Navigating the unknowns of the battery market through forecasting

An interview with Sam Jaffe, vice president of E Source Battery Storage Solutions

By Sara Patnaude, Sam Jaffe

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Change is coming to the battery industry, one of the most important sectors in the US and Canada. Prices have been increasing rapidly because of rising demand, a result of the batterification of nearly everything, especially EVs. This constrains current supply. It complicates raw material availability needed to make the batteries, chokes manufacturing capacity, and puts strain on supply chains. The result is causing havoc in the battery market.

A battery costs how much?

We held a webinar on battery pricing and the E Source Battery Cost Model on July 19, 2022.

Watch the recording

With all this uncertainty and price fluctuation, it's more important than ever for utilities to confidently forecast battery market conditions and inputs. While it may be impossible to predict the markets with 100% accuracy, the E Source Battery Storage Solutions team, led by vice president Sam Jaffe, has an approach that ensures our market forecasts are realistic projections of the future, are grounded in fact, and incorporate assumptions and the scary unknown unknowns.

Sam's expertise in the battery industry is rather unparalleled, so I just had to learn more. I recently sat down with Sam to pick his brain about what he sees in his crystal ball for batteries—and to get to know him better.

Sara Patnaude. Hi Sam. Let's start with an easy one. Can you tell us a little bit about yourself and your career as a battery expert?

Sam Jaffe. I've been in the battery space for about 15 years as an analyst, a consultant, and an executive. In the course of that time, I've assembled a wide range of expertise in battery technology, battery science, and the business of batteries. And I've worked with a variety of companies throughout the supply chain of batteries, ranging from mining companies to battery manufacturers, car manufacturers to energy developers, and now, most currently, utilities.

You might be surprised to know that my background is actually not in science but in literature. I was an English major in college. I'd like to think Shakespeare prepared me very well for understanding the battery industry! Shakespeare prepares a person well for understanding just about everything, really.

Nevertheless, I picked up the science so much as my career evolved that, at this point, I've lost track of how many thousands of scientific papers on electrochemistry and battery performance I've studied. I may not have a PhD after my name, but I certainly have a good understanding of how batteries work and what's new in the battery space. Currently, as E Source's vice president of Battery Storage Solutions, I work closely modeling battery costs on a very granular scale as well as collecting data and forecasting battery markets.

> **Battery Next does the hard work on behalf of utilities by combining our market forecasts, our Battery Cost Model, our data and analysis, and our expertise in one product offering.**

SP. Can you share more about what your latest initiative, Battery Next, is all about?

SJ. We conceived Battery Next to provide our battery data and forecasts to the utility industry. Battery Next brings together our data and analysis packages so that utilities can learn more about battery pricing. With Battery Next, utilities get access to our data science–driven Battery Cost Model to calculate the cost of making a stationary energy storage system from the atomic layer to the finished product. We also give them access to our proprietary Battery Forecast Database to conduct forecasts from more than 30 global battery markets, including data on 12 stationary applications. And if they need guidance, our analysts are here to help them study the market and apply the data to their specific needs. Essentially, Battery Next does the hard work on behalf of utilities by combining our market forecasts, our Battery Cost Model, our data and analysis, and our expertise in one product offering.

SP. Why is a resource like Battery Next important for utilities?

SJ. Batteries are fairly new to the grid. Ten years ago, we didn't have batteries on the electric grid, and now they've become a fixture on the grid—in front of the meter and behind the meter. Electric utilities now must understand (and work with) batteries in the same way that they've learned to understand and work with coal and natural gas turbines, a distribution grid, or billing and customer behavior.

Battery Next is designed to help utilities understand what's ahead for batteries in pricing, technology, and market development so the utility can efficiently prepare—whether that's through direct purchases of batteries or a PPA [power purchase agreement] with an IPP [independent power producer] that needs to be negotiated. Understanding the battery industry, the makeup of batteries, and the manufacturing environment of batteries is now as critical to a utility as it is to the car industry. The utility industry is in the process of a transformation toward understanding and working with batteries similarly to what the car industry has been going through for the last 10 years.

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Whether in rate design, distribution planning, generation development, or customer programs, Battery Next can help utilities solve their battery-related challenges.

SP. What's your top priority for helping utilities in 2022?

SJ. I think that anybody buying batteries today—or over the next few years—is experiencing sticker shock. There's been a dramatic increase in battery pricing like other industries that have seen inflationary trends, but it's been especially bad in batteries. We expected the trend to peter out and prices to decline in the coming few years. But it'll probably happen again, and we'll see a second price spike in the 2025 time frame. So, I think my top priority in helping utilities today is to help make purchasing decisions based on this pricing cycle and timing the pricing cycle correctly, which is going to be critical to having a profitable operating battery system.

SP. How does your team confidently gather data and forecast with such accuracy?

Connect with Sam Jaffe, vice president of Battery Storage Solutions

Sam Jaffe analyzes the business models, manufacturing processes, and electrochemistry of batteries for stationary energy storage and electric transportation. Contact him to learn more about E Source Battery Next, our newest research and advisory service. With Battery Next, we offer a data-focused solution for tracking the battery energy storage market and anticipating where it will go.

SJ. We spend a lot of time talking to people in our network and industry, collecting information from those discussions to get a real-world outlook on where the battery markets are heading, what's happening with technology, and what's happening with pricing. And not just on the battery-cell level, but on the battery-pack and system levels as well, understanding where costs are heading and what developments have occurred in those spaces that'll enable growth in markets as well as new markets.

SP. You mentioned in a recent CNBC article that "the tsunami of demand is coming." What does that mean for the energy industry?

SJ. The scale of growth of the battery industry is enormous and is happening in the EV industry—which is almost doubling every year—but also on the stationary storage side, which is probably going to more than triple this year in the US. So we've got two things happening at once. We've got an enormous wave of demand coming from the energy industry (and from the car industry) as well as the existing demand for consumer electronics and other mobile applications. Because of that, the battery industry is trying to build out capacity (both manufacturing capacity and supply-chain capacity) for the input materials.

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Both of those two factors are undergoing an enormous growth period and the question there is, Are those two waves evenly matched, or is one going to be greater than the other? My concern is that the demand wave is going to outstrip the supply wave over the next few years and there simply won't be enough batteries for what the world wants to buy.

SP. What's one piece of advice you can give utilities to get ahead of the shortage of lithium production?

SJ. I would advise that all utilities become proficient in their knowledge of the lithium supply chain and the battery supply chain quickly and soon to anticipate future changes in this market. It's not a market that ever stands still and it's a market that's currently undergoing tremendous change. So becoming proficient in this space is extremely critical in the next few years for anyone who needs to buy batteries over next decade.

SP. Most importantly, if you were a sandwich, what kind would you be and why?

SJ. I've thought long and hard about this and spent a lot of time evaluating the pros and cons. I would have to say a BLT. First, because it's not extravagant but, second, it's a perfect balance of sweet, salty, and savory. It's pretty much the ideal sandwich, in my opinion.

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