to work. In terms of storage comparisons, a single Tesla Powerwall 3 has a storage capacity of 13.5 kWh, while many EVs far exceed this:

With proper integration, an EV can serve as an incredible source of backup energy, all while being used day-to-day. The downside is that this concept is still largely under development and the power output (i.e. amount you can actually discharge) is currently much less than what home batteries currently offer.

Bidirectional EV charging--also known as Vehicle-to-Home (V2H) or Vehicle-to-Grid (V2G)--is developing quickly, though no universal standard currently exists. Various automakers, including Ford, GM, Kia, Hyundai, Rivian and Tesla, are leading the charge, but each uses proprietary systems, limiting compatibility across brands.

For instance, Ford's Intelligent Backup Power system for the F-150 Lightning, in partnership with Sunrun, can supply V2H power. However, it requires specific equipment and integration and doesn't seem to easily pair with anything other than SunRun solar systems. If you want to use Enphase Microinverters, you're out of luck; You'll have to use Delta microinverters, and hope they are just as reliable.

Enphase and SolarEdge have also entered the bidirectional space. Enphase's Bidirectional EV Charger, slated for 2025 (fingers crossed, please deliver), will work within the Enphase ecosystem, allowing seamless integration with Enphase microinverters and energy management systems. This charger is expected to provide an accessible V2H option for various EVs, but will only integrate with solar systems using Enphase microinverters. As an Enphase installer, this is still exciting for us, but it won't be a one-size-fits-all solution for existing systems.

If you need reliable backup power now, a dedicated home battery like the Tesla Powerwall 3 or Enphase 5P is probably your best choice. These batteries provide whole-home backup, seamless integration with solar, and excellent performance. Plus you can monitor all your home's energy, and take your home off-grid, straight from the app.

For those willing to wait, bidirectional EV charging may finally be around the corner. As companies like Tesla



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expand their Powershare roadmap and more universal systems like Enphase's bidirectional charger enter the market, EVs may soon offer a cost-effective and convenient alternative for both home energy storage and transportation. As soon as it becomes a viable option, we'll be all-in, and look forward to supporting our customers that want a V2H charging solution.

A solar advocate and installer for over 10 years. Matt started working in solar in the Charlottesville area in 2012, and formed Virtue Solar in 2015. Passionate about sustainability, outdoors, climbing, local food and music.

Virtue Solar is proud to be the local solar installer for Central Virginia. We serve Charlottesville, Culpeper, Greene County, Harrisonburg, Lexington, Louisa, Lynchburg, Madison County, Orange, Short Pump, Richmond, Roanoke, Staunton, Warrenton, Waynesboro, and most other areas in central Virginia. Interested in going solar? We'll be happy to provide you with information, a quote and site visit, all free of charge.

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