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How New York State Is Making Energy Storage A Priority

By **Thomas Puchner and Kevin Blake**

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Notwithstanding New York's aggressive efforts to lead the way in renewable energy and carbon reduction, its programs have been relatively anemic when it comes to encouraging energy storage. In 2015, New York launched the NY-Sun Commercial / Industrial Incentive Program, which offered performance-based incentives for large-scale solar photovoltaic systems, and provided a $50,000 additional incentive for projects that integrated energy storage.


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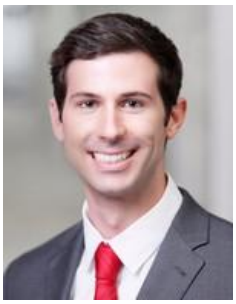
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Most recently, the New York Public Service Commission (PSC) adopted a mandate requiring that each individual New York utility deploy two separate energy storage projects at two separate substations or feeders by the end of 2018, which spurred the utilities to file a number of requests for proposals to address deficiencies on their networks. But for a state that seeks to "reform the energy vision," New York has not provided strong market signals to encourage energy storage.

It is widely known that energy storage is critical to meeting the New York State Energy Plan — namely its goal of generating 50 percent of its electricity from renewables by 2030 and the companion goal of reducing carbon emissions 40 percent by 2030.

These goals cannot be met without massive investment in both supply and demand-side resources that can accommodate intermittent wind and solar while avoiding the "California Duck Curve" — a phenomenon that occurs when high levels of wind and solar are added to the grid, exacerbating the peaks and troughs of the electricity load profile, which strains the system.

Energy storage is a critical piece of the multipronged strategy to control generation/demand, flatten the duck curve, and ultimately enable high penetrations of intermittent renewables.

On June 19, 2017, in response to the need for energy storage in a market with rising intermittent wind and solar power generation, the New York State Legislature passed the Energy Storage Deployment Program (ESDP) bill (S. 5190/A.6571), which now awaits Governor Andrew Cuomo's signature.

If enacted, the bill would require the PSC to commence a proceeding to establish an energy storage

deployment program within 90 days of enactment, and make a determination by the end of 2017 to establish a 2030 target for installation of qualified energy storage systems and programs to enable the state to meet the target. This would be a critical fourth 2030 target in conjunction with the existing goals of 50 percent renewables by 2030 (50/30); a 40 percent reduction in greenhouse gas emissions by 2030 (40/30); and a 23 percent reduction in energy consumption in buildings by 2030.

Given that energy storage is somewhat of a Rorschach test that can resemble a wide range of grid services — bulk energy, capacity, ancillary (e.g., frequency regulation and load leveling) and transmission services (e.g., voltage support and grid stabilization) — this fourth 2030 target could accelerate achievement of New York's other three 2030 targets.

While leaving the details of the ESDP to the PSC, the bill outlines the basic factors to be considered by the PSC in designing the program, such as the minimization of peak load in constrained areas and the opportunity to avoid or defer costs associated with transmission, distribution or capacity.

Unlike most other states that have sought to establish storage targets, such as Massachusetts and Nevada, which passed bills requiring their respective utility commissions to investigate whether a storage target would be prudent and within the public interest, New York's ESDP program streamlines the prudency determination process by affirmatively requiring a storage target to be established by the end of 2017. If the ESDP bill is signed into law, New York may leapfrog other states that are still considering the prudency of storage, giving New York the competitive advantage to attract significant investment in a rapidly growing industry.

In crafting the ESDP, the PSC may draw on the experiences of other states. The agency may consider adopting proposals such as Nevada's decision to allow energy storage dispatched at peak times to count double for the Renewable Portfolio Standard, and will have to address whether and how storage should be incentivized to go in front of the meter, putting it in the hands of utilities, or behind the meter, putting it in the hands of residential and commercial customers.

The PSC will also need to address how distributed energy resource (DER) providers and retail energy service companies can incorporate storage into their products and services to provide value-added benefits to a diverse range of customer classes in the long-sought-after transactive digital energy marketplace.

The ESDP will also aid New York in addressing problems arising from the state's aging infrastructure and transmission congestion. Over 80 percent of New York's high-voltage transmission lines are more than 37 years old, and the New York Independent System Operator (NYISO) estimates that nearly half of the state's 11,000 circuit-miles of transmission lines will require replacement within the next 30 years, which could cost customers over $25 billion.

Additionally, because of transmission congestion in the downstate region, physical limitations on the transmission system often require higher-cost electricity to supply resources that could be otherwise served by lower-cost electricity. If energy storage can compete with those higher-cost resources, and energy storage is allowed to fully participate in the marketplace, NYISO's market will dispatch lower-cost energy storage to curtail demand, provide supply or both.

All of this comes at a time when: (1) the PSC is in the midst of finalizing Phase Two of the "value stack" for DER by December 2018; (2) the NYISO is developing a comprehensive market design model for electricity storage to participate in its wholesale energy, ancillary and capacity markets, which may be

completed by 2018; and (3) the Federal Energy Regulatory Commission is accelerating its efforts to facilitate integration of energy storage into wholesale electricity markets subject to its jurisdiction to ensure that barriers to energy storage resources are not leading to unjust and unreasonable wholesale rates, which are prohibited by Section 205 of the Federal Power Act.

Even without these expansive targets, mandates and market rules for storage that will be established by the PSC, NYISO and FERC over the coming years, the market is driving down costs for storage technologies, particularly lithium-ion batteries, which appear to be following similar cost curves as the solar industry. The aggressive electric vehicle mandates imposed by India, China, Germany and others will only further drive those costs downward.

Over the course of the next few years, a multitude of factors may converge such that New York becomes a prime target for energy storage investment. The PSC will establish an ambitious storage target by the end of 2017 if the ESDP becomes law; the PSC's Phase Two value stack will be implemented by December 2018; the distribution-level electricity system data will be further refined and made available to project developers through the Distributed System Implementation Plan process; and the NYISO will clarify its market rules for storage to participate in wholesale markets.

With proper market rules and incentives, energy storage could help New York meet its four 2030 targets and defer or avoid millions of dollars in costs to customers.

The ESDP bill has not yet been sent to the governor's office, but given the importance of energy storage to New York's clean energy goals, it is widely expected to be signed into law with sufficient time for the PSC to establish an implementation plan by the end of 2017.

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