

# NYISO News



## Study: Storage Can Replace 53% of LIPA Peakers by 2030

### LIPA Disputes Findings

By Michael Kuser

The Long Island Power Authority (LIPA) could replace more than half of its aging and rarely used fossil-fueled peaker plants with energy storage by 2030, saving ratepayers almost \$400 million, according to a *study* released last week.

The report by consulting firm Strategen, prepared for the New York Battery and Energy Storage Technology Consortium (NY-BEST), said “it is feasible and cost-effective” to replace 1,116 MW of peakers by 2023 and more than 2,300 MW by 2030. It said LIPA frequently dispatches the 4,357 MW of peaker units on the island uneconomically and for reasons other than meeting peak-load needs.

In addition to saving customers more than \$390 million in net present value over the next 10 years – about \$360 per household – the study says swapping peakers with batteries would significantly reduce harmful air pollutants.

“The whole framing of this is that New York has the goal of getting to zero emissions by 2040 ... so we need to start on that path with what we can do now,” Edward Burgess, lead author of the study and a senior director at *Strategen*, told *RTO Insider*.

Strategen, based in Berkeley, Calif., estimates

that the peaker fleet is costing Long Island ratepayers approximately \$473 million annually just for capacity – three times the market rate for capacity resources cleared through NYISO’s competitive markets – and that if it is not replaced, the cost could increase to \$716 million by 2030. (The study identifies as peakers those plants with an annual capacity factor of 15% or less; it says about 3,053 MW of the capacity operated 10% or less of the time, while 36 units (1,249 MW) ran less than 1% of the time in 2019.)

A 15-year power service agreement (PSA) between LIPA and National Grid that runs to 2028 accounts for the bulk of these costs. The PSA is for 3,634 MW, 90% of which are for peaking plants.

LIPA spokeswoman Jen Hayden told *RTO Insider* that LIPA will be issuing a request for storage proposals in the next several months that may result in the replacement of certain Long Island peaker or steam plants and will evaluate the proposals it receives compared to the costs of the existing units.

“LIPA has already announced the retirement of 68 MW of peaker plants in 2020 and 2021 and has an ongoing study for the retirement of an additional 400 to 600 MW of steam and peaker plants in 2022. We anticipate additional retirements in 2024 and beyond,” Hayden said.

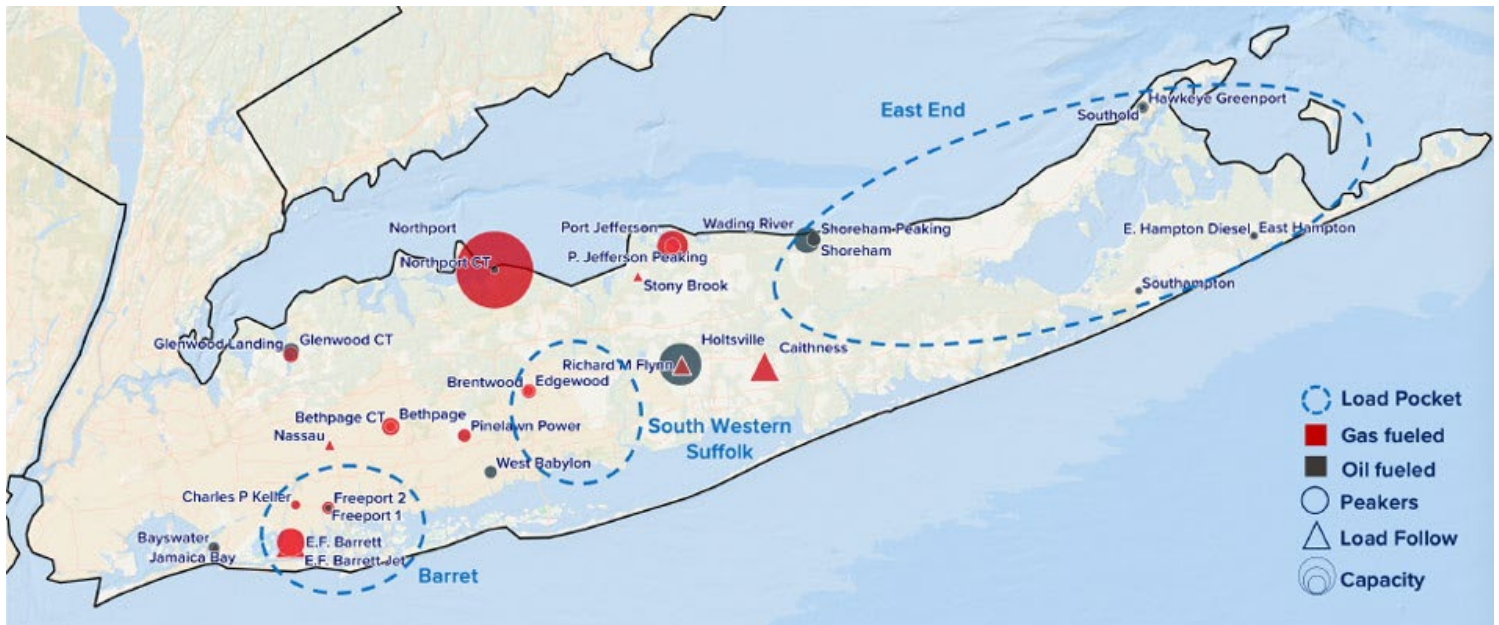
She challenged the study’s savings estimates, saying they “are higher than we have experienced in either deploying storage or retiring existing plants.”

“In classifying low-usage steam plants as ‘peaking plants,’ the study overstates the potential savings in fixed costs, much of which are prior capital costs that must be paid to the plant owner at the time of retirement,” Hayden said. “Moreover, the study assumes that future storage discharge requirements can be determined from past peaker operation, which does not reflect the significant system changes that will be occurring.”

### Uneconomic Dispatch?

The study’s claim that the peakers are frequently dispatched when they are not economic is based on the 2019 NYISO State of the Market *report* by the ISO’s Market Monitoring Unit, Potomac Economics. It said out-of-merit “dispatch was frequently used to manage 69-kV constraints and voltage constraints (i.e., transient voltage recovery requirement on the East End of Long Island).”

In addition to using peakers to resolve local transmission problems, LIPA generally does not coordinate their dispatch with NYISO, so the actions are not optimized through the ISO’s day-ahead and real-time market software, the study said. The result is often



LIPA's fossil fuel peaker capacity could be replaced by a mixture of storage, offshore wind, energy efficiency and rooftop solar. | *Strategen*

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depressed locational-based marginal prices that send inaccurate price signals for potential future investment and require millions of dollars in uplift charges.

“The proportion of hours where out-of-merit actions were taken to resolve congestion issues (versus times when the market was used to resolve these) were quite significant throughout Long Island and are more pronounced in certain locations,” the study said. “For example, in the Brentwood area, 99% of congested hours in 2019 were managed through out-of-merit actions rather than through the [day-ahead] and [real time] markets.”

The MMU’s 2019 report also noted that NYISO has said that issues frequently arise because of lack of coordination between the ISO and LIPA regarding the scheduling of phase angle regulators to manage congestion. Under state law, LIPA is generally exempt from the New York Public Service Commission’s jurisdiction.

## An Evolving Grid

The study notes that the percentage of the peaker fleet on Long Island (Zone K) needed to meet peaking needs has declined in recent years, from 71% in 2016, to 67% in 2017 and 64% in 2018. Whether that decline continues, Burgess said, will depend not only on the peakers, “but also [on] what’s happening on the load side.”

“On the one hand, maybe we have increasing demand from electrification, but on the other hand, maybe there’s more distributed solar or energy efficiency,” he said.

Other generation on the system is also a

factor, he continued. “Are we using more of the recently installed combined cycle units because gas is cheap? That certainly would be an interesting thing to look into further and see how those trends have gone over a longer period of time,” Burgess said.

The state’s Climate Leadership and Community Protection Act (CLCPA) calls for at least 9 GW of offshore wind energy by 2035, and 6 GW of that will likely interconnect onto Long Island by 2030. The CLCPA also targets 6 GW of distributed solar generation by 2025, 3 GW of energy storage by 2030 and raising energy efficiency savings to 185 trillion BTU by 2025.

The study mentions that the iconic Ravenswood peaker plant on the East River in New York City is being converted to a 318-MW energy storage facility.

Asked why such conversions aren’t happening on Long Island, Burgess said, “Definitely there’s a need for local generation capacity in New York City [Zone J]. There’s also a need for generation on Long Island too. I believe part of the rationale for that is that [at Ravenswood], we have a site with an interconnection and it’s all ready to go, and New York City is even more constrained in that sense than Long Island is.”

One of the values of storage is its ability to perform functions in addition to substituting for generation, he noted. “Storage can also be a load; it can absorb energy,” Burgess said. “Perhaps down the road when we have a lot more renewables on the system that’s going to be a necessary function too, if you have oversupply of wind or solar at a certain time. And there’s all the different ancillary services it could provide too: balancing functions [and] ramping up and down in very quick succession.”

**“On the one hand, maybe we have increasing demand from electrification, but on the other hand, maybe there’s more distributed solar or energy efficiency.”**

—Edward Burgess, lead author of the study and a senior director at Strategen

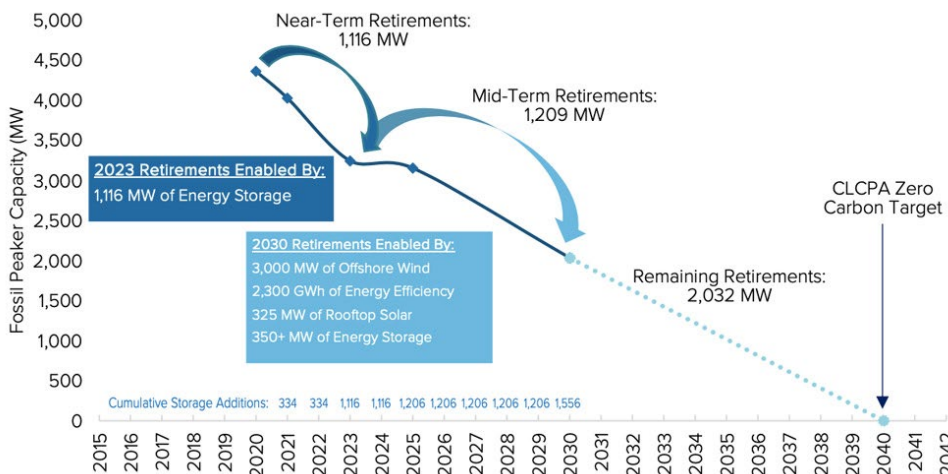
Of the 2,300 MW of fossil peaker plant replacements, 334 MW could be retired and replaced immediately, and in the East End of Long Island, there is a near-term opportunity for up to 90 MW of fossil peakers to be displaced with storage, the study said.

Burgess said some peakers will likely retire because of the state Department of Environmental Conservation’s (DEC) regulation limiting nitrogen oxides (NO<sub>x</sub>) emissions from simple cycle combustion turbines. The department required all impacted plant owners to file compliance plans by March 2, 2020. The phased approach goes into effect May 1, 2023, and limits emissions to 100 ppm, dropping two years later to 25 ppm for units using gaseous fuels and 42 ppm for units burning liquid fuels. (See *NY DEC Kicks off Peaker Emissions Limits Hearings*.)

Because of “the NO<sub>x</sub> regulations that the DEC put out ... some of these plants without the pollution controls will have to either be making retrofits or retiring,” Burgess said. “We’ve also got decisions that LIPA is going to have to make around contracts and the current power supply agreement that they have with National Grid. ... There are provisions that would allow them to ramp down a portion of that.”

“And there are a lot of inefficiencies that we’re seeing here in how some of these plants are being operated. There are some economic benefits to be gained, so that’s another driving factor, along with the environmental,” he said.

Replacing peakers with storage will eliminate 2.65 million metric tons of CO<sub>2</sub>, 1,910 tons of NO<sub>x</sub> and 639 tons of SO<sub>2</sub> of emissions annually, resulting in societal benefits of \$163 million annually through fewer pollution-related deaths and hospital visits, according to the study. ■



LIPA’s fossil fuel peaker capacity could be replaced by a mixture of storage, offshore wind, energy efficiency and rooftop solar. | Strategen

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## NYISO Management Committee Briefs

### Fix Endorsed on Demand Curve Reset

The NYISO Management Committee on Wednesday endorsed a *technical fix* to the 2017-2021 capacity demand curve reset (DCR) to address an error in the model used to estimate net energy and ancillary services (EAS) revenues for the hypothetical peaking plant.

The problem resulted from a misalignment of natural gas prices. The model assumed that index prices published by S&P Global represented the “trade day” — the day before generators take delivery and use the gas to produce electricity. In fact, the data actually represent the “flow day” prices.

The error was discovered during work on the net EAS model for the 2021-2025 DCR, and the change will apply to that period as well. (See *NYISO Management Committee Briefs: Sept. 23, 2020.*)

NYISO already submitted the change to FERC, which approved it on Oct. 22 (ER21-130). “We have implemented the revised reference pric-

es into the capacity market [and] spot market auctions,” Vice President of Market Operations Robb Pike said.

Pike said the ISO would submit an informational filing to FERC to provide notice of the MC’s concurrence with the previously filed revisions.

The 2017-2021 DCR includes the capacity demand curves for the 2017/18 through 2020/21 capability years (May 1, 2017, through April 30, 2021).

### 2020 Reliability Needs Assessment OK’d

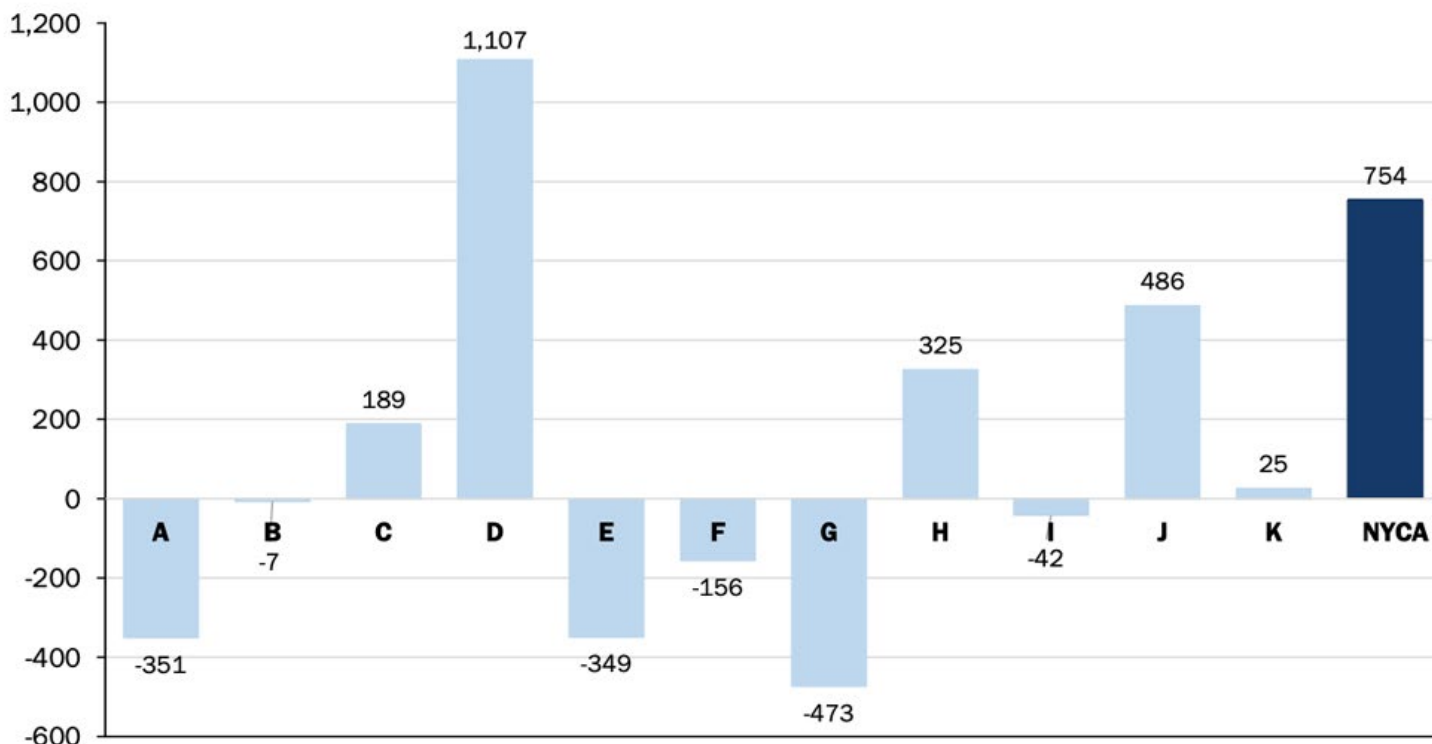
The MC unanimously approved the 2020 Reliability Needs Assessment (RNA), which cut the peak load forecasts for 2020-2028 by as much as 467 MW from the 2018 RNA. If the Board of Directors approves the revisions in November, NYISO will file the changes with FERC.

Laura Popa, manager of resource planning, *presented* the 2020 RNA, which examines needs over the coming 10 years. The presentation included a transmission analysis supplied by Keith Burrell, manager of transmission studies.

Pallas LeeVanSchaick of Potomac Economics, the ISO’s Market Monitoring Unit, *presented comments* on the RNA and said the MMU found a number of areas where the reliability needs identified by the RNA are in part driven by gaps in the market design, where it fails to provide incentives for resources.

Some key findings that the MMU focused on included a number of base case transmission violations from 2024 to 2030 in New York City driven by impending peaker retirements and load growth, he said. The state Department of Environmental Conservation last year adopted a regulation to limit nitrogen oxides (NO<sub>x</sub>) emissions from simple cycle combustion turbines, or peaking units, and required all impacted plant owners to file compliance plans by March 2. (See *NY DEC Kicks off Peaker Emissions Limits Hearings.*)

The RNA found transmission security violations on Consolidated Edison’s non-bulk power transmission facilities system in the Astoria East/Corona as well as Greenwood/Fox Hills load pockets, rising to 180 MW in 2030 for the former and 370 MW for the latter.



NYISO Gold Book baseline energy forecast growth rates, 2020 to 2030, used in the current Reliability Needs Assessment | NYISO

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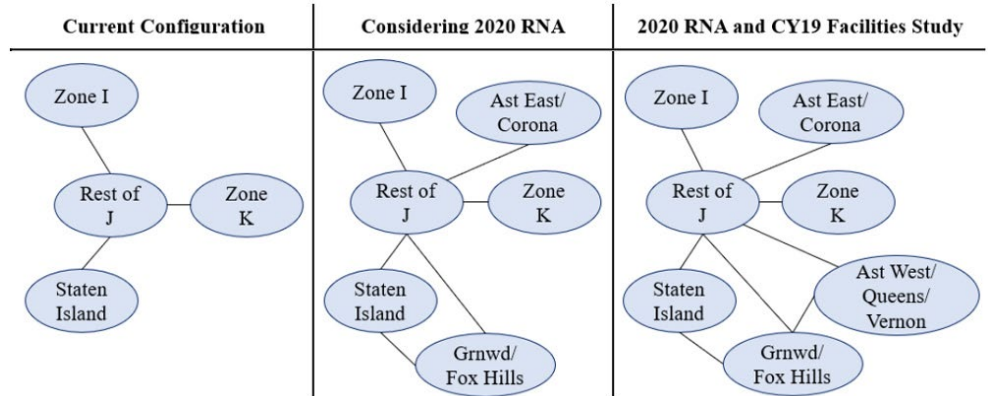
It “also found transmission security violations on Con Edison’s bulk system, and the deficiency there rises to 1,075 MW by 2030,” LeeVanSchaick said. “[The RNA] also found resource adequacy violations beginning in 2027, but it’s notable that the compensatory megawatts needed to resolve those are much lower than for the transmission security violations ... being only 350 MW by 2030.”

The two significant takeaways are Astoria East/Corona and Greenwood/Fox Hills, as well as the “big difference” between the compensatory megawatts needed in the transmission security analysis versus those in the resource adequacy analysis, he said.

“This RNA reveals a number of ways in which the NYISO market design fails to reflect the value of resources that help satisfy transmission security needs, which may lead to [reliability-must-run] contracts and other regulated transmission investment. The first recommendation that would help to align market signals with the reliability value of resources is better reserve market pricing in New York City,” LeeVanSchaick said.

The second issue is lining up the capacity accreditation with the reliability value of resources in NYISO planning studies, particularly for the large units and special-case resources, LeeVanSchaick said. Finally, the RNA is another piece of information that supports enhancing locational capacity pricing with the “C-LMP” framework, which would allow the ISO to set different prices for different areas and, in turn, for more cost-effective capacity to meet reliability needs, he said.

“If you do those things, it’s much less likely that you’d have to make any further out-of-market investment,” LeeVanSchaick said.



The MMU says the 2020 RNA and related Class Year 2019 studies imply the value of capacity varies widely and suggested that a C-LMP can be implemented to align capacity pricing with reliability value. | *Potomac Economics*

NYISO will seek updates to local transmission owner plans and other resource and load changes in December and determine in January whether the needs should be adjusted and solutions solicited to the remaining needs.

\$1.137/MWh, down from the 2020 budget of \$168 million allocated across 154.3 million MWh (\$1.089/MWh).

## 2021 Budget Approved

The MC also approved a draft [budget](#) for 2021, which will go before the board for final approval in November.

Alan Ackerman of Customized Energy Solutions, chair of the Budget and Priorities Working Group, [presented](#) the draft budget, which was unchanged from the draft stakeholders reviewed last month.

For the second year in a row, NYISO is proposing a decrease to the budgeted revenue requirement, with the draft budget allocating \$167.4 million across a forecast of 147.3 million MWh, for a Rate Schedule 1 charge of

## Wentlent Elected 2021 Vice Chair

The MC elected Christ Wentlent to serve as its vice chair for 2021, beginning in December.

Wentlent represents the Municipal Electric Utilities Association and New York Municipal Power Agency as liaison to both NYISO and the New York State Reliability Council.

He was unable to attend the meeting, but he sent a message read by Chair Jane Quin. “We all know our energy market is at a major transition point, and I would be honored to assist the NYISO and its stakeholders with that transition,” he said. ■

— Michael Kuser

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# NYISO Reviews Fuel Security, Mitigation Project

## Fuel and Energy Security OK for Now

NYISO told stakeholders last week that its fuel and energy security (FES) *metrics* remain “well aligned” with the assumptions of Analysis Group’s November 2019 *study*, which concluded that the state’s grid is “currently well equipped to maintain reliability in the winter, even under adverse winter system conditions.”

Although the report concluded “only fairly severe and relatively low probability conditions or events would create meaningful reliability challenges,” it said the ISO should continue monitoring because of the transition of its resource fleet and the increasing reliance on natural gas and renewables.

In April, NYISO pledged to update the metrics at least twice a year and said the study will be “refreshed” if the ISO observes large deviations between actual conditions and the conditions assessed in the study. A refresh also could result from large differences between the study’s assumptions and actual conditions that could adversely affect reliability. (See [NYISO Launches Fuel Security Effort](#).)

The ISO uses 23 metrics to monitor fuel security, including the deployment of new renewable and clean energy resources; the impact of the state Department of Environmental Conservation peaker rule; gas-only generator outages because of lack of fuel; and the status of transmission upgrades such as the AC Transmission Projects and Western NY Public Policy Transmission Need.

“We were aiming to enhance monitoring by adding some elements related to fuel security to both the Winter Capacity Assessment and the cold-weather operations presentations, those occurring in the fall and the spring,” market design specialist Amanda Myott told the Installed Capacity/Market Issues Working Group.

The ISO also is working to improve the accuracy of its generator fuel and emissions reporting (GFER) surveys, which inform internal FES assessments.

The fuel security monitoring “is focused on severe cold-weather conditions and being able to meet winter peaks in those conditions,” Vice President of Operations Wes Yeomans said.

On compensating for the intermittency of renewable resources, Yeomans said, “At other times of the year, we might have a duration of low wind or clouds; we are certainly aware of that and have other processes we’re trying to enhance with market designs and even some

good work setting up the [installed reserve margin] with” the New York State Reliability Council.

In response to a recommendation that the ISO consider comparing actual conditions and operating experience to the conditions assumed in the FES study, Yeomans noted that winter 2019/20 was “extremely mild.”

“But if there is a cold snap this upcoming winter, it will be very important to look at what we assumed about gas availability for the generator fleet and the actual availability experienced,” he added.

## CMR Project Treads Water

NYISO is pausing its Comprehensive Mitigation Review (CMR) project until it receives further clarity from FERC, which rejected the ISO’s proposal to make it easier for public policy resources to clear its capacity market, Michael DeSocio, director for market design, said in an *update*.

The project’s objective is to modify the capacity market framework while preserving competitive signals and facilitating the state’s ambitious clean energy goals. CMR efforts this year included the ISO’s proposed renewable exemption limit and changes to the Part A test for exempting resources from market mitigation.

In July, FERC approved the renewable exemption limit formula for calculating a megawatt cap of renewable resources exempt from buyer-side market power mitigation (BSM) specific to each mitigated zone. (See [NYISO BSM Mitigation Ruling Sparks Glick Rebuke](#).)

But the commission rejected the Part A changes on Sept. 4, prompting a dissent from Commissioner Richard Glick and an Oct. 5 rehearing *request* by the ISO (ER20-1718-002). (See [FERC Rejects NYISO Bid to Aid Public Policy Resources](#).) Rehearing requests were also filed by [Equinox](#), [New York Transmission Owners](#) and [jointly](#) by the New York State Energy Research and Development Authority and Public Service Commission.

“The ISO still thinks that the proposal is an excellent one that makes a whole lot of sense,” DeSocio said. “FERC unfortunately didn’t see it exactly the same way.”

The ISO’s BSM rules require new ICAP resources in New York City and zones G-I to offer at or above the default offer floor. To win an exemption from mitigation, a new entrant must pass one of two exemption tests. Part

A allows exemptions if the forecast of capacity prices in the first year of a new entrant’s operation is higher than the default offer floor. Part B permits exemptions if the forecast of capacity prices in the first three years of a new entrant’s operation is higher than its net cost of new entry (CONE).

DeSocio said ISO officials are considering a suite of options, the first being contractual models such as CAISO’s, with an energy-only market and fixed resource requirement.

The second option is enhancements to the capacity market such as to BSM, available capacity transfers and a future clean capacity requirement. The third option is a redesign of the capacity market, with possibilities such as a “multiple value pricing” model that co-optimizes over several variables (e.g. specific to resource type, zero-carbon resources, etc.) and a Forward Clean Energy Market to procure a certain percentage of generation from qualifying renewable resources.

The combination of the renewable exemption limit and the BSM proposals addressed many of the concepts being considered in the proposal for available capacity transfer (ACT) — expanding the use of the renewable exemption bank — and CRIS+, the pairing of transferable capacity resource interconnection service (CRIS) rights with an existing resource’s BSM exemption.

“We’re recommending to put [ACT and CRIS+] on the shelf until we get clarity on the Part A revisions that we filed earlier this year,” DeSocio said.

In the meantime, the ISO wants stakeholder feedback on capacity market changes and any other ideas before moving into 2021, he said.

“As we add more renewable resources and more limited-duration resources in the future, that will change how we approach reliability, and that does have an impact on the role of the capacity market,” DeSocio said.

The ISO will likely be more focused on BSM and how that impacts state policies and the design of the capacity market, and how the capacity market supports resource adequacy, he said.

“It’s a broad conversation, and if folks have ideas on how to structure that, I would certainly be willing to listen, because these markets are pretty complex, and as you tug on one area, it affects another area,” DeSocio said. ■

— Michael Kuser