

## A Plan To Meet New York's Expanded Energy Storage Goals

By **Danielle Mettler-LaFeir** and **Ekin Senlet**

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The state of New York is accelerating its efforts to curb greenhouse gas emissions and promote increased reliance on renewable energy resources for electric generation. Energy storage is an essential piece of the power puzzle, as the Empire State aims to drastically increase renewable electric generation and have a zero-carbon emission electrical system by 2040.

Deployment of more energy storage has the potential to lower electricity prices at peak demand times, reduce the need for traditional electric generation and reduce greenhouse gas emissions from the electricity sector, by storing energy produced by intermittent renewable energy resources such that it can be used to serve baseload electric demand and peak demand, even when such resources are not able to produce electricity.

The Climate Leadership and Community Protection Act, passed by the New York State Legislature on June 20, 2019, expands on New York's Reforming the Energy Vision, or REV. The act establishes an energy storage capacity goal of 3 gigawatts by 2030, and requires the state's Public Service Commission to establish a program by June 30, 2021, to require that 70% of electric generation come from renewable energy sources by 2030, an increase from the current standard of 50% renewable generation by 2030.

In order to meet the standards established by the act, New York must transform its grid to make it able to store greater amounts of energy produced from renewables and cleaner traditional generation, so that it can meet electric demand on high energy demand days and make these carbon-free resources viable as reliable baseload energy producers.

### The 2018 Energy Storage Order

The PSC and the New York Energy Research and Development Authority, or NYSERDA, are already acting to increase energy storage capacity in New York. To implement the REV and Governor Andrew Cuomo's energy storage goals, the PSC established, in June of 2018, a docket (PSC Case No. 18-E-0130) for an energy storage program. NYSERDA developed an energy storage roadmap, and in December 2018, the PSC issued an order, "Establishing Energy Storage Goal and Development Policy." The PSC's energy



Danielle Mettler-LaFeir



Ekin Senlet

storage order includes several requirements and incentives to increase energy storage capacity in New York.

Additionally, Cuomo pledged \$400 million in funding for energy storage projects in order to incentivize deployment. Concurrently, the PSC has a separate docket (PSC Case No. 15-E-0751) to revise the Valuation of Distributed Energy Resources, or VDER, in order to better compensate distributed energy resources — including energy storage systems — and increase the capacity of renewables and energy storage in New York.

While New York is seeking to increase its energy storage capacity to meet its ambitious greenhouse gas reduction and renewable energy goals, the rest of the country has also seen an uptick in the deployment of utility-scale energy storage. According to the U.S. Energy Information Administration, as of February 2019, utility-scale battery storage in the United States had reached 866 megawatts of installed capacity, up from 208 MW just five years ago.

This growth is a result of state policies to increase energy storage projects, and the Federal Energy Regulatory Commission's Order 841, which directs regional transmission organizations and independent system operators to encourage deployment of energy storage by expanding opportunities for market participation, ensuring fair and adequate compensation for storage, and eliminating barriers to participation in the wholesale electric markets and providing incentives for deployment of energy storage.

Moreover, the combination of energy storage with utility-scale wind or solar projects has become increasingly popular among regulators and developers as a way to enhance the flexibility of renewable energy resources and reduce emissions of greenhouse gas emissions associated with electric generation.

### **NYSERDA Incentive/Accelerations Plans**

To increase energy storage capacity, the PSC's energy storage order required NYSERDA to draft and put into place an implementation plan to administer the Energy Storage Market Acceleration Bridge Incentive Program. On March 11, 2019, NYSERDA issued its implementation plan, which splits the state's incentive strategy primarily between retail storage incentives and bulk storage incentives, and provides guidance and application details through program manuals designed for developers considering energy storage projects in New York.[1]

In short, the implementation plan aims to promote both retail storage and bulk storage, with a total budget of \$394 million in incentives. Of that, \$130 million is allotted for retail incentives and \$150 million for bulk incentives. The implementation plan reserves an additional \$53 million in Regional Greenhouse Gas Initiative funds available specifically for future retail and bulk storage projects located on Long Island. The implementation plan also makes clear that an overarching goal of the program is to accelerate the energy storage market, and create a self-sustaining market that will ultimately operate without any incentives.

The retail storage incentive program is designed for energy storage projects of up to five megawatts of power, whose value is monetized under an investor-owned utility, or IOU, tariff, and includes both behind-the-meter projects and projects that are directly interconnected to the electricity distribution system. An energy storage project qualifies for the bulk storage incentive program if it is over five megawatts and provides wholesale market energy, ancillary services and/or capacity services.

Eligible projects must use commercially available chemical, thermal or mechanical storage systems, be physically located in New York and interconnect into New York's bulk transmission system, or an IOU's transmission or distribution system. Both incentive programs require a project developer to work with NYSERDA-qualified contractors, who remain responsible for all aspects of the energy storage project.

The idea behind the implementation plan is that each new energy storage project will receive a fixed dollar amount per kilowatt-hour of its usable energy storage capacity, which is measured on the date the project begins commercial operation. Capacity and compliance are then monitored through NYSERDA inspections. The implementation plan incentives are designed to compensate the project developer for the environmental and economic benefits the state will receive over an energy storage project's expected 20-year life span.

The incentives will decline as the technology becomes more economically viable and the market demand decreases. NYSERDA published the current incentive rates in the incentive plan. The incentive rates, however, can be changed as necessary to meet New York's energy storage goals, based on ongoing market review, planning and coordination with stakeholders, and impact evaluations.

As part of the implementation plan, NYSERDA provided application criteria and tips for prospective energy storage developers seeking acceptance into the retail incentive program. According to the implementation plan, prospective energy storage developers should consider the characteristics of a proposed project and highlight their specific electric grid benefits, such as reducing peak demand, increasing grid flexibility and reliability, and promoting cleaner electric generation to displace higher-emitting electric generation sources.

To be eligible for the bulk storage incentive program, among other things, a proposed energy storage project should have:

- Completed a facility study in the New York Independent System Operator, or NYISO, interconnection process, or an equivalent distribution utility study, if connecting directly into the distribution system;
- For an energy storage project that is associated with development of a new electric facility generating 25 MW or greater capacity, a Public Service Law Article 10 application for the siting of the new generating facility;<sup>[2]</sup>
- A special use permit from the local municipality; and
- A detailed estimate of total project costs, an installation schedule and site plans including location and layout of all components, interconnection and metering.

For the retail storage incentive program, the incentive plan should attract new developers to invest in establishing or growing New York business operations, as well as target projects to benefit low-to-moderate income communities. A project may be a standalone energy storage system or paired with a solar photovoltaic system, and it may be interconnected behind a customer's electric meter or directly into the distribution system. The incentive plan also requires that a proposed project's value be monetized under an IOU tariff in the form of customer electricity bill savings or credits.

According to the plan, NYSERDA will administer the retail program through a first-come, first-served

block application process, with a specific target of megawatt-hours in each block. For example, for Block 1 projects, \$35 million is available to support the deployment of the first 100 MWh of storage. After that, the initial \$350/kWh incentive level will step down to \$250/kWh and, eventually to \$200/kWh.

There is also a different budget and incentives for New York City projects, as those projects are seen as providing larger overall benefits than upstate projects.

### **Coordination With New York Utilities**

The PSC's energy storage order established specific energy storage deployment requirements for each IOU. Consolidated Edison Company of New York Inc. must procure at least 300 MW of energy storage, and the other IOUs in New York are each required to procure at least 10 MW.

IOUs have issued initial drafts of the requests for proposals for energy storage projects to provide the IOUs with the amount of bulk energy storage dispatch rights required by the Energy Storage Order. Consistent with the implementation plan, NYSERDA will work with each IOU to provide incentive funding for contracted energy storage projects, based on an economic evaluation of the energy storage project bids, and the projected localized benefits from any resulting emission reductions that occur in environmental justice communities.

NYSERDA recently informed potential energy storage project developers that plan to bid on the RFPs that rather than a single IOU contract that includes the NYSERDA market acceleration incentive, two contracts will need to be entered into by developers whose energy storage projects are selected: one with the IOU, and one with NYSERDA. As part of the newly initiated NYSERDA Market Design and Integration Working Group, NYSERDA and the IOUs worked together to avoid conflicting provisions within the two contracts.

The final Con Edison RFP, released on July 15, 2019, includes the specific payment terms, as well as the IOU and NYSERDA contracts that the selected developer(s) will need to execute. The other IOU RFPs should be issued in draft form for comment on July 30, 2019. For a successful bid, the following must be demonstrated in responses to the IOU RFPs:

- Experience developing a commercial-sized/utility-scale battery storage system within or outside of New York;
- The capability to conduct business in New York;
- The ability to register with, and participate in, the NYISO markets, and complete the NYISO interconnection process (projects that have executed an interconnection agreement prior to the PSC's energy storage order will not be eligible to participate in the IOU RFPs);
- A robust understanding of, and ability to comply with, local ordinances and zoning laws relative to the siting of an energy storage system; and
- If developers are participating as a team, the proposal should clearly identify the team members, and who will perform specific roles (e.g., developer, owner, operator, market participant, etc.).

## **Future Outlook for Energy Storage in New York**

For New York to meet the ambitious renewable and greenhouse gas requirements of the REV and the Climate Leadership and Community Protection Act, a drastic increase in New York's energy storage capacity is essential.

To meet New York's goals of 3 GW of installed energy storage capacity by 2030, and create a self-sustaining energy storage market in New York, the state needs to continue to provide financial incentives for energy storage development, increase IOUs' energy storage requirements and set in place a framework for accurate valuation of these resources that make them competitive with traditional energy resources.

Renewable energy resources are intermittent and variable, so in order to meet New York's goal of 70% renewable energy by 2030, not only is an increase in renewable generation necessary, but a large increase in energy storage connected directly to renewable generation is necessary. To increase energy storage to 3 GW by 2030, New York will need to continue to increase incentives for energy storage systems paired with both large and small existing renewable generation, such as wind and solar projects that are generally located in upstate New York, which in return creates valuable opportunities for investment in energy storage in New York.

The current state of energy storage technology, and the associated costs of installing such technology, means that the largest near-term opportunities for energy storage deployment are from stand-alone battery systems and battery systems paired with existing traditional electric generation resources in the most congested parts of the state, mainly in the downstate area, where peak energy use and energy prices are the highest, and the impact of these resources on meeting New York's goals will be the largest. Without significant incentives or direct IOU requirements, the current cost of installing battery systems, or other energy storage systems, makes them largely uneconomical in upstate New York, where the cost of energy during peak demand is much lower.

In order to make energy storage systems competitive with more traditional energy generation resources needed to meet baseload and peak electric demand, especially in the upstate area, direct state funding, and a system of valuing energy storage resources that compensates them for more than just the energy they provide, will be necessary. The PSC is currently grappling with the appropriate method of compensating smaller distributed resources, including energy storage battery systems, in its VDER docket.

The system for valuing these resources, which is generally described as a "value stack" approach, seeks to compensate them for their ability to export their stored energy to the grid, shave peak electric demand and provide relief in certain congested areas (particularly when paired with renewable energy generation facilities), and for their environmental benefits. By sending these dynamic price signals to the marketplace, the PSC hopes to increase energy storage penetration in the electric grid.

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*Danielle Mettler-LaFeir and Ekin Senlet are counsel at Barclay Damon LLP.*

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[1] On April 25, 2019, NYSERDA filed modified versions of the Plan and the Program Manuals in PSC Case No. 18-E-0130.

[2] New York's Board on Electric Generation Siting and the Environment ruled that stand-alone battery

storage facilities not associated with the development of new electric generating facilities are not subject to Public Service Law Article 10 review. (See Case 18-F-0204, Petition of Helix Ravenswood LLC and Energy Storage Co.).