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Is Solar+Storage the Next Big Trend in Affordable Housing?

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Solar+storage, which combines a battery with a photovoltaic system, is an energy-cost-saving technique that commercial companies have used for a few years. While energy storage is still in its infancy, there are some that already see a new application for this technology: affordable housing. “Battery storage is used in commercial entities. We want to bring those economic benefits from commercial to affordable housing,” said Rob Sanders, senior finance director at Clean Energy Group (CEG).

CEG is an 18 year-old nonprofit with a commitment to accelerate the adoption of clean energy technology. One of its initiatives is the Resilient Power Project, which works to expand the use of clean, distributed generation for critical facilities to avoid power outages; to build more community-based clean power systems; and to reduce the adverse emergency-related impacts on low-income and other vulnerable populations from severe weather events. As part of this initiative, CEG issued a report titled, “Resilience for Free: How Solar+Storage Could Protect Multifamily Affordable Housing from Power Outages at Little or No Net Cost.” The purpose was to discover whether it is economical to install solar+storage technologies to power common-area loads in multifamily affordable housing developments. In short, the report found it is already economically feasible in certain areas.

This report is one of the first to analyze the economics of providing solar+storage to affordable housing developments. It found that solar+storage can reduce operating costs in affordable housing developments, that the payback period for investing in solar+storage systems can be as short as a few years and that there is a need to develop smarter, targeted incentives, among other things.

In addition to providing power during outages, solar+storage can enable low-income housing developers to generate savings by reducing utility demand charges or generating revenue through providing grid services, according to the report. Jared Lang, sustainable development manager at National Housing Trust (NHT), said that solar+storage provides two revenue streams.

The first is that solar+storage limits a development's peak demand charge. Utility companies charge more for energy during times of the day when its customers use the most power. During peak demand times, an affordable housing development can lower its utility bill by using its stored battery power, said Lang. Henry Misas, senior project engineer at Bright Power, referred to this as “peak shaving.”

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The other revenue stream Lang mentions is that batteries help with frequency regulation when deployed on a wide scale. Nat Eng, principal in the San Francisco office of Novogradac & Company LLP, described frequency regulation by saying that the electrical grid must maintain overall stability by keeping its alternating current frequency

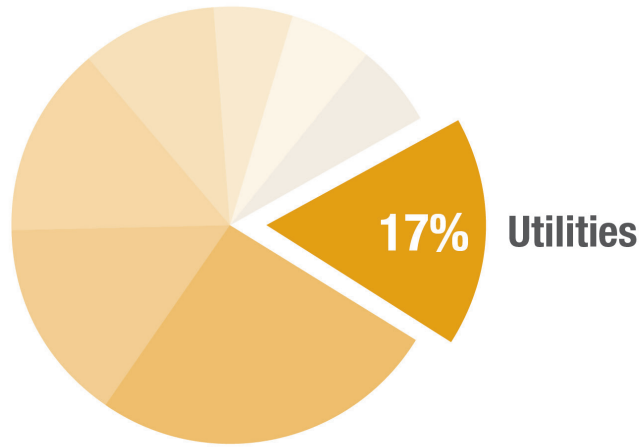
within tight limits. Electrical demand spikes can cause disruptions in the frequency to the extent additional power generating assets are required to meet demand and maintain frequency. These power-generation assets have traditionally been gas turbine and/or coal generation. Therefore, an affordable housing development can use its battery to power the building to meet demand and minimize the need for other electrical generating assets needed for purposes of frequency regulation.

While the industry is very much in its infancy, there are two multifamily affordable housing properties currently using solar+storage. NHT, a 30-year-old advocacy organization for affordable housing issues on both a federal and state level, is looking into the impact of solar+storage through its 223-unit affordable housing development in Washington, D.C., called Channel Square Apartments. NHT owns the solar array and has a power purchase agreement to use its lead acid battery. “We are not comfortable owning the battery yet,” said Lang. “Utilities require you to shut solar down when the grid goes down. The only way for solar to work when the grid goes down is to have a battery.”

The Cost of Utilities at LIHTC Properties

2010–2013 Expense Category Proportions Per Unit for LIHTC Properties

- 6% Real Estate Taxes
- 6% Property Insurance
- 6% Operating
- 10% Management Fee
- 14% Administration
- 15% Repair and Maintenance
- 26% Payroll



Source: Novogradac & Company LLP 2015 Multifamily Rental Housing Operating Expense Report

Lang added, “With affordable housing, you need to be more efficient with the money you have. ... You can’t add granite countertops and raise the rent. That is a great strategy if you are a market-rate owner, but it doesn’t work for affordable housing. Our option is to do existing things better.” He said solar+storage could be a feasible way to do just that.

Misas said that he is also working on an affordable housing development with solar+storage called Via Verde in the Bronx, N.Y. Bright Power is a national organization that specializes in helping multifamily apartment buildings and other buildings reduce energy and water costs. Bright Power’s energy management expertise and proprietary benchmarking software have been applied to more than 13,000 buildings with more than 500,000 apartments across 49 states. The company also worked on the report with CEG. Via Verde has an existing solar array which will be retrofitted with an advanced lead acid battery in 2016. “Solar is a great idea, but it is not complete. To make it complete you have to add storage,” said Misas. “We wanted this [development] to showcase the technology.”

Weighing the Good with the Bad

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While the technology shows a lot of promise in the affordable housing industry, experts say there are also a few barriers to making this a national trend. Misas said that there are myriad kinds of batteries, making the education process difficult. “It is a matter of choosing the right technology for the right application,” said Misas. Misas added that it is hard to predict when you will need to replace the battery. Lang added that the sheer size of these batteries can be problematic. He said it can be hard to find a place for them on an affordable housing development.

Sanders noted that the fact that this is a very new industry is a challenge in and of itself. “It is a new concept for affordable housing developers,” said Sanders. “Developers like to do what they did the last time. ... You can’t walk around one. You can’t look at 10 years of track record.” On the plus side, Sanders said, “These systems are now as expensive as they will ever be—and they are still economic today. They are only going to get cheaper.”

“The battery is like solar seven-to-eight years ago, no one did it. I see similar growing pains,” said Eng. Eng said that for solar+storage to be installed on affordable housing developments and in other areas, the technology has a ways to go. “It’s not about affordable housing. It’s about getting the technology developed to become more economically feasible. When that happens you will see this technology being applied more in all industries.”

Incentivizing Growth

While solar+storage is still a very new concept in affordable housing, industry experts are already trying to figure out the best incentives to help this trend grow. First, everyone is concerned with the ITC, which is

scheduled to drop from a 30 percent credit to a 10 percent credit for commercial solar at the end of 2016. At that time, the credit for residential solar will be eliminated altogether.

“If you install solar photovoltaics at the same time as the battery, you get ITCs on the battery as well,” said Sanders. Forrest Milder, partner at Nixon Peabody, piggybacked off that thought, saying, “The interaction of solar and housing credits can be complicated, but solar is often only a small part of the cost of an affordable housing development. Solar needs to be a more significant component to get everyone to devote the attention necessary to address the complexities. Of course, batteries make the solar component larger and eligible for more tax credits, so that can add to everyone’s interest in taking advantage of the opportunity.”

“It would be nice to have the full ITC to help subsidize the cost of storage,” said Eng. Misas is advocating for “a performance-based incentive for reducing peak demand.”

Conclusion

The report found that it can be economical today to install solar+storage in affordable housing developments in certain key national markets. As developers continue to look for ways to lower utility costs and better serve their tenants, this could be the next trend in affordable housing. “We are not waiting 20 years for this to trickle down to affordable housing,” said Sanders.

Misas added, “More and more clients and developers are asking me about batteries. People are asking the question. ... Developers are open to the conversation.”❖

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