

**TECH**

## Long before Tesla made grid batteries cool, there was AES

**The battery services arm of AES has been building huge battery banks for utilities for eight years.**

*By Katie Fehrenbacher*

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**T**esla has brought an unprecedented level of attention to the somewhat dry topic of using batteries to manage energy for utilities. But if there was a prize for a company that has already delivered the most of these kinds of batteries to customers, that would likely go to AES Energy Storage, the battery integrator arm of power giant AES.

The Arlington, Virginia-based company has been working on installing grid battery farms since 2007, and now has about a third of a gigawatt worth of batteries in various stages of deployment. Some of those batteries are currently operating in big battery farms on the grid, some projects are under construction, and other projects are in the late stages of development.

That's a lot of batteries in the slowly emerging world of grid storage. For comparison's sake, there were about 5.8 megawatts worth of energy storage installed across the entire U.S. in the first quarter of this year (1,000 megawatts make up 1 gigawatt), according to a report from GTM Research. While that market figure actually showed growth of 16% over the amount of grid storage installed in the first quarter of 2014, it also shows just how new and emerging this market really is.

The industry is white hot in terms of talk, new startups, venture capital funding and new deals announced, but few projects have been put into the ground — yet. But that is rapidly changing: 220 megawatts of energy storage are expected to be installed in the U.S. by the end of this year.

In contrast to the newcomers, AES Energy Storage has already installed many battery projects. The company has 86 megawatts worth of batteries installed and storing energy on the power grid today. That equals 2 million megawatt hours of energy services that can provide utilities with the ability to bring on battery energy during peak times of the grid, or when the energy from wind or solar farms start to waiver (like when the sun starts to go down).

AES Energy Storage has big battery projects installed in Ohio, Northern Chile and the Atacama Desert, West Virginia, and Pennsylvania. New projects are soon coming online in Northern Ireland, the Netherlands, Maryland, and another in Chile. Down the road AES Energy Storage has a big battery project in the works for the Alamos Energy Center in California and another in Northern Ireland. Many of these regions are where power giant AES already has significant business.



PHOTO COURTESY OF AES ENERGY STORAGE

**A 40 MW battery farm at Dayton Power and Light's (DP&L) Tail generating station, just south of Dayton, Ohio, built by AES Energy Storage.**

Similar to many of the new batteries service providers out there, AES Energy Storage doesn't make its own batteries — it buys whatever batteries it thinks work best, and are low cost enough, for a certain project. The company then integrates those batteries into its packs and containers, and manages them with software. Publicly, AES Energy Storage has used batteries from LG Chem, Parker Hannifin, and back in the day, A123 Systems.

But the company could use batteries from any supplier that it wants. It first tests the batteries in its Indiana facility to make sure they work as advertised and can be used with AES' container system and management software. Recently AES announced that it now has an agreement with Tesla and could potentially use its small Powerwall systems through AES' distributed solar channel, and Tesla's larger Powerpack through AES Energy Storage itself.

However, it's the big Asian battery giant suppliers, like Panasonic and Samsung, that have really started to change the economics of the grid storage market. AES Energy Storage President John Zahurancik told Fortune that the global battery suppliers have really "stepped up their level of commitments," to grid storage, moving beyond consumer electronics and transportation in recent years. "We're moving into the scale phase of the industry.

It's been in a niche state for several years," says Zahurancik.

That means that a company like AES Energy Storage, or Tesla, can buy a large volume of low-cost batteries from these giant battery makers and deliver grid storage to utilities like never before. In the same way that Apple or Nokia can source low cost batteries relatively easily for their cell phones, so now too can these grid integrators.

It's a perfect storm of push and pull in the grid storage market. Utilities, particularly in California, have been turning to grid storage more than ever before.

Part of that is due to California's mandate that says the state's utilities need to buy over a gigawatt of energy storage by 2020, but part of that is utilities dealing with managing new grid services coming online like clean power. Tesla has said that 80% of its batteries sales will likely be for utilities and

industrial and commercial companies.

But it's not just Tesla that has jumped in. There's a handful of new grid storage providers which have emerged in recent years, from Stem to Advanced Microgrid Solutions to Green Smith Energy. AES' Zahurancik says there are a lot of new faces at the grid storage industry events these days: "Two or three years ago you knew everyone. Now there are a lot of unfamiliar faces."

Being positioned ahead of the market and waiting for it to catch up, puts AES Energy Storage in a pretty good position. Earlier this year AES bought Main Street Power for \$25 million, bringing AES a distributed solar panel business that pairs nicely with grid storage. While AES doesn't break out the numbers for its battery business, in the company's most recent earnings call, AES CEO Andres Gluski described operating the energy storage unit as "a profitable experience."

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