

DOCKETED

Docket Number:	16-AFC-01
Project Title:	Stanton Energy Reliability Center
TN #:	224163
Document Title:	GreenBiz Article - Here comes the sun Solar plus storage energy solutions get competitive
Description:	This article was cited in Note 11 of the Clean Coalition's Opening Testimony (TN#: 224025)
Filer:	Miles Maurino
Organization:	Clean Coalition
Submitter Role:	Intervenor
Submission Date:	7/13/2018 11:40:14 AM
Docketed Date:	7/13/2018



Main menu

- [Insights](#)
- [Events](#)
- [Videos](#)

Secondary menu

- [Sustainability](#)
- [Energy](#)
- [Buildings](#)
- [Cities](#)
- [Water](#)
- [Transportation](#)
- [Supply Chain](#)
- [Design](#)
- [More +](#)

Greenbiz on Social Media

- [Twitter](#)
- [Facebook](#)
- [Google+](#)
- [LinkedIn](#)
- [This site \(RSS\)](#)
- [Search](#)

[Search](#)

[x](#)

Here comes the sun: Solar plus storage energy solutions get competitive

[Daniel Rothberg](#)

Monday, June 25, 2018 - 12:30am



[Shutterstock](#) Chesky

The energy dynamic around renewables is changing so quickly in Colorado that Zach Pierce, a senior campaign representative for the Sierra Club, can hardly keep up with it. "I feel like we're having to rewrite the talking points on the drawing board every month in Colorado," he said.

In December, the state's largest utility — Xcel Energy — released a [short report](#) summarizing the responses to the solicitation it had issued to power suppliers for bids to bring new sources of electricity to the grid. The utility received 430 bids, and 350 of those were for renewable energy projects.

That was remarkable on its own, but what surprised people even more were the bids for projects that added battery storage to the mix. They were cheaper than anyone expected.

"It's a testament to how quickly the market is changing," Pierce said.

Changing attitudes

For years, renewable energy advocates have pushed utilities and regulators to consider adding [battery storage](#) to their electrical generation portfolios for flexibility and to reduce [intermittency problems](#) that come with solar and wind. Until recently, it wasn't considered a realistic option: Batteries were expensive and largely untested by utilities, and risk-averse regulators mostly let grid managers ignore them in their bids, statements and long-term planning documents.

Analysts say that's starting to change as batteries come down in price, as momentum builds behind renewables and as renewables create a natural market for storage. Utilities increasingly look at batteries as a tool for leveling out power available over the course of the day and for replacing bulky and expensive peaking power plants that have high costs but only occasionally run at or near full capacity to meet peak demand (in the Southwest, this might be one hot day in the summer when everyone has their air conditioning turned up).

Utilities increasingly look at batteries as a tool for leveling out power available over the course of the day and for replacing bulky and expensive peaking power plants.

Some see the Xcel Energy report as the most recent case in a growing trend. Xcel's [preliminary analysis](#) from December (a more thorough report is expected to come out this month) showed that the median bids for battery storage projects coupled with solar and wind generation came in at about \$36 and \$21 per megawatt-hour, respectively. The prices of projects that combined solar or wind with storage, according to the report, were still more expensive than conventional fuels but only marginally more expensive than bids for standalone solar or wind projects. What it shows, analysts say, is that utilities can use batteries without adding huge costs to renewable projects.



First Solar has contracted to help Arizona Public Service meet heightened power needs during late afternoon and early evenings with energy gathered by state-of-the-art thin film solar panels and stored in a 50-megawatt battery. Photo courtesy of First Solar.

Xcel is not alone. Utilities across the country appear to be more receptive to the idea of adding storage to their portfolios. Tucson Electric Power's decision to build a solar-plus-storage project for \$45 per megawatt-hour [generated dozens of headlines](#) last year — and that price-point is higher than the Xcel median. Earlier this year, NV Energy, an affiliate of Berkshire Hathaway Energy, [announced it would include battery storage](#) in its bidding process for the first time. Around the same time, California regulators pushed a utility to [procure energy storage as a replacement to natural gas](#). A few months later, Florida Light & Power announced a [project adding storage to an existing solar plant](#).

Kate McGinnis, Western U.S. market director for [Fluence Energy](#), a global battery storage provider that [Siemens](#) and [AES Corporation](#) launched last year, stated it's clear that attitudes toward storage are changing. "We're seeing utilities talk directly to us to learn more about what storage can do and how it can help them to meet the various grid challenges they are experiencing," McGinnis said.

But she also offered the following warning: The Xcel numbers, as medians, reveal difficulties in comparing energy storage projects. Batteries are diverse and complex. Different batteries have different capacities — some might be able to hold enough energy so they could discharge power over five hours. Others might be able to store enough for 10 hours.

"If you compare them on price alone, you are probably comparing apples to oranges to blackberries," McGinnis said.

Boosting efficiency, replacing gas

A big driver of the shift in energy storage is cost, said Yayoi Sekine, an analyst for Bloomberg New Energy Finance. She notes that the price of lithium-ion batteries has dropped from about \$1,000 per kilowatt-hour in 2010 to about \$209 per kWh in 2017. The decreases came as more batteries were produced at a more efficient scale to accommodate a growing electric vehicle market.

The price of lithium-ion batteries has dropped from about \$1,000 per kilowatt-hour in 2010 to about \$209 per kWh in 2017, while more batteries were produced at a more efficient scale.

"That's a massive decrease in prices over not that long of a period," she said.

Utilities, Sekine said, see an opportunity to [use storage to make the grid more efficient](#). Adding more solar to the grid has created big issues for how grid operators manage a utility's generation portfolio, the biggest of which is commonly known as the "duck curve" (the name comes from the a graph of net load on the grid; it forms what looks like the outline of a duck). It occurs when so much solar power is produced during the day that it [creates a slew of issues for meeting demand at night](#). The thinking is that if some of that solar power were stored in a battery, it could be dispatched with more flexibility and deployed more gradually to better balance supply and demand.

Others want to take storage and solar a step further. They believe that, as prices become more competitive, the two together can obviate the need for some natural gas plants. According to a new report from Greentech Media, solar and storage together are [expected to compete directly](#) with natural gas peakers — plants built to meet peak electricity demand — by 2022.

"That is an application where we think [battery] storage can be highly competitive," said Ravi Manghani, an industry analyst who directs Greentech Media's energy storage research.

The industry still faces some headwinds. Analysts say costs need to decrease even more for batteries plus renewables to compete head-on with most conventional fuels. David Hart, a professor at George Mason University and a co-author on [a recent working paper on energy storage \(PDF\)](#), said that more research and development is necessary. He proposed that government mechanisms encourage innovation, especially research in battery types other than lithium-ion.

Another challenge, Hart said, is that electricity prices vary based on time and location.

"It's a pretty complex and diverse market that is going to emerge," he said.

But if the adoption of a new technology looks like a hockey stick — where things start slowly and then suddenly boom, Manghani says the energy storage industry is somewhere near the inflection point.

"We are at a point in the industry where adoption is expected to go up significantly," he said.

This story first appeared on: [Ensia](#)

Topics: • [Energy Storage](#)

Tags:

- [Solar](#)
- [energy storage](#)

share this article

- [Twitter](#)
- [Facebook](#)
- [LinkedIn](#)



[Daniel Rothberg](#)

Journalist

0 Comments

GreenBiz

Login

Recommend

Share

Sort by Best



Start the discussion...

LOG IN WITH

OR SIGN UP WITH DISQUS ?

Name

Be the first to comment.

ALSO ON GREENBIZ

How to make wealth from waste on a crowded planet

3 comments • 4 days ago

Adam Hunt — Dear Craig – as the communications and engagement lead on the projects mentioned, I thank you for thoughtful comments. You have very important points, and like you, we are concerned about the hidden contaminants in sewage

What Bloom Energy's IPO says about energy tech

14 comments • 22 days ago

kimgerly — Here's another salient point that confirms my assertion about Bloom's overstated performance claims. Katie was certainly apprised of via the SF Bay Area NBC Investigates reported back in June 2015, yet she failed to mention this in this

How strategic PPPs are shaping up in cities

1 comment • 18 days ago

B Wilds — Over the years we have been hearing a lot of good things about "Public-Private Partnerships" and how they can propel forward needed projects by adding an incentive for the private sector to undertake projects they might choose not to do

Industrial giants advocate new carbon math for renewable thermal projects

4 comments • 17 days ago

Phil D — I think the discussions around biomass and whether there is a certification scheme, etc. is a diversion from the real solution. If you truly want to decarbonize industrial operations, you have to eliminate combustion as a process. This not only

Subscribe Add Disqus to your site Add Disqus Add Disqus' Privacy Policy Privacy Policy Privacy

Related Content



Colorado hits lowest renewables and storage bids to date

By [James Murray](#)



[In coal country, net zero energy nears cost parity](#)

By [David Labrador](#)



[How solar and wind will grow even in grid-centric economies](#)

By [Mark Dyson](#)



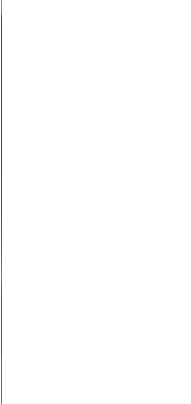
[Energy storage innovations provide a boost for renewables](#)

By [David Levitan](#)



[Renewable energy's bird problem](#)

By [Owen Smith](#)



Trending



[China's EV gold rush](#)

By [Katie Fehrenbacher](#)



[How a sustainability summer camp could affect millions of youth](#)

By [Scott Harmon](#)



[Episode 131: Talking circular strategy with HP Inc. and Hewlett Packard Enterprise](#)

By [Heather Clancy](#)



[Voluntary climate risk disclosures are lagging — is it time for regulators to step in?](#)

By [Richard Mahony](#)



[3 steps to ensure greater supply-chain transparency.](#)

By [Margaret Fenwick](#)

Featured Videos



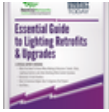
Why utilities and cities are joining REBA

[More from Video](#)

Featured Whitepapers



[All in One Metering Guide: How To Choose The Best Metering Solution \(eBook\)](#)



[Essential Guide to Lighting Retrofits & Upgrades](#)



[Summer savings end soon](#)



[Get your copy.](#)



[Access the Archive for Free](#)

Subscribe to our Newsletters

Email Address: *

GreenBuzz: newsletter
covering the latest
sustainable business news,
trends & analysis.
(Delivered weekly)

Transport Weekly:
newsletter exploring
transportation & mobility
marketplace news, trends &
analysis. (Delivered weekly)

VERGE Weekly: newsletter
exploring the technologies
& trends accelerating the

clean economy. (Delivered weekly)

Energy Weekly: newsletter
exploring energy marketplace news, trends & analysis. (Delivered weekly)

Circular Weekly: newsletter
exploring the circular economy marketplace news, trends & analysis. (Delivered weekly)

By completing this form, you agree to GreenBiz Group's privacy policy. To view our policy, please [click here](#).

Submit

- [About Us](#)
- [GreenBiz Team](#)
- [Editorial Team](#)
- [Media Kit](#)
- [Contact Us](#)

- [Executive Network](#)
- [Research Reports](#)
- [White Papers](#)
- [Webcasts](#)

- [GreenBiz 350 Podcast](#)
- [Career Resources](#)
- [Jobs](#)
- [Newsletters](#)
- [GreenBiz Careers](#)

[Twitter](#)

[Facebook](#)

[Google+](#)

[LinkedIn](#)

[This site \(RSS\)](#)

- [Privacy Policy](#)

© 2018 GreenBiz Group Inc. GREENBIZ® and GREENBIZ.COM® is a registered trademark of [GreenBiz Group Inc.](#)

```
// Loads the Linker plugin ga('require', 'linker'); // Instructs the Linker plugin to automatically add linker parameters // to all links and forms pointing to the domain "cvent.com".
ga('linker:autoLink', ['cvent.com'], false, true); // Loads the Linker plugin ga('require', 'linker'); // Gets a reference to a link pointing to an external domain. var destinationLink =
document.getElementById('destination-link'); // Adds click handler that decorates 'destinationLink'. destinationLink.addEventListener('click', function () { ga('linker:decorate',
destinationLink); });
```