

# Tesla's \$13,000 battery could keep your home online in a blackout

Elon Musk has hinted at device to be unveiled this week, and analyst Trip Chowdhry sees big benefits for those who 'always want to be connected'

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Elon Musk is a man who likes to make waves. Whether it's privatizing space exploration or shaking up commuting with the Hyperloop high speed transport system, the billionaire technocrat aims big. Now his electric car company, Tesla, is planning to change the way people power their homes.

In a tweet last month, Musk announced that Tesla would be unveiling a new product on 30 April. It is now widely thought to be a large battery capable of powering a house and an even larger "utility" sized power unit.

Energy supply is a big business and a key market for Tesla, which has spent a fortune developing batteries for its cars. Home batteries can be powered up overnight, when energy companies typically charge less for electricity, and turned on during the day to power a home. They can also be used to store power generated by green - but intermittent - sources like solar and wind.

Tesla isn't expected to spill the beans about its battery system until Thursday, but thanks to investment analyst Trip Chowdhry, we have some details ahead of the big announcement. Built to work in concert with residential solar power setups, the Tesla battery system is basically an uninterruptible power supply (UPS) that is large enough to keep refrigerators, routers, lights and other devices powered up when storms and other unforeseen incidents take grid power out of commission.

The system has been made available to about 300 customers of SolarCity, a company in which Musk, Tesla's chief executive, is both chairman and a major shareholder.

Chowdhry said in an interview that he had happened to meet a couple of these customers at trade shows last year. One of them had had the system installed for more than a year. Chowdhry pressed them for details, and here are the basics, according to what he was able to learn: the system is offered, currently, in 10 and 15 kwh configurations to solar customers who

do not own electric vehicles or plug-in hybrids; the battery pack costs about \$13,000, and Pacific Gas & Electric offers a 50% rebate for using the system (presumably because it can be used to decrease load on the grid during peak use hours); financing is set up for the customer to make an initial \$1,500 payment, followed by \$15 monthly payments for 10 years (at the end of which the battery is returned to SolarCity); Tesla has permission from customers to monitor data from the systems; and Tesla packages the battery pack in what Chowdhry described as an attractive cabinet, available in white or a dark color.

Tesla Motors declined to comment for this article.

“It’s clean, it’s quiet and it looks good in the garage,” Chowdhry said, adding that it sounded like a worthwhile expenditure for someone who spends \$100 to \$150 per month on data services for phones, computers, televisions and other devices. “This is a speculation on our end, based on what we’ve seen on Tesla battery storage, but so far, this makes sense.”

Why install a battery system at home? Chowdhry pointed to customers relying upon constant connection with “the digital highway”, noting that it could take up to 45 minutes to re-power devices and re-set digital clocks when the power went out.

“If you are a gadget person living a digital life - you have iPhones and computers and you always want to be connected - the storage battery is a dream come true,” he said.

Like the batteries that power Tesla’s cars, the residential units are made with lithium ion cells, which the automaker plans someday to manufacture in Nevada at its so-called (and yet-to-be-built) Gigafactory. The home battery packs would, of course, differ in arrangement from the automotive ones, which are laid out horizontally to fit beneath Tesla’s cars.

Whatever the case, Tesla’s residential batteries are most likely an improvement over tearing apart a \$100,000 car to power your home, as some people have done in search of cheap power.

Tesla is not the only, or the first, company to offer UPS. General Electric recently announced it was increasing its investment in electricity storage. But Menahem Anderman, president and founder of Total Battery Consulting, said Musk’s entry into the market comes with certain advantages. “Unique-looking products, attractive customer interface and powerful, untraditional marketing gives them some power over the traditional UPS providers,” he said.

There’s also scale. Tesla is at work on a \$5bn “Gigafactory” in the Nevada desert that will become the world’s largest producer of lithium-ion batteries when it opens in 2017.

Jeff Kagan, an independent technology analyst, said that technology like Tesla’s residential battery system could be a significant business opportunity, but pointed out that battery power, in its current form, has limitations.

“Battery technology has improved over the last decade, but its uses have far exceeded any

improvement,” he said. “So we are further behind, in many cases, since devices require more power today.”

In some cases, there are cheaper alternatives to battery power. The Department of Energy Office of Energy Efficiency & Renewable Energy has done a great deal of research into backup power systems for “key infrastructure elements”, finding that they could “aid emergency response during major storms or other devastating events and prevent loss of productivity, time, and money for other grid incidents.” In a 72-hour test, the agency found that the annualized cost of ownership for a hydrogen fuel cell backup was 1.5 times higher than a diesel-battery setup, but five times lower than a pure battery system.

But the agency also noted that battery systems, which work well as backups during power outages that last a day or less, are also good for storing and balancing electric power collected by photovoltaic panels. Fuel cells - or the type that are commercially available now - cannot store energy.

The corporate market for Tesla could be huge. Chowdhry said that both Google and Apple had Tesla battery backup systems installed at their corporate campuses in California, but both companies declined to comment when contacted. WalMart is already in talks with Tesla, according to Bloomberg.

For his part, Chowdhry seems enthusiastic about the future prospects of the technology. “If you feel naked when you leave your iPhone at home, this is a product you can’t live without,” he said.

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