2023 Market Project Candidates

Product and Project Management

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This document represents potential 2023 Market project candidates. Market projects are associated with market rule(s), including market design and study projects as well as any projects implementing market rule changes. They are identified through (1) the State of the Market (SOM) Report; (2) internal NYISO discussions; and (3) discussions with Market Participants in the stakeholder process. These project candidates and their corresponding descriptions reflect information known about each of the project candidates as of the date of this document.

Table of Contents

Introduction

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Project Type	Description
Mandatory	Strategic Initiatives and FERC Orders. These projects will be included in the budget
Continuing	Projects approved in a prior year and that have progressed to either Software Design, Development Complete, or Deploy will generally be proposed as Continuing. Additional projects may be classified as Continuing based on stakeholder feedback. These projects will be included in the budget
Future	Consensus from stakeholder discussions of this projects priority relative to other projects has resulted in these projects NOT being prioritized and initiated in the coming budget year. Resources, time constraints, stakeholder feedback, and other project dependencies have been taken into consideration
Prioritize	Projects to be prioritized and included in the budget based on a feasibility assessment taking into consideration resources, time constraints, stakeholder feedback, priority score, and other project dependencies

Prioritize

1 Balancing Intermittency (SOM)

1.1 Problem / Opportunity

In a time of unprecedented change in the electricity sector, New York's competitive electricity markets must be positioned to unleash the innovation and flexible energy solutions necessary for a reliable transformation towards a zero-emissions power grid. A rapid transition is underway in New York State from a power grid where energy is largely produced by central-station fossil fuel generation, towards a grid with increased intermittent renewable resources and distributed generation.

The pace of this transition is driven primarily by state policy, notably the Climate Leadership and Community Protection Act (CLCPA). In addition, technological advancements are expanding the capabilities of new resources and lowering their costs, further driving broader industry changes.

A grid characterized by high levels of intermittent renewable resources, Energy Storage Resources (ESR), and Distributed Energy Resources (DER) will require new thinking to adequately balance intermittency on the system and meet associated flexibility and ramping needs. The NYISO is actively working on developing market enhancements to meet these future challenges. . The NYISO approaches this work with two guiding principles: (1) all aspects of grid reliability must be maintained; and (2) competitive markets should continue to maximize economic efficiency and minimize the cost of maintaining reliability while supporting the achievement of New York's climate policy codified in the CLCPA.

The 2022 Grid in Transition Study will identify the potential level of system flexibility that will be required with increases in intermittent resources and evaluate grid and/or resource attributes necessary to continue to reliably maintain system balance. This project continues that work and supports State of the Market recommendations 2021-1.

1.2 Project Objective(s) & Anticipated Deliverable(s)

Using the work completed to date across various NYISO studies and initiatives, including the Reliability and Market Considerations for a Grid in Transition work, Grid in Transition project

work, and any relevant external studies on the ramp and flexibility needs of the future, this project will examine the existing NYISO market structures, including the level of dispatchability and ramping capability that may be needed to balance intermittency. This effort will also assess

existing market rules and will determine appropriate compensation mechanisms that incentivize such attributes including the potential for new market products, such as ramping or new reserve products, or other market changes needed to support reliability. The 2023 project deliverable will be Market Design Concept Proposed.

1.3 Project Justification

The CLCPA includes the following goals:

- 100% of the state's electricity must be emissions free by 2040
- 9,000MW of offshore wind energy must supply NY by 2035
- 6,000MW of solar energy be installed in NY by 2025
- Statewide reduction of 185 trillion BTUs through energy efficiency
- 3,000MW of energy storage capacity must be installed to serve NY by 2030

This project will help to identify the means to maintain system reliability while addressing the state's goals and mandates in a cost-effective way through the creation of proper market mechanisms.

2 Constraint Specific Transmission Shortage Pricing (SOM)

2.1 Problem / Opportunity

Transmission facility and line ratings limit the amount of energy that can flow from one location to the next on the bulk electric system. As transmission constraints arise, the NYISO's energy market software prices the quantity of energy that would be necessary to alleviate shortages. The existing transmission constraint pricing logic applies a single graduated shortage pricing mechanism to all facilities assigned a non-zero constraint reliability margin (CRM) value. Under the current pricing logic, some transmission constraints are relaxed without being resolved by the graduated mechanism.

The NYISO and its stakeholders completed a Market Design in 2021 to utilize a revised and more graduated transmission demand curve (TDC) mechanism that better accounts for the various non-zero CRM values assigned to facilities. Under this proposed construct, TDC prices will increase with the severity of transmission overloads. The design is intended to reduce occurrences of constraint relaxation by seeking to resolve constraints for internal facilities using a graduated TDC mechanism that includes pricing values for shortages that exceed applicable CRM values. In 2022, the NYISO, in collaboration with stakeholders developed techniques to

address multiple active transmission constraints (MATC) for the same monitored element, in-series monitored elements, and parallel monitored elements.

2.2 Project Objective(s) & Anticipated Deliverable(s)

Subject to acceptance by the FERC, in 2023, the NYISO will deploy enhancements to the TDC mechanism approved in the 2021 Market Design Complete as further enhanced to address the MATC issue. The 2023 project deliverable will be Deploy.

2.3 Project Justification

The transmission constraint pricing logic enables the NYISO's market software to re-dispatch resources efficiently in the short term to alleviate constraints and incentivizes long-term investment in locations where resources could provide the greatest benefits. This project also supports State of the Market recommendation 2015-17.

3 Coordinated Grid Planning Process (CGPP) Support - Requested by New York TOs

3.1 Problem / Opportunity

The New York Transmission Owners (TOs) are currently developing a Local Coordinated Grid Planning Process (CGPP) [see Feb 9 ESPWG Presentation on CGPP] to comply with a Public Service Commission (PSC) directive to develop an end-to-end planning process to identify and approval local transmission needed to achieve the state's CLCPA goals. A major part of the CGPP development needs to address the alignment between the local utilities' planning process and the regional planning processes completed by the NYISO, including but not limited to the utilization of databases developed by the NYISO to satisfy current regulatory requirements, the development of scenarios through the NYISO's System and Resource Outlook, and consideration of NYISO resource availability and additional resources necessary to complete studies to support the CGPP and align it with bulk system studies.

3.2 Project Objective(s) & Anticipated Deliverable(s)

This project should entail a review of current NYISO procedures with a focus on *identifying areas where the CGPP and* the current set of NYISO processes and deliverables *can be better aligned*. The CGPP is envisioned to run on a two-year process cycle followed by Department of Public Service (DPS)/PSC review and approval of local project portfolio recommendations with the first CGPP cycle to start in 2023 or 2024. Utilization of and alignment with current NYISO deliverables

related to the NYISO's planning processes would be beneficial to parties and stakeholders involved in both local and bulk transmission planning. Examples of work products that will be used in the CGPP include:

- Zonal Capacity Expansion Modeling Results
- New base cases in the FERC 715 Database
- Modification of cases for Zonal Capacity Expansion scenarios
- Performance of BPTF assessments of TO's proposed Local Transmission Solutions

As such a review of the current processes and deliverables is needed to identify potentially beneficial interactions, evaluate, and establish changes to existing or introduce new methods and procedures, and assess resourcing needs as compared to what exists today. The 2023 milestone will be Issue Discovery.

3.3 Project Justification

The PSC has directed the NYTOs to work with DPS Staff, the New York State Energy Research & Development Authority, and the NYISO to develop the CGPP – an effort to create a repeatable end-to-end planning process for local transmission needed to achieve the State's CLCPA goals. The NYISO has and continues to implement processes for bulk transmission identification and approval needed to achieve the same (e.g., the Public Policy Transmission Needs Process). It is imperative for the sake of consistency and transparency that the two planning processes are coordinated with regards to initiating assumptions used to develop scenarios guiding recommendations for approval of local transmission projects. The CGPP is meant to be complementary to the NYISO's bulk planning processes. Not having alignment between the two processes will risk the identification and approval of projects on the bulk and local level that may be incompatible with one another, reducing or negating the anticipated benefits of both and ultimately harming customers, developers, and other Market Participants.

4 CRIS Expiration Evaluation

4.1 Problem/Opportunity

As part of the Class Year Redesign project, the NYISO identified proposals providing for more stringent Capacity Resource Interconnection Service (CRIS) expiration rules. Some of those proposals were implemented as part of that initiative, while others were deferred for later consideration. Although the new CRIS rules are expected to prevent retention of CRIS by certain facilities not participating in the Installed Capacity (ICAP) market and increase deliverability

"headroom," the rules, as accepted by FERC and implemented by the NYISO, do not significantly address circumstances under which facilities can retain their CRIS beyond the effective date of their retirement for up to three years and retain unused CRIS with minimal participation in the ICAP market under Section 25.9.3 of the NYISO Open Access Transmission Tariff (OATT).

The current tariff provisions may allow facilities to retain CRIS that, if terminated, could eliminate the need for deliverability upgrades or require less costly deliverability upgrades, thereby facilitating new entry. For example, the existing rules allow a facility to retain its full CRIS by offering as little as 1 MW into the capacity market. Additionally, a facility is able to retain all CRIS obtained for up to three years after it retires, rather than immediately making its unused CRIS available to other new entrants.

Modifying the current tariff language with respect to CRIS transfers may allow for more flexibility as more public policy resources come on to the system. Modifications could include exploring options to include same-location transfers to better facilitate these new entrants.

4.2 Project Objective(s) & Anticipated Deliverable(s)

Continuing the work from the 2022, the objective of this project is to develop software requirements to implement the CRIS Expiration rules as well as the rules surrounding CRIS Transfers. The project deliverable for 2023 will be Functional Requirements.

4.3 Project Justification

This project will seek to further enhance and provide additional clarification to the CRIS expiration rules. Further enhancements to the CRIS expiration rules will more appropriately address the retention of CRIS by retired facilities and facilities no longer fully participating in the ICAP market.

Finally, this project will seek to increase the capacity deliverability headroom and potentially lower the cost of market entry to future facilities seeking to participate in the ICAP market.

5 Dynamic Reserves (SOM)

5.1 Problem / Opportunity

Today, the NYISO procures fixed quantities of operating reserves in specified regions across the state. Under this structure, the static modeling of reserve regions and their associated requirements may not optimally reflect the varying needs of the grid to respond to changes in system conditions. These system conditions are expected to become more variable as new resources enter into the market in the coming years.

Based on New York State Reliability Council, L.L.C. (NYSRC) rules, the NYISO is required to procure sufficient reserves to account for the single largest source contingency at all times. However, the current static modeling approach does not account for the potential for the largest source contingency changing based on system conditions and system topology every market run. Dynamically determining the operating reserve requirements could enhance system reliability and market efficiency based on the system needs at any time.

The NYSRC rules also require the NYISO to ensure that transmission facilities are not loaded above their Long-Term Emergency (LTE) rating, post-contingency. In some cases, within NYC, the NYISO is permitted to operate transmission facilities above LTE, using generating capacity not otherwise scheduled to provide energy and phase angle regulator actions to quickly secure the transmission facilities, post-contingency. This offers opportunities to reduce production costs by relaxing the transmission limits of facilities that feed New York City load pockets. Currently, operating reserve providers in these NYC load pockets are not compensated for the avoided transmission congestion they enable by allowing certain facilities to be secured to a rating that is higher than LTE.

Therefore, Dynamic Reserves would enhance the current modeling by: (i) allowing the adjustment of the minimum operating reserve requirements based upon the single largest source contingency or risk for simultaneous loss of energy from similarly situated generation (e.g., offshore wind and/or natural gas), and (ii) accounting for transmission capability when determining reserve needs within a constrained area. These enhancements could allow the scheduling of energy above the minimum operating reserve requirements from individual suppliers when sufficient reserves are available and also the shifting of reserves to lower-cost regions when transmission capability exists. A dynamic reserve procurement methodology could improve market efficiency through enhancing competition among suppliers, and better aligning market outcomes with how the power system is operated.

5.2 Objective(s) & Anticipated Deliverable(s)

The market design will seek to leverage the recommendations from the study conducted in 2021 and the 2022 Market Design Concept Proposed and develop potential changes to the NYISO's market software and market rules to facilitate more efficient scheduling of operating reserves based on system conditions. The project deliverable for this effort in 2023 will be Market Design Complete.

5.3 Project Justification

As the markets and grid are expected to rapidly evolve in the coming years, the modeling of reserves will need to also evolve and become more flexible. The Market Monitoring Unit (MMU) has recommended that the NYISO "[d]ynamically adjust operating reserve requirements to account for factors that increase or decrease the amount of reserves that must be held on internal resources [SOM Recommendation 2015-16]." Dynamic Reserves would seek to ensure the reserve requirements and procurement of the reserves adequately reflect the conditions of the system. Specifically, the reserve modeling should dynamically account for the single largest source contingency or transmission capability into a region. This would improve market efficiency by allowing more energy to be produced from a single source if adequate reserves are available, and also allow reserves to be scheduled in less expensive regions when there is available transmission capability to import power into a more constrained region post-contingency. Dynamic reserve procurements present opportunities to enhance grid resilience, incentivize resource flexibility, lower total production costs, and increase efficiency in meeting applicable reserve requirements.

This project also considers an additional recommendation made by the MMU in past State of the Market Reports. The MMU has recommended that the NYISO "[c]onsider rules for efficient pricing and settlement when operating reserve providers provide congestion relief [Recommendation 2016-1]."

6 Emissions Transparency - Requested by Stakeholders

6.1 Problem/Opportunity

The emissions rates associated with the production of electricity in New York vary widely from hour to hour and location to location, but specific emissions rates are not transparent to the market. This project envisions that the NYISO would publish marginal and average emissions rates concurrent with the release of Locational Based Marginal Pricing (LBMP) results. Doing so would inform end users, load-serving entities, generators, energy service companies, marketers, aggregators, and other Market Participants seeking to optimize their use, production, storage, or purchase of electricity based on emissions. In addition, providing such data to the market would enable consumers to evaluate the emissions associated with the energy they consume and could inform decision-making related to implementation of State policies and environmental initiatives.

6.2 Project Objective(s) and Anticipated Deliverable(s)

This project will deliver Functional Requirements including a methodology to determine real-time emissions rates for each transmission node and load zone.

The NYISO would aim to begin publishing emissions rates by 2024. Published rates would include indicative day-ahead and real-time emissions rates (both average and marginal) for each transmission node and load zone. They would be posted as an additional column when the NYISO posts LBMP results on its website.

Marginal emissions rates would be determined based on the characteristics and operations of each marginal generator in a manner similar to that used by PJM (see PJM Primer) or using a methodology comparable to LBMPc (see LBMPc Slides).

Average emissions rates for each transmission node and load zone would be determined using a methodology to be developed and documented (e.g., in a manual) by the NYISO in consultation with its stakeholders.

6.3 Project Justification

The project could provide several benefits: 1) it would support use of load management and storage operations to reduce emissions, 2) it would enhance the market for sustainable electricity products, and 3) it would provide data that could be used to support planning and implementation of State policies and environmental initiatives. The project would enhance the NYISO's reputation as a leader in market design, would provide more effective planning in the context of state and local environmental goals, and would facilitate the development of more robust markets for green energy products. Without a transparent and reliable flow of detailed information to the marketplace, decisions intended to reduce greenhouse gas emissions and enhance environmental quality may not be made in the most efficient manner.

7 Engaging the Demand Side

7.1 Problem / Opportunity

Engaging consumers to assume greater control of their energy use will help to balance increasing penetration of intermittent and variable generation supporting New York State's zero emission and climate action policies. The NYISO's demand response programs and DER participation model offer Load consumers the opportunity to "supply" energy to the wholesale markets. The NYISO also currently offers Load Serving Entities the opportunity to offer Price-Responsive Load in the

DAM. Historically, Price-Responsive Load Bids have constituted a few percent of total bid Load by volume.

As part of the NYISO's mission to improve market efficiencies, the NYISO believes there may be opportunities to enhance market signals for Load Serving Entities to modulate Load in response to price on the buyer side of the equation. Load flexibility is at the intersection of the retail and wholesale markets. While demand response is a reduction of planned or expected consumption, Load flexibility includes other actions such as shifting or modulating demand in response to price signals. Robust participation of flexible, price–responsive Load in both DAM and Real-Time Markets (RTM) may provide another tool to balance the NYCA system, address resource intermittency, and support ancillary service providers.

7.2 Project Objective(s) & Anticipated Deliverable(s)

The NYISO will work with both internal and external stakeholders to identify opportunities ripe for enhancing Load participation in the wholesale markets. The 2023 project deliverable for this project will be Issue Discovery.

7.3 Project Justification

Further engaging Load participation could allow for more robust price formation that reflects customers' willingness to pay, consistent with the marginal benefit of consuming energy. Engaged end-use customers that understand their Load consumption patterns and have access to incentivized price signals are enabled to modify behaviors to take advantage of enhanced customer rate design. Once established, end-use customer consumption patterns can allow Load Serving Entities to bid price sensitivity in the wholesale markets. Incenting Loads to modify behavior and bid responsively would benefit the NYISO's market design and operations and aligns with New York State policy goals to encourage end-use customer engagement in their energy usage through Reforming the Energy Vision. Opportunities identified in this effort can then be further evaluated to determine their merit.

8 Enhancing Fuel and Energy Security

8.1 Problem / Opportunity

The 2023 Enhancing Fuel and Energy Security project would refresh the assumptions developed in the 2019 Enhancing Fuel and Energy Security project in recognition of the ongoing transformation of the bulk power system to assess emerging operational and grid reliability concerns. The NYISO also appreciates stakeholder concerns related to a wide range of potential

grid resilience risks, including extreme weather scenarios and climate change impacts. Future changes to New York's fuel supply mix as well as the expected increases in winter peak loads due to electrification may challenge the ability to meet electric system demands under stressed system conditions, such as a prolonged cold weather event and/or natural gas supply/transportation disruptions. NERC, NPCC and NYSRC are all currently considering new mandatory standards in this area. The 2023 Enhancing Fuel and Energy Security project should examine potential new reliability standards and the changing nature of the supply mix and load patterns and quantify the amount of resources that will be required based on a wide array of study assumptions. Depending on the results of the study, the NYISO would, in collaboration with stakeholder, assess the subsequent development of potential operational and/or capacity and energy market enhancements to achieve recommended improvements in grid resilience as related to fuel and energy security.

8.2 Project Objective(s) & Anticipated Deliverable(s)

The 2023 project deliverable for this project will be Study Complete.

8.3 Project Justification

Future changes to New York's resource mix as well as the expected increases in winter peak loads due to electrification may challenge the ability to meet electric system demands under stressed system conditions, such as a prolonged cold weather event and/or natural gas supply/transportation disruptions. Additionally, NERC, NPCC and NYSRC are all currently considering new mandatory standards in this area.

9 Evolving Financial Transaction Capabilities: Bilateral Transactions - Requested by NY-Best and Bayonne Energy Center

9.1 Problem/Opportunity

Current NYISO software capabilities facilitate internal bilateral transactions, however the range of source and sink locations do not encompass the full range of use cases. For example, while ESRs can currently be the source in bilateral contracts, they cannot currently be a sink.

To the extent there is increasing demand to use bilateral transactions to serve load by contracting output from specific resources, an opportunity exists for NYISO to enhance its bilateral transaction functionality to meet this demand.

9.2 Project Objective(s) & Anticipated Deliverable(s)

This project will enhance bilateral transaction functionality by increasing the range of bilateral contracting opportunities (i.e., source and sink locations), including creating the opportunity for bilateral contracts in which an ESR could be a sink. This project would assess and commence designing the software changes necessary to achieve this objective. The 2023 project deliverable for this project will be Software Design.

9.3 Project Justification

The ability for an ESR to procure charging energy from specific generators, particularly renewable generators, would enhance the ability to provide customers with energy that is sourced from certain resources. Additionally, New York State has adopted aggressive energy storage goals (6000 MW by 2030) as a step towards achieving the requirements of the CLCPA. The software revisions that would be pursued under this project would enable developers of ESRs to represent to potential customers that the energy stored in their facilities is sourced from renewable and emission-free generators. This is especially important in Zone J, where much of the generation operates using fossil fuels. Allowing developers to enter into bilateral contracts to charge their energy storage projects will facilitate financing and development, as it will allow ESR operators to meet the needs of customers who prefer acquiring emission free energy. Similarly, owners of renewable and emission-free generators may want the ability to store their energy in downstate energy storage facilities during periods of low-demand for use during higher-demand periods.

10 Hybrid Aggregation Model

10.1 Problem / Opportunity

The 2022 Hybrid Aggregation Model project created the market rules and Functional Requirements for an ESR and another Generator to be co-located at a single point of interconnection and share the same point identifier (PTID). To effectuate these rules, the NYISO must work towards developing and implementing the necessary software changes.

10.2 Project Objective(s) & Anticipated Deliverable(s)

This project is a continuation of the 2022 Hybrid Aggregation Model project. The 2023 project deliverable will be Software Design based on the 2022 Functional Requirements.

10.3 Project Justification

State and Federal initiatives such as Renewable Energy Credit (REC) procurements provide incentives for developers to couple storage and intermittent renewable assets. Such programs are aimed at reducing the output volatility and improving the availability of intermittent resources. The NYISO has implemented a Co-Located Storage (CSR) model for front-of-the-meter generators plus storage acting as two distinct resources with a shared injection limit that better align the NYISO's market procurement with state and federal efforts to integrate more clean energy into the grid. The 2023 project deliverable will continue the work necessary to implement the new participation model.

11 Interconnection Process Enhancements - Requested by ACE-NY

11.1 Problem / Opportunity

With the advent of the CLCPA, New York State's power grid is rapidly transitioning with the incorporation of new intermittent renewable resources, energy storage resources, and distributed energy resources. It is estimated that an additional 26,000 MW of new resources will need to come online by 2030 in order to achieve the codified goals of the CLCPA. All of these new resources will be required to go through the NYISO's interconnection process. While the NYISO has taken important steps in ensuring the competitive markets and reliability are maintained through initiatives like Grid in Transition, additional steps are needed to be taken to develop new enhancements and reforms to the interconnection process to ensure that is remains sustainable and reflects the unique characteristics of the resources that will be interconnecting.

The NYISO's Interconnection process was last enhanced and reformed back in 2019 with the Class Year Redesign, and a 2022 project will seek to better coordinate the interconnection process with expected transmission expansion. Additionally, FERC has initiated an Advance Notice of Proposed Rulemaking with regards to Transmission Planning and Interconnection. It is expected that FERC will issue a final Notice of Proposed Rulemaking (NOPR) by the end of 2022 resulting in a compliance directive for the RTO/ISOs. While these initiatives have and are expected to result in increased efficiencies, there are additional opportunities for reforms and enhancements that build upon these initiatives (i.e., 2019 Class-year redesign, 2022 project, and expected FERC NOPR).

Due to a large influx of new projects to the Interconnection Queue, the complete study process has become overly lengthy, with high numbers of withdrawals from the queue. Longer timelines create queue churn, wherein potential generators will submit a large number of projects in the

hopes of seeing 2 or 3 make it through the process. This leads to longer study timelines. And a feedback loop is created.

As the volume of new resources seeking to interconnect to the system rapidly grows, it is paramount that the NYISO seeks to continue to enhance the interconnection process to be the most efficient and sustainable possible.

11.2 Project Objective(s) & Anticipated Deliverable(s)

The project will first study and identify opportunities for improvement to the interconnection process by working with key stakeholders (i.e., Interconnecting Developers, Transmission Owners, and NYISO Planning department). As part of this initial phase of the project, it will be important to identify aspects that are included as part of the expected FERC NOPR. This will help the project avoid any duplicative work and ensure it is operating in coordination with other interconnection initiatives. These identified opportunities will then be prioritized to create a plan that identifies a timeline for their implementation. The project will culminate in a final proposal for the enhancement of the interconnection process. The 2023 project deliverable for this project will be Issue Discovery.

The areas identified for improvement would range from simple process improvements, to updating study procedures, to tariff modifications.

Areas to be addressed should include but not be limited to the following:

- Evaluate current COD requirements to accommodate longer development timeframes (e.g., Off-shore wind)
- Stakeholder Communications
    - Portal Improvement
    - Improved response time to inquiries
- Study process improvements
    - Determine how to speed up SRIS process
    - Determine the need for SRIS Cluster analysis
    - Improve cost estimate accuracy
    - Determine how Developers and NYISO can use consultants to expedite SRIS process
    - Standardize agreements and milestone templates across all TOs
    - Improve facilitation of LGIA process

The proposed enhancements would result in an interconnection process that is sustainable, efficient, and designed to support the state of New York's energy transition goals. The 2023 project milestone would be a Market Design Complete.

11.3 Project Justification

Enhancements to the NYISO Interconnection process result in efficiencies that reduce time, decrease uncertainty, and reduce the risk that the interconnection process imposes upon new resources. This risk creates uncertainty for entrants, which is most often reflected in costs, and a need to overcompensate with additional projects. By reducing this risk, a positive feedback loop could be created, fewer interconnection requests would be required, timelines would shrink, and the process would become more efficient. Additionally, the NYISO is facing an unprecedented challenge associated with the drastic increase in workload due to the volume of projects needing to interconnect while also experiencing staffing challenges. Therefore, any increase in efficiency would support the NYISO in their essential function of the reliable interconnection of new resources.

12 LCR Optimizer Enhancements

12.1 Problem/Opportunity

In 2017 and 2018, the NYISO worked with stakeholders to design and implement a proposal to set Locational Capacity Requirements (LCRs) based on both the Resource Adequacy criterion of maintaining a Loss of Load Expectation of no greater than one event-day in 10 years, as well as an economic cost minimization of those requirements based upon a set of Net Cost of New Entry (Net CONE) curves developed based upon the proxy technology underpinning the ICAP Demand Curve Reference Points. This effort, called the Alternative Methods for Determining LCRs, was intended to produce a robust, transparent, and intuitive process for maintaining reliability, while producing a lower cost solution in comparison to the previous method for developing LCRs, called the Tan 45 methodology.

Since the new methodology has been implemented, multiple concerns have been raised about the methodology and the resulting LCRs about the stability of the LCRs and the transparency of the optimization function. Re-examining this process and the methodology could lead to improvements in the stability and transparency of the LCRs.

12.2 Project Objective(s) & Anticipated Deliverable(s)

The objective of this project is to examine the process used today to optimize the setting of Location Capacity Requirements and develop any necessary modifications and enhancements to the process. The milestone for 2023 is a Market Design Complete.

12.3 Project Justification

This project will seek to further enhance the LCR methodology to improve stability and transparency of the LCRs.

13 Storage as Transmission – Requested by Stakeholders

13.1 Problem / Opportunity

The unique characteristics of energy storage allow these assets to provide many potential services to grid operators. During normal operation, storage often has very positive impacts on transmission systems by relieving peak demand through injections and reducing congestion through off-peak charging to bring power where it will be needed later. Currently, the NYISO tariffs treat storage as a Generator. In some instances, storage used exclusively as a transmission asset could provide a faster and cheaper option for providing the same or similar services as traditional alternatives, while providing valuable optionality to scale or augment project size or operation in the future. There is currently no pathway by which a storage project could be evaluated through the interconnection process as a transmission asset, and no methods by which to operate a storage asset as transmission. Furthermore, market rules for such projects would need to consider what impact market participation may have to avoid double payment while allowing for flexibility and reduced revenue requirements through traditional rate-basing mechanisms. Finally, the project should consider options for cost recovery for storage as transmission, while evaluating participation of storage in various transmission use cases.

13.2 Project Objective(s) & Anticipated Deliverable(s)

This project has two primary components. The first component would have the NYISO develop a process by which a storage project could progress through the interconnection queue while being considered and evaluated as a transmission asset, including options for cost recovery. The second component would have the NYISO develop rules and methods for operating the storage as a transmission asset, taking multi-use and double payment issues into consideration, as well as the various use cases. These components are related and may depend on one another.

This process should include discussions with developers in this space, review of the literature from FERC on the issue, and consideration of similar projects in other jurisdictions. The 2023 project deliverable will be Issue Discovery, covering market rules for evaluating, interconnecting, and operation storage as a transmission asset.

13.3 Project Justification

Transmission upgrades may be necessary to ensure delivery of clean energy across New York's electric grid. However, transmission development is often difficult, expensive, and on very extended time frames. Utilizing storage as transmission provides another alternative for providing or enhancing these services on a shorter timescale and potentially at lower cost, while preserving valuable optionality in the process. Without a path forward and market rules, these projects are unlikely to be proposed or move forward, despite the significant potential benefits.

Mandatory

14 Ambient Adjusted Transmission Lines Ratings

14.1 Problem / Opportunity

FERC recently issued Order 881 to improve the accuracy and transparency of the transmission line ratings. This order results in both TOs and regional transmission organizations (RTOs) needing to implement a methodology to determine transmission line ratings that are ambiently adjusted on an hourly basis for all near term evaluations such as the DAM, RTM and Real-Time Security. This effort will require coordinated work by the TOs and NYISO, as the TOs, who are the rating authorities, will need to calculate the hourly ratings for their own use and then transmit them to the NYISO for use in the Energy Management System and Business Management System software and posted to the NYISO's public website.

14.2 Project Objective(s) & Anticipated Deliverable(s)

This project is a continuation of the 2022 FERC Ruling assessment effort and compliance filing. The 2023 project deliverable for this project will be Functional Requirements.

14.3 Project Justification

This project is a FERC mandate and therefore completion is required to comply with Order 881 by mid-2025.

15 Demand Curve Reset

15.1 Problem / Opportunity

Every four years, the NYISO, along with its stakeholder community, conducts a comprehensive review to determine the parameters used in establishing the ICAP Demand Curves. This process is referred to as the demand curve reset (DCR). As required by the tariff, the study includes an examination of potential peaking unit technologies and the financial parameters assumed in the construction and operation of that unit, along with an estimate of the projected profit earned in the Energy and Ancillary Service markets, to determine unit with the "lowest fixed costs and highest variable costs among all other units' technology that are economically viable" that serves in establishing values for each of the ICAP Demand Curves.

15.2 Project Objective(s) & Anticipated Deliverable(s)

This periodic review of the ICAP Demand Curves seeks to ensure that the capacity market continues to efficiently support reliability and send accurate, transparent price signals. The review is performed by engaging an independent consultant to lead the DCR process. In addition to providing recommendations for the parameters and assumptions used in establishing the ICAP Demand Curves, the consultant's efforts include evaluating the shape, slope, and zero crossing point for each ICAP Demand Curve.

The 2023 project deliverables will be Study Defined, which will include selecting an independent DCR consultant and posting the project schedule for completing the DCR.

The process DCR culminates in a filing on or before November 30, 2024, of the proposed curves for the first year of the reset period (i.e., the 2025/2026 Capability Year), along with the assumptions and methodology to be used to set demand curves for the subsequent three Capability Years of the reset period (i.e., the 2026/2027, 2027/2028 and 2028/2029 Capability Years).

15.3 Project Justification

The quadrennial DCR is mandated by the tariff. The DCR is a resource intensive process for both the NYISO and stakeholders that has a significant impact on the market as a whole.

16 DER Participation Model

16.1 Problem / Opportunity

Technological advancements and public policy support are encouraging greater adoption of DERs to meet consumer energy needs as well as system needs. DERs offer the potential to make load more dynamic and responsive to wholesale market price signals, potentially improving overall system efficiencies.

16.2 Project Objective(s) & Anticipated Deliverable(s)

In 2022, the NYISO is working on delivering software and infrastructure changes required to enable the participation of DER Aggregations in the NYISO Market. While most of the software changes are on track to be delivered in 2022, work on one to two key systems is likely to continue into 2023 and will require software deployment.

16.3 Project Justification

The 2023 software deployment will enable full participation of DERs in the NYISO Capacity, Energy, and Ancillary Services Markets.

17 FERC Order 2222 Compliance

17.1 Problem / Opportunity

NYISO's Q4 2022 DER Participation Model deployment scope includes only those features needed to operationalize the 2019 filed, 2020 FERC-approved market design. As a result, the requirements to implement NYISO's FERC Order No. 2222-compliant market rules were not included in the 2022 deployment scope. A FERC Order on NYISO's compliance filing will require modifications and additions to, the deployed DER Participation Model.

17.2 Project Objective(s) & Anticipated Deliverable(s)

Throughout 2020, 2021, and 2022, the NYISO completed software design consistent with the 2020 FERC-accepted tariff. NYISO also dedicated resources to drafting and filing market rules in compliance with Order No. 2222, including several engagements with MPs. In 2021, the NYISO submitted its compliance filing, responses to Comments submitted in response to the compliance filing, and a response to a request for additional data from the Commission.

In 2022, the NYISO will deploy the DER Participation Model. The NYISO is awaiting a final ruling from the Commission of its Order No. 2222 compliance proposals, while continuing to scope necessary enhancements. The project deliverable for this project for 2023 will be Market Design Concept Proposed to reflect requirements of Order No. 2222 compliance that were previously not in scope for the 2022 deployment.

This project's expected benefits are to allow the NYISO to cultivate a market that is accessible and competitive for DER, aligning with federal regulatory compliance requirements and New York State policy goals.

17.3 Project Justification

The NYISO has developed its DER Participation Model software requirements since 2020. The software infrastructure needed to implement the DER program was scoped based on the 2020 FERC-accepted market design. FERC's additional issuance of Order No. 2222 presents additional scope and challenges to the NYISO's previously approved market design.

The NYISO will continue to work with the Joint Utilities, New York Power Authority (NYPA), Long Island Power Authority (LIPA), municipal representatives, and the broader stakeholder community to achieve consensus on any new requirements as a result of FERC's Order on NYISO's Order No. 2222 compliance filing. This will build on the efforts and momentum of the 2022 NYISO manual and tariff updates initiative, and the previous discussions between NYISO and stakeholders on Order No. 2222 requirements.

This project will enable NYISO to review and incorporate market design features required by Order No. 2222 that were not previously included in the initial deployment of DER due to resource constraints and a lack of final ruling from the Commission.

The 2023 effort will enable NYISO's DER Participation Model to be fully compliant with the requirements of FERC Order No. 2222, while building on the participation model deployed in 2022 to support the 2020 FERC-accepted market design.

18 Long Mountain PAR Operating Protocol with ISO-NE

18.1 Problem / Opportunity

There is a planned PAR installation on the Long Mountain-Cricket Valley 345kV (#398) intertie between NYISO and ISO-NE by Q4 2023, which is an upgrade from the AC Public Policy Segment B project. The NYISO does not currently have an operating agreement with ISO-NE for this PAR.

Tariff revisions will be required to incorporate the new device. Longer-term operational plans for this PAR could include setting up a market-to-market PAR coordination program with ISO-NE.

18.2 Project Objective(s) & Anticipated Deliverable(s)

The objective of this project is to develop an operating protocol with ISO-NE for the new Long Mountain PAR. The project deliverable for 2023 will be Market Design Complete.

18.3 Project Justification

With the addition of a PAR on the NYISO/ISO-NE seam, an operating agreement is necessary to guide PAR control actions that reduce the overall cost of congestion and maintain reliability.

19 Modeling Improvements for Capacity Accreditation (SOM)

19.1 Problem / Opportunity

As part of the Improving Capacity Accreditation project discussed in 2021 and 2022, limitations in the NYISO's current resource adequacy analysis software (GE MARS) have been identified on modeling and accounting for attributes, such as correlated fuel unavailability for non-renewable resources or resources with long start up notifications. Resolving these limitations would enable more accurate calculations of the Resource Adequacy requirements needed to maintain reliability as well as the value of resources in meeting Resource Adequacy requirements.

19.2 Project Objective(s) & Anticipated Deliverable(s)

Working with stakeholders and the NYSRC, the 2023 effort will examine methodologies and enhancements to GE MARS and the inputs to the Installed Reserve Margin and LCR database to model additional risk factors in the Resource Adequacy assessments and Capacity Accreditation calculations. The project deliverable for 2023 will be Functional Requirements.

19.3 Project Justification

This is a continuation of the work started with the Improving Capacity Accreditation project and will facilitate both the establishment of Installed Capacity Market Reserve Margins reflecting reliability risks not currently modeled by GE MARS as well as improved Capacity Market Accreditation Factors for resources with these operating characteristics.

Continuing

20 Improving Capacity Accreditation (SOM)

20.1 Problem / Opportunity

The resource mix is evolving and the NYISO's markets need to continue to accurately value resources for the attributes they provide in meeting system reliability. Specifically for the Installed Capacity market, a review of resource adequacy concepts including the determination of capacity requirements as well as resources' contribution to reliability is needed.

As the resource mix transitions to one more dependent on resources that rely on the sun or wind to produce energy and/or resources with energy limitations, each resources' contribution to reliability also evolves. 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 resource adequacy contribution of all resources must be reviewed as the diversity and performance of the resource mix changes and must be accurately reflected in the Installed Capacity market and its processes.

20.2 Project Objective(s) & Anticipated Deliverable(s)

The objective for this project would be to expand on the principles established with the Expanding Capacity Eligibility, Tailored Availability Metric, and Capacity Valuation projects to apply to all resources. The project deliverable for 2023 will be Deploy.

20.3 Project Justification

Properly valuing resources' contribution to maintaining grid reliability, known as capacity accreditation, will provide the signals necessary to maintain a diverse resource mix. Enhancing these capacity accreditation measures will allows the Installed Capacity market to continue to support grid reliability as the transition of the resource mix unfolds.

21 Internal Controllable Lines

21.1 Problem / Opportunity

As of April 2022, there are no internal controllable lines in operation within the NYCA. Although the NYISO has high-level rules to allow Internal Unforced Capacity Deliverability Rights (UDRs) to

participate within the ICAP Market, these rules also have gaps including, but not limited to, the determination of requirements for providing capacity on the Internal UDR and the determination of obligations for the Internal UDR that sells capacity.

Additionally, market rules for the scheduling and pricing of internal controllable lines within the Energy Market do not exist.

21.2 Project Objective(s) & Anticipated Deliverable(s)

The development of market rules for internal controllable lines that will support outcomes in the best interests of all stakeholders is needed. This project would begin with developing market rules for the scheduling and pricing of internal controllable lines within the Energy Market. Based on these newly developed rules, the NYISO would evaluate and, if necessary, revise the existing ICAP market rules for Internal UDRs to ensure compatibility with the expected operation of internal controllable lines in the Energy Market. These newly developed rules must also consider how internal controllable lines could be used to support state and local programs.

This project would build upon the 2022 Market Design Concept Proposed and develop the market rule changes that would be necessary to incorporate point-to-point internal controllable lines into NYISO markets. This project will proceed to a Market Design Complete and at a minimum present the full set of market rules to the Business Issues Committee in 2023.

21.3 Project Justification

State and local initiatives such as Tier 4 REC procurements and NYC Local Law 97 provide incentives for developers to deliver renewable generation into congested areas using HVDC lines.