CURRENT MARKET INITIATIVES RELEVANT TO RELIABILITY

October 9, 2025

The guiding principle for development of market rules at the NYISO is that Markets are consistent with and reinforce Reliability rules. The following current market design activities provide opportunities for application of this principle and may be of interest to the NYSRC.

Preparing the Capacity Market for the Grid in Transition

Capacity markets exist to provide efficient incentives for attracting resources needed to satisfy the resource adequacy requirements of the system. In New York, the Installed Capacity Market has performed this role well and has provided strong signals for developers to make investment or retirement decisions while maintaining a reliable resource fleet.

As the resource mix transitions to one more dependent on resources that rely on the sun or wind to produce energy or resources with energy limitations, each resources' contribution to reliability also evolves. Historically, for each MW of installed capacity, that MW could also be depended upon to provide grid operators with dispatch control to manage transmission constraints. With intermittent and energy limited resources, this one-to-one relationship no longer exists.

The resource adequacy contribution of resources that has limited energy and/or dispatch capabilities, such as being intermittent or having limited energy/fuel storage capabilities, is also very dependent on the diversity and performance of the resource mix. For example, as more solar generation is added to the grid the peak load shifts to non-daylight hours therefore making it less valuable to resource adequacy.

The NYISO believes that improving the robustness of Capacity Requirements to support Reliability, evolving the Methods for Measuring Reliability, and enhancing Capacity Accreditation Measures are key to the future success of the Installed Capacity Market as we navigate the transition of resource mix.

- **Methods for Measuring Reliability** - Improve the resource adequacy tools and models to account for the evolving critical reliability time periods, changing load shapes and load variability, new technology operation such as energy storage, and consideration of regional conditions that may inhibit shared assistance.
- **Reform Capacity Accreditation Rules** - Expand on the principles established with Expanding Capacity Eligibility and Tailored Availability Metric to all resources; and
- **Capacity Requirements support Reliability** - Improve handling of the assumptions between the IRM and LCR setting processes and consider *Valuing Transmission Security* which will explore additional requirements based on the resource mix's impact on transmission security considerations.

These improvements are part of a larger effort, the NYISO's Grid in Transition, which is a multi-faceted approach that focuses on i) aligning competitive markets and New York State clean energy objectives, ii) valuing resource and grid flexibility, and iii) improving capacity market valuation. By addressing the improvements above, the NYISO believes its Installed Capacity Market will continue to provide robust market signals that promote efficient decision making by developers in support of maintaining a reliable grid.

Starting with a set of Issue Discovery projects in 2024, the NYISO is investigating 3 areas of concern that may revise the capacity market. NYISO discussed these with stakeholders in the second half of 2024. It is expected that these projects will continue over the next couple of years into market design efforts. These areas are:

- Preparing the NYISO ICAP market for a system that is no longer driven from a Resource Adequacy Risk coincident with Peak Summer Load. As load patterns change and increased penetration of renewable resources and load modification resources, including behind-the-meter solar, the NYISO foresees that the existing ICAP Market constructs may need to be revised to incent the right behaviors coincident with the changing Resource Adequacy Risks. This work will continue in 2025.
- Examining the role of Transmission Security in the ICAP market. As significant penetration of renewable resources are added to the grid, the value that these resources provide is different in a Resource Adequacy evaluation in comparison to a Transmission Security evaluation. As shown by the NYISO's latest Short-Term Assessment of Reliability (STAR), Transmission Security risks can sometimes be more constraining in comparison to Resource Adequacy. This project will examine if and how Transmission Security should be accounted for in the ICAP Market, which today is mainly focused on Resource Adequacy.
- Re-examining the Capacity Zones and the methodology to establish Capacity Zones. As the grid evolves with changing load patterns and transmission topology, the existing Capacity Zones construct may need to be revised to send effective price signals on where capacity is needed.

In 2025, the NYISO has undertaken a holistic review of the capacity market under the Capacity Market Structure review. This project was highly prioritized by both stakeholders and the NYISO to ensure that the capacity market continues to function appropriately with the evolution of the grid. The NYISO has initiated discussions with its stakeholders and will continue discussions throughout 2025. The NYISO has outlined its objectives for the Capacity Market Structure Review as:

- Identify market structures that will help facilitate New York's evolving grid consistent with policy goals and achieve the following objectives:
    - accurately value resources according to their contribution to maintaining bulk system reliability;
    - deliver transparent and predictable market outcomes;
    - operate cohesively with the Energy and Ancillary Services markets to meet the reliability requirements of the evolving grid;
    - provide appropriate, nondiscriminatory, price signals to existing and new resources;
    - function without unnecessary administrative complexity; and
    - provide an economically efficient, durable and stable market structure to facilitate investment.
- Explore potential alternatives to the existing structure.

- Determine if the existing structure or alternatives explored better meet the defined objectives.

On April 1st, the NYISO proposed its initial list of priorities for the Capacity Market Structure Review for stakeholder feedback. That proposed list is:

1. Demand Curve Reset (DCR) Process and Methodology Improvements
2. Winter Reliability Capacity Enhancements (currently ongoing effort)
3. Co-Optimized Attribute-based Capacity Pricing
4. Improving Capacity Accreditation and Resource Adequacy Modeling
5. Capacity Zone Redesign

The NYISO has continued discussions with stakeholders on the evolution of the Capacity Market, highlighting the potential benefits of its proposal. The NYISO, with its consultants Potomac Economics and FTI, have also explored the potential benefits and risks of a bifurcated capacity markets that would look to separately compensate existing resources from new resources. Overall, the economic benefits of these market mechanisms do not appear to be significant, but could introduce reliability risks that would require out of market action in order to maintain reliability.

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On July 29, the NYISO presented its initial market design proposal to address winter reliability risks. Specifically, the Winter Reliability Capacity Enhancement Project aims to ensure that the capacity market continues to send accurate price signals to provide for New York's resource adequacy needs. The 5 pillars of this proposal are:

- Seasonal elections for UDRs
- Seasonal ICAP requirements
- Seasonal transmission security limit (TSL) floors
- Updates to the Demand Curve parameters to maintain revenue sufficiency consistent with seasonal changes (i.e., removing the winter-to-summer and summer-to-winter ratios)

We are continuing to work with stakeholders on finalizing the design.

Efficient Markets for a Grid in Transition

The NYISO will assess the impacts of de-carbonization goals on the current NYISO markets from the high penetration of low carbon or carbon-free resources and consider whether market enhancements and/or new market products or changes to the existing market structure will be necessary to meet the anticipated reliability needs.

Key areas for consideration:

a) Understanding the additional resource flexibility that will be necessary to balance the intermittent nature of weather dependent resources; and
b) Ensuring resources are responsive to operational instructions.

The NYISO is considering a broad spectrum of market product and structural enhancements that may be necessary to incent market participants to meet the reliability needs anticipated with the Climate Leadership and Community Protection Act (CLCPA). The CLCPA includes 70% renewable generation by 2030 and carbon neutral electricity by 2040, 6,000 MWs of solar by 2025, 6,000 MWs of energy storage by 2030, 9,000 MWs of offshore wind by 2035, and 185 trillion BTU electricity reduction through energy efficiency. The NYISO has completed its simulation of potential market conditions and initiated discussions on possible reforms with stakeholders. Based upon these discussions, and input from the stakeholders, the NYISO has identified a series of initiatives to prepare for balancing intermittency and variability and managing energy limited resources. The NYISO produced a whitepaper on "Reliability and Market Considerations for a Grid in Transition," which identifies the needs for additional resource flexibility and responsiveness to balance the output from large penetrations of weather dependent resources. The NYISO evaluated and presented system ramping and other flexibility needs of the grid to determine whether additional market products should be developed to continue to support reliable grid operations as the resource mix and electric load profiles continue to transition in support of a decarbonized economy as part of its *Balancing Intermittency* effort. A white paper on the analysis and findings was shared with the NYISO stakeholders in 2022. Discussions with stakeholders are ongoing focused on consideration of new ancillary service products that will support sustained ramps, studying the existing and near future regulation needs, and consideration of ancillary service pricing that continues to support reliability as the fleet transitions. (Current)

Other efforts underway in this area are included in the NYISO Project Plan.

Dynamic Reserves: The NYISO procures fixed quantities of reserves in specified regions across the state. For example, the NYCA-wide reserve requirement is based on the largest single source contingency, which today is statically defined as 1,310 MW. Operationally, the largest contingency could change based on the current commitment of generation. Additionally, the static modeling of reserves, specifically locational requirements, does not optimally account for the real-time transmission flows and available transmission capability that could be used to deliver reserves from a more cost-effective reserve region. Dynamic Reserves is a novel approach that will explore more efficient scheduling of operating reserves based on system conditions and transmission system capability. This will not only allow for appropriate reserves to be procured to cover the largest source contingency that could potentially occur under the current system conditions but will also allow for more reserves to be scheduled in cost-effective regions. The NYISO issued a report on its findings regarding the feasibility of incorporating a dynamic reserves approach into its energy market software and recommended next steps on December 14, 2021. The NYISO is working with stakeholders to evaluate capturing forecast uncertainty risks into the dynamic reserves design. NYISO finalized a Market Design Concept Proposal in 2022 and continues to work on completing the design with tariff provisions. Stakeholder's unanimously supported the concept at the December 2023 BIC and support NYISO's continued efforts to test and finalize the tariff. In 2024 NYISO finalized the design with stakeholders and prototype work. In 2025 NYISO will develop a software design specification. (**Current**)

Balancing Intermittency: The NYISO procures Operating Reserves in specified regions across the state to facilitate reliability when contingencies occur. Contingency based Operating Reserves are critical to supporting reliability. The Balancing Intermittency project has further identified a need for grid balancing between the Day-Ahead Market and the Real-Time Market. The 2023 Balancing Intermittency project (a) adjusted Regulation Requirements to align with current balancing needs (this was deployed in 2023) and (b) proposed a concept to procure additional Operating Reserves to ensure sufficient Real-Time energy is available to balance deviations in intermittent resource output and load between Day-Ahead and Real-Time (i.e., forecasting error). These reserves will be procured locationally to align with the locational nature of balancing needs (e.g., onshore wind is concentrated in Zones A-E, therefore additional reserves to manage onshore wind uncertainty will be procured in the NYCA reserve region). A comprehensive Market Design Concept proposal was discussed with stakeholders in November 2023. Stakeholders approved the market design and tariff at the 2024 October BIC and MC meetings. FERC recently approved the design and NYISO continues to work to complete software development in the later part 2025. Future potential phases will explore whether additional ancillary service products or characteristics are also necessary to support the Grid in Transition. (**Current**).

Improve Duct Firing Modeling: Increased intermittent resource penetration leads to variability and uncertainty in scheduling such resources. Any enhancements to market models which improve or eliminate other uncertainties can help balance the system. This effort will evaluate market software enhancements that are required to reflect the operating characteristics of a combined cycle generator in the duct-firing range. This enhancement is intended to enable more efficient scheduling of a combined-cycle resource for both energy and operating reserves. Furthermore, this enhancement could provide additional flexibility to the RTD to make cost effective dispatch decisions by more accurately reflecting the operating characteristics of such resources. The NYISO presented a concept proposal to stakeholders in 2023 that includes improved ramp modeling and the potential to limit reserve availability while the generator is operating its duct firing capabilities. Stakeholders approved the market design and tariff at the 2024 October BIC and MC meetings. FERC recently approved the design. NYISO will continue software development for the remainder of 2025. (**Current**)

Additional Updates

Distributed Energy Resources

To support the integration of Distributed Energy Resources (DER) into NYISO markets NYISO staff engaged Market Participants in the development of a DER Participation Model. The NYISO's model enables Aggregations of DER to receive compensation for performance in the Energy, Ancillary Services and Capacity Markets.

Key areas for consideration:

a) Managing the volume of Resources interacting with the NYISO.
b) Modeling DER in IRM and long-term planning studies.
c) Evaluating the ability of limited duration Resources to satisfy resource adequacy needs.
d) Capturing the impact of behind the meter resources in Load Forecasting and other system models.
e) Ensuring Aggregations are responsive to operational instructions; and
f) Establishing requirements and expectations in the NYISO wholesale markets for resources that wish to simultaneously participate in retail market programs.

The NYISO collaborated with Stakeholders to develop a DER Participation Model supporting DER integration into the wholesale markets. Stakeholders approved the market design in 2019, and FERC accepted the proposed design and accompanying tariff language in 2020. The NYISO worked with stakeholders on finalizing the implementation details for the model from 2020 to 2023, including revising NYISO manuals, user guides and training materials. The NYISO completed the necessary software integration and deployments to support the model.

FERC approved NYISO's filing on April 15, 2024. NYISO has enabled the ability for Aggregators to enroll DER and Aggregations for market participation.

Consistent with the FERC approved DER market design, the NYISO filed its compliance with FERC Order 2222 on July 19, 2021. On June 17, 2022, FERC accepted the NYISO's compliance of Order 2222 subject to further revisions as directed by the Commission. The NYISO filed its updated compliance of Order 2222 on November 14, 2022, which FERC subsequently accepted on April 20, 2023. NYISO provided informational filings to FERC while finalizing the remaining rules pertaining to Ancillary Services eligibility for heterogenous DER Aggregations, necessary to fully comply with Order 2222. The NYISO filed tariff and finalized its market design to address the remaining ancillary services rules in Q4 of 2024, noting in its filing the current expectation to implement all software and tariff for full Order 2222 compliance by the end of 2026.

NYISO's first DER resource recently became active. (Current)

Hybrid Storage Resources

Interest in opportunities for hybrid resources to participate in wholesale markets is growing. The NYISO has engaged stakeholders on market rules to support hybrid storage integration and has developed two options, referred to as the Hybrid Co-located Model (CSR) and the Hybrid Aggregated Storage Resource Model (HSR).

Key areas for consideration:

a. Evaluating the ability of Hybrid Resources to satisfy resource adequacy needs.
b. Modeling Hybrid resources in IRM and long-term planning studies.
c. Understanding the resource flexibility contribution of Hybrid Resources.
d. Consideration of Hybrid Resources capabilities to meet operating reserve requirements; and
e. Ensuring resources are responsive to operational instructions.

The CSR Model currently allows an Energy Storage Resource (ESR) and a Wind or Solar Intermittent Power Resource (IPR) behind the same point of interconnection to participate in the wholesale market as an individual ESR and IPR while respecting any point of interconnection injection or withdrawal limitation. Newly proposed updates to the model in 2022 and 2024 will also allow a landfill gas IPR, limited control run-of-river hydro resource (LCRoR), or other traditional Generator such as a steam resource to co-locate with an ESR as a CSR. The HSR Model will allow an ESR to aggregate with IPRs and/or LCRoR resources behind the same point of interconnection to participate in the wholesale Energy and Ancillary Services markets as a single, dispatchable resource. The market design for the CSR Model was approved by stakeholders and filed with the FERC on January 28, 2021. FERC approved the CSR Model on March 30, 2021, and it was implemented in December 2021. Stakeholders approved the market design for the HSR model and the accompanying proposed updates to the CSR model in December 2022, with the additional updates approved in March 2024. NYISO filed the HSR and CSR tariff revisions at FERC on May 29, 2024, and the revisions were accepted by FERC on July 23,

2024. Implementation of the CSR model updates were completed in 2024 and the HSR model updates will be implemented by the end of 2026. (Current)

Champlain Hudson Power Express

The Champlain Hudson Power Express ("CHPE") project is a 1,250 MW controllable transmission facility expected to deliver energy and capacity from Quebec into New York City (NYISO Load Zone J). CHPE's primary transmission customer, Hydro Quebec US, has a renewable energy credit contract with the New York State Energy and Research Development Authority that will pay incentives for delivery of obligated "clean" resources in real-time. CHPE is expected to begin operational testing in Q1 2026 and enter commercial operation in Q2 2026.

While the CHPE project broadly fits within the existing energy and capacity market design constructs (i.e., there are existing controllable transmission facilities that deliver energy and capacity from external control areas into the New York Control Area), this is the first controllable facility that employs "physical," as opposed to financial, scheduling rights over which the NYISO will have operational control. The NYISO has identified efforts underway as part of the 2025 project portfolio and continuing into 2026 that will be required to integrate CHPE into the NYISO markets and New York electric grid.

Integrating CHPE requires multiple work streams to be coordinated across the NYISO, CHPE, HQ, and market participants. These work streams are **Regulatory Documentation**, **Software Development**, **Market Mitigation**, **Market Integration**, and **Energizing/Commission Testing**. NYISO will continue to execute on the tasks necessary to integrate CHPE into the NYISO markets and NYS electric grid.

As part of the efforts to integrate CHPE, the NYISO is exploring with it's stakeholders the potential need to develop two sets of market parameters for the ICAP Market in the event CHPE is not ready to participate with the start of the 2026-2027 Capability Year that begins May 1, 2026. This exploration considers using a set of parameters prior to CHPE entering the market which presumes CHEP is not in service, and swapping to a set of parameters that assumes CHPE enters service once CHPE is in service.

Stakeholders approved a number of changes related to CHPE in September, which will be filed with FERC in Q4.

(~~Current~~Updated)

2025 Project Prioritization

Annually, the NYISO in collaboration with its market participants develop and prioritize the project work that will be undertaken for the following year. This process generally starts in April and ends with the approval of the budget by the NYISO Board of Directors in November. NYISO is currently reviewing 2026 project candidate scoring and will provide an initial project budget recommendation in August. The 2025 timeline is anticipated to follow closely to the timeline utilized in 2024 (Updated).