

NY Needs Policy Alignment To Meet Energy Storage Goals

By **Danielle Mettler-LaFeir, Ekin Senlet and Angela Sicker**

New York state continues to accelerate 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.

On July 19, 2019, Gov. Andrew Cuomo signed the Climate Leadership and Community Protection Act, or CLCPA, which requires the New York State Public Service Commission, or PSC, to establish a program by June 2021 that results in a zero-carbon electrical system by 2040. The CLCPA also establishes an energy storage capacity requirement of 3 gigawatts by 2030.

To further its energy storage and renewable generation goals, New York also passed the Accelerated Renewable Energy Growth and Community Benefit Act, or the Renewables Act, as part of its 2021 state budget. Although the Renewables Act does not cover siting stand-alone energy storage projects, its definition of "major renewable energy facility" includes "any co-located system storing energy generated from such a renewable energy system prior to delivering it to the bulk transmission system."

The Renewables Act also directs the New York Energy Research and Development Authority, or NYSERDA, to find underutilized sites, referred to as build-ready sites, that have the potential for the development of renewables and energy storage facilities.

While there is significant momentum to increase energy storage and renewable capacity, several challenges lie ahead to meet the 3 GW by 2030 CLCPA energy storage target and to cost effectively meet the CLCPA target of a zero-carbon New York electrical system by 2040. A drastic increase in the amount of renewable capacity will need to be added to the system.

And a significant increase in energy storage will be necessary, to store the energy needed to allow the electrical system to use renewable sources to meet the electrical needs of New York. To increase energy storage capacity this drastically, transparent pricing needs to be established, continued and expanded, and incentives need to be provided.

The COVID-19 pandemic has slowed energy storage and renewable development by putting



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construction of renewable energy projects on pause. Nevertheless, New York agencies have stayed active in their pursuit of decarbonizing the grid — including continuing to develop policies that incentivize energy storage development.

Energy Storage Docket and the PSC's First Status Report

In June 2018, the PSC established a docket for an energy storage program in New York, which prompted NYSERDA to develop an energy storage roadmap. In December 2018, the PSC issued its policy order on establishing an energy storage goal and development policy, which included several requirements and incentives to increase energy storage capacity in New York.

On April 1 of this year, the New York Department of Public Service issued its first annual report on the state of energy storage. This report details the progress made in reaching the statewide energy storage capacity target of 3 GW by 2030, and the interim objective of deploying 1.5 GW by 2025.

Although there is currently only about 0.04 GW of energy storage capacity in the New York electrical system, the report stated that the total energy storage projects deployed, awarded or in the queue of the New York Independent System Operator, or NYISO, at the end of 2019 would result in an additional 706 megawatts in capacity — about 47% of the 2025 target, and 24% of the 2030 target.

The number of energy storage projects in various interconnection queues indicates robust activity in the industry, and a market for energy storage projects. However, it is not clear how many of these projects will ultimately be constructed and able to provide capacity to the New York electrical system.

For example, some of the projects included in the 706 MW may be associated with the request for proposals processes that were solicited by investor-owned utilities, or IOUs, as required by the PSC. Many of those projects will not ultimately be awarded by the IOUs and, therefore, are unlikely to be constructed.

These results suggest that the PSC's portfolio of programs, coupled with the declining costs of storage technology — as well as the ability to pair energy storage with renewable generation projects to capture additional revenue streams — have been effective in building a market for the development of energy storage systems in New York. However, to meet New York's targets, the state will need to continue to take actions and provide incentives for the development of energy storage projects.

New York's Grid in Transition

The CLCPA requires a significant increase in renewable generation capacity, including a minimum of 6 GW of solar capacity by 2025, and 9 GW of offshore wind capacity by 2035. Currently, there is only 1.5 GW of distributed solar capacity, and no offshore wind.

While energy storage does not generate electricity, it stores excess electricity produced during periods when it is not needed. As such, energy storage resources can provide electrical capacity to the system when the sun is not shining and the wind is not blowing, and during peak periods when electricity demand is highest.

In order to meet CLCPA targets for renewables and a zero-carbon electrical system by 2040, significant changes to the electric transmission grid, electric generation and energy storage

must occur. As noted in NYISO's draft report last month on reliability and market considerations during the transition to a renewable-powered grid, the costs of new renewable generation technologies and energy storage are declining.

However, energy storage projects are still costly. To get sufficient merchant investment to meet the CLCPA goals, there needs to be transparent prices, and developers of energy storage resources must be able to earn sufficient revenues to recover investment costs.

As more storage and renewables are added to the New York City electrical system, the amount and duration of energy storage needed to meet the demand of the electrical system increases. Duration is the length of time an energy storage resource can provide power to the system before needing to be recharged. For example, if an energy storage resource has a duration of four hours, it can provide power to the electrical system for four hours before it needs to be recharged — and the amount of time for recharge varies.

New York City has high peak electricity needs, so a lot of generation or storage needs to be available to supply a sufficient amount of electricity during these periods. The state's outdated grid is not capable of efficiently transferring the electricity produced upstate to New York City, so electricity needs during periods of peak demand are currently met by fossil fuel fired peaking units in New York City.

While they might have other various constraints, fossil fuel powered generators do not have the duration limit issue energy storage is facing, and generally can continue to provide power until it is no longer needed. A significant increase in the amount and duration of energy storage would be needed for energy storage to replace all of the electric capacity currently provided by fossil fuel units during periods of high demand.

NYISO's draft report also notes that total revenues earned by new energy storage resources that could provide power to meet New York City's demand may be less than their cost of entry. Unless incentives are provided to make these projects economically viable, the number of energy storage projects developed will be limited. One incentive is a change to the buyer-side mitigation, or BSM rules that NYISO has proposed, but that the Federal Energy Regulatory Commission initially rejected earlier this year.

NYISO's BSM rules require all new resources in mitigated capacity zones, such as New York City, to be subject to a price floor when bidding into the state's capacity market, unless they qualify for an exemption. The purpose of BSM rules is to prevent uneconomic entry from artificially suppressing capacity prices.

Before making a change to its existing BSM rules, the NYISO needs to secure the approval of FERC. In a February decision, FERC rejected NYISO's request that renewables and energy storage be exempt from the BSM price floors. Energy storage could face significant consequences as a result of this FERC order.

If FERC's order stands, it will be much more difficult for energy storage resources to clear in the capacity market, and, therefore, energy storage development — and the state's ability to reach its CLCPA renewable and energy storage capacity goals — could be severely hampered. Many organizations have filed comments protesting FERC's decision, and an appeal is underway.

Challenges for Energy Storage

Despite the momentum for energy storage development seen in New York, there are

challenges ahead.

One such challenge is increasing energy storage capacity in the upstate New York region, where most of the state's existing renewable generation is located. Without significant incentives, the current cost of installing energy storage systems makes them largely uneconomical in upstate New York, where the cost of energy during peak demand is much lower than in the downstate area.

Another challenge is having enough energy storage resources to meet the electrical demand in New York City in a way that does not significantly increase the already expensive cost of electricity. A BSM rule exemption, transparent pricing and incentives are necessary to make energy storage a valid capacity resource for the electric grid.

Similar to other energy policies, such as the effort to curb climate change, if state and federal laws and policies are not effectively harmonized, it will put a strain on New York's efforts to incentivize development of renewable energy and energy storage resources.

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