

NYISO Project Prioritization 2021

Please score the projects that your organization believes are the most important for the NYISO to pursue in 2022. All Survey responses and comments will be made public and posted with Budget and Priorities Working Group materials after the survey due date of June 25, 2021.

- You have a total of 100 points to allocate to as many projects as you like. Please only use POSITIVE whole numbers and no decimals. Negative numbers are not accepted.
- Click on the project title to display a description. To minimize the description, click on the project title again.
- There is an area under each project to add any comments pertaining to that project.
- You may share your link with your colleagues to work collaboratively on scoring prior to submitting your scores.
- Any questions, please reach out to Brian Hurysz at bhurysz@nyiso.com or 518-461-6405.

The organization you are completing this survey for is: <Company Name>

1. 15-Minute Transactions Enhancement – Requested by HQUS

1.1 Problem / Opportunity

Intra-hourly transactions allow market participants at eligible proxy buses to submit 15-minute bid curves for each of the four quarter hours. Real-Time Commitment (RTC) RTC software establishes binding external transaction schedules on each external interface for each quarter hour. RTD treats the RTC schedules as fixed interchange (irrespective of price), and Real-Time Dispatch (RTD) prices are used to settle these transactions. This leads to a risk of discrepancy between RTC and RTD, as RTD prices may be higher or lower than the RTC price that was

used to establish interchange schedules. This dynamic therefore can affect the usage of 15-minute transactions compared to Day-Ahead transaction bids.

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

The 2022 project will develop and propose market rules to settle 15-minute transactions at RTC prices rather than RTD prices and will have a deliverable of Market Design Complete.

1.3 Project Justification

This effort would reduce trading risk associated with the difference between RTC and RTD prices and would provide additional incentive for market participants to bid intra-hourly transactions. The increase in intra-hourly transaction bids would thus provide the NYISO with greater scheduling flexibility to respond to changing real-time conditions. : _____ (1)

2. 5 Minute Transaction Scheduling – Requested by HQUS

2.1 Problem / Opportunity

Currently, interchange with external control areas is achieved on either a 15-minute or an hourly basis using the NYISO's RTC software. A significant portion of Internal Generation is scheduled every five minutes. More frequent interchange scheduling with external control areas could notably improve convergence between prices in RTC and Real-Time Dispatch RTD and provide additional balancing and/or ramping capabilities. With increased penetration of intermittent renewables, 5 minute transactions would provide greater flexibility to RTD and would create more consistency between internal and external resource scheduling.

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

The project builds upon the study completed in 2020 that evaluated the feasibility for scheduling every five minutes with external control areas. This project will expand upon the recommendation from the study by developing market rules and a mechanism to schedule interchange every five minutes using the RTD with Hydro-Quebec. This will include evaluating the benefits of a transaction vs. generator model in greater detail. The 2022 deliverable will be a Market Design Concept Proposed.

2.3 Project Justification

This market design is expected to improve price convergence between RTC and RTD, improve market efficiency by increasing the amount of available resources for dealing with real-time system changes and/or events. More frequent interchange scheduling that aligns with internal

generation scheduling frequencies will also help to alleviate top of hour and quarter-hour interchange discrepancies between RTC and RTD.

The added flexibility that more frequent interchange scheduling provides is particularly important with the State mandated requirements for renewable generation and other clean energy resources to replace the use of fossil fuel generation. : _____ (2)

3. Adjustment of Energy Offer/Bid Floor (SOM)

3.1 Problem / Opportunity

The bid and offer floor for internal resources and external transactions is negative \$1,000/MWh. Under rare conditions, the NYISO operators may have to reduce external interface limits and/or curtail external transactions to maintain transmission security on an external interface. In such cases, external transaction schedulers are effectively able to “buy” power at arbitrarily low price levels, resulting in uplift for NYISO customers. The MMU recommends raising the bid and offer

floor to a level that is closer to the range of potential avoided costs of supply for generation resources.

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

The project scope would be to investigate the impacts of increasing the offer floor for resources and the capping logic required to implement the change. The 2022 project deliverable would be Market Design Complete.

3.3 Project Justification

This project would potentially reduce uplift for NYISO customers by reducing the level of arbitrary low pricing that is not necessarily reflective of associated costs. : _____ (3)

4. Advancing NYISO Transparency - Requested by DC Energy

4.1 Problem / Opportunity

There is currently an incomplete set of information that is posted by NYISO. The additional data requested below can be posted publicly or protected through CEII protocols.

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

The following additional data should be posted by the NYISO.

1. State estimator modal and data including

- Topology
- Branch characteristics
- Branch flows

2. Transmission line rating for all transmission lines/facilities monitored, including when they change and why

3. DAM and RTM contingencies. The NYISO has a separate list of contingencies for DAM/RTM relative to what the NYISO models in the TCC auctions, and the NYISO only publishes the TCC contingencies.

The project will review the information requested to determine its classification (public, CEII, confidential, etc.), develop software to automate pulling the data from the appropriate system including working with vendors that support our systems for modifications, and developing

software to periodically post data in a manner that is designed to protect CEII and other Confidential Information. The 2022 project deliverable will be Deployment.

4.3 Project Justification

Open, transparent and competitive ISO markets are essential to facilitate efficient solutions and provides benefits to consumers. FERC has opined many times on the benefits transparent and competitive markets deliver.

- Commission’s conclusions in AD14-14 that transparency plays a critical role in improving price formation
- Without sufficient transparency, market participants may not have the tools necessary to critically analyze and discuss problems and identify potential solutions to market inefficiencies.
- Order No. 704 conclusion: [Such] policies [i.e., the Commission’s market-oriented policies for the wholesale natural gas industries] require that interested persons have broad confidence that reported market prices accurately reflect the interplay of legitimate market forces. Without confidence in the basic processes of price formation, market participants cannot have faith in the value of their transactions, the public cannot believe that the prices they see are fair, and it is more difficult for the Commission to ensure that jurisdictional prices are “just and reasonable”. : _____ (4)

5. Capacity Demand Curve Adjustments

5.1 Problem / Opportunity

The existing quadrennial ICAP Demand Curve reset (DCR) process includes consideration of the slope and shape of the ICAP Demand Curves. However, the NYISO recommends a targeted effort outside of the quadrennial DCR process to review the efficacy of the current slope and shape used by the ICAP Demand Curves to evaluate whether alternative slopes and/or shapes would improve resource adequacy, grid reliability, and price formation.

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

This project would evaluate what, if any, changes to the current slope and/or shape of the ICAP Demand Curves may warrant further consideration. The milestone for 2022 would be Study Complete. If stakeholders and the NYISO intend on pursuing a change, the NYISO recommends completing this effort prior to the start of the next DCR in 2023.

5.3 Project Justification

The work effort and analysis required by the existing DCR process does not provide adequate time to conduct a detailed analysis of the existing ICAP Demand Curve structure’s efficacy. This standalone effort would afford stakeholders and the NYISO the chance to more fully evaluate whether a modified structure may improve resource adequacy and grid reliability. : _____ (5)

6. Constraint Specific Transmission Shortage Pricing (SOM)

6.1 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 them. The existing transmission constraint pricing logic applies a single graduated 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.

In 2018, the NYISO's Constraint Specific Transmission Demand Curves study concluded that certain enhancements to the current logic would be beneficial and should be further explored with stakeholders. Based on this study, it is expected that the NYISO and its stakeholders will complete a Market Design in 2021 to utilize a revised and more graduated transmission demand curve mechanism that better accounts for the various non-zero CRM values assigned to facilities. Under this new construct, transmission demand curve prices will increase proportionally with the severity of transmission overloads. The design reduces occurrences of constraint relaxation by instead seeking to resolve constraints for internal facilities through use of a graduated transmission demand curve mechanism that includes pricing values for shortages that exceed applicable CRM values.

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

The 2022 deliverable for this project will be Functional Requirements.

6.3 Project Justification The transmission constraint pricing logic enables the NYISO's market software to re-dispatch suppliers efficiently in the short term to alleviate constraints, and incentivizes long-term investment in locations where suppliers could provide the greatest benefits. : _____ (6)

7. Coordination of Interconnection and Transmission Expansion Study

7.1 Problem / Opportunity

The NYISO supports several different interconnection and transmission expansion processes to evaluate the reliability impact of transmission and generation projects that seek to interconnect to FERC-jurisdictional interconnection facilities.

Certain transmission projects are evaluated under the Transmission Interconnection Procedures (TIP) in OATT Attachment P. Such Transmission Projects include all proposed transmission expansions of the New York State Transmission System, regardless of whether the Transmission Developer seeks cost allocation under the NYISO OATT or proposes a market-based project, other than: 1) a new transmission facility or upgrade to an existing transmission facility pursued by a Transmission Owner (TO) as part of a Local Transmission Plan (LTP) or NYPA transmission plan that is not subject to the NYISO's competitive selection process under Attachment Y and for which the TO is not seeking regional cost allocation under the NYISO

OATT, and 2) Class Year Transmission Projects seeking CRIS that fall under the NYISO Large Facility Interconnection Procedures in Attachment X to the NYISO OATT.

Other transmission projects are evaluated under OATT 3.7 and would include, for example, LTP projects and NYPA transmission plan projects.

All new Large Generating Facilities and Class Year Transmission Projects that propose to interconnect to the NYS Transmission System or Distribution System are subject to the NYISO interconnection procedures in OATT Attachments S and X. Also, projects that materially increase the capacity of an existing Large Generating Facility or Class Year Transmission Project that is interconnected to the NYS Transmission System or Distribution System, or to make a material modification to the operating characteristics of such Large Facilities, also are subject to the NYISO's interconnection procedures. Similarly, Small Generating Facilities that propose to interconnect to the NYS Transmission System or Distribution System are subject to the NYISO's interconnection procedures in OATT Attachment Z.

Each set of interconnection and transmission expansion procedures has base case inclusion rules that establish the updated base case at the start of each study. As a result, it is conceivable for projects to proceed in different interconnection study processes without taking into account projects in another study process that could directly impact each other. The chance of this circumstance occurring is now more likely to be encountered given the transformation of the grid that will be needed to meet CLCPA requirements.

In addition, the NYISO's interconnection procedures provide a mechanism for updates to the Connecting Transmission Owner's system representation, including distribution level updates provided by the Connecting Transmission Owner. With the increasing number of distribution-level interconnections proceeding outside the NYISO interconnection queue, it is important to capture the collective reliability impacts of projects in both NYISO and TO interconnection queues.

Revising the interconnection and transmission expansion tariffs to provide for coordination among the various processes – both NYISO and Connecting Transmission Owner interconnection study processes – would mitigate the potential for inconsistent treatment among

projects developers, would provide for more comprehensive study results, and would help avoid not having an explicit tariff process to address the potential for interactions between projects in different processes.

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

The 2022 deliverable for this project would be Market Design Complete.

- Tariff Updates
- Potential for identification of new requirements for Salesforce Portal

7.3 Project Justification

In addition to the benefits described in the objectives above, this project would also lead to improved efficiencies of the interconnection study process. : _____ (7)

8. CRIS Expiration Evaluation

8.1 Problem / Opportunity

As part of the Class Year Redesign project, the NYISO identified proposals providing for more stringent 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 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.

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

Continuing the work from the 2021, the objective of this project is to develop modifications to CRIS Expiration rules as well as the rules surrounding CRIS Transfers. The milestone for 2022 is a Market Design Complete.

8.3 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. : _____ (8)

9. Demand Curve Translation Enhancement (SOM)

9.1 Problem / Opportunity

The ICAP Demand Curves are based on the net cost of new entry (Net CONE) for the demand curve unit for each curve (referred to as a “peaking plant”). These Net CONE costs are estimated in ICAP-terms and then converted into Unforced Capacity (UCAP)-terms based on the regional average derating factor, which reflects the forced outage rates of the existing fleet as well as UCAP-ICAP ratios of intermittent resources. Since the peaking plant is expected to have a low forced outage rate, this method leads the monthly UCAP-based curves to be set higher than if the derating factor of the peaking plant for each curve were used. This inconsistency is expected to be more pronounced as additional intermittent resources are added to the system.

9.2 Project Objective(s) & Anticipated Deliverable(s) This project will investigate the implications of revising the ICAP to UCAP conversion methodology to utilize the estimated forced outage rate of the peaking plant for each ICAP Demand Curve. Findings and resulting suggestions will be reported and discussed with stakeholders. The project deliverable for 2022 will be Market Design Complete.

9.3 Project Justification Given the upcoming changes planned for the New York grid, ensuring an appropriate method for ICAP to UCAP translation for the ICAP Demand Curves will be important for maintaining reliability and sending accurate market signals in the ICAP market. : _____ (9)

10. Dynamic Reserves (SOM)

10.1 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 by (i) scheduling energy above minimum operating reserve requirements from individual suppliers when sufficient reserves are available or (ii) shifting reserve procurements to lower-cost regions when transmission capability exists.

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.

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.

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

The market design will seek to leverage the recommendations from the study being conducted in 2021 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. Additionally, if determined to be feasible in the prototyping effort as part of the 2021 study, such enhancements could facilitate the capability for reserves to be scheduled in more cost-effective regions if sufficient transmission capability is available to deliver the reserves to another location/reserve region, post-contingency. Finally, the 2021 study is expected to provide additional information regarding how to most efficiently incorporate potential reserve requirements within certain load pockets in New York City into the market software. The deliverable for this effort in 2022 will be Market Design Concept Proposed.

10.3 Project Justification

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].” A dynamic reserve procurement methodology could improve market efficiency by scheduling reserves in a less expensive region using available transmission capability to import power into a more constrained region post-contingency, rather than hold reserves in the more expensive reserve area. By scheduling reserves more dynamically, reserves could be shifted to resources in lower-cost regions as transmission capacity is made available or shifted to resources that are not export constrained. 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].” : _____ (10)

11. Eliminate Fees for CTS Transactions with PJM (SOM)

11.1 Problem / Opportunity Coordinated Transaction Scheduling (CTS) was introduced as a market design concept to allow wholesale market operators the ability to schedule efficient transactions based on close to real-time price information. The 2017 SOM report notes that overall performance of CTS improved significantly between 2016 and 2017, but that participation is still much stronger at the ISO-NE interface (where it is required) than the PJM interface (where it is optional). The lower utilization of CTS with PJM can partially be attributed to the relatively large fees that are charged to transactions between NYISO and PJM, while no substantial transmission charges or uplift charges on transactions are charged between New York and New England. The fees and uplift charges present an economic barrier to achieving potential benefits from CTS process at the PJM border. The cost of these fees are paid by load, regardless of whether it is charged to transactions because Market Participants (MPs) facilitating transactions must increase their bids to account for the fees.

11.2 Project Objective(s) & Anticipated Deliverable(s) This effort would seek to eliminate fees on CTS transactions at the NYISO and PJM interface, or alternatively minimize the fees applied by NY on CTS transactions. The 2022 deliverable for this effort will be Market Design Concept Proposed.

11.3 Project Justification Charging fees for transactions introduces an unnecessary cost into the marketplace. Eliminating or minimizing transaction fees with PJM would provide a market efficiency gain by setting a Locational Based Marginal Pricing (LBMP) at the border that better reflects the actual marginal cost of energy. : _____ (11)

12. Eliminate Offline GT Pricing (SOM)

12.1 Problem / Opportunity

The NYISO’s real-time market runs a dispatch model that updates prices and generator schedules every five minutes. Currently, the dispatch model treats 10-minute gas turbines (i.e., units capable of starting up in ten minutes) as if they can follow a 5-minute signal. The MMU has observed that this structure leads to inefficiencies since 10-minute gas turbines are unable to respond in five minutes. As a result, units may receive schedules they are incapable of following. This leads to periods of under-generation, inconsistencies between scheduled

transmission flows and actual flows, and inefficient prices that do not properly reflect the balance of supply and demand.

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

The 2022 deliverable for this project would be a Market Design Complete. The scope of this project would involve examining the implications of eliminating the currently existing offline GT pricing logic and presenting potential revisions to market rules to stakeholders.

12.3 Project Justification

This project could enhance market efficiency by better aligning price signals and schedules with operational needs and resource capabilities. : _____ (12)

13. Engaging the Demand Side

13.1 Problem / Opportunity

Engaging consumers to assume greater control of their energy use will help to balance increasing penetration of intermittent generation supporting New York State's zero emission policies. The NYISO's Demand Response programs and DER participation model offer end-users the opportunity to "supply" energy to the wholesale markets. The NYISO also offers Load Serving Entities the opportunity to offer Price-Responsive Load in the DAM. Historically, Price-Responsive Load Bids have constituted only a fraction of total Load by volume.

The NYISO desires to enhance incentives for Load Serving Entities to modulate Load in response to price. Robust participation of flexible, price-responsive Load in both DAM and RTM may provide another tool to balance the NYCA system, address resource intermittency, and support ancillary service providers.

The NYISO's effort to incent flexible Load will include coordination with utilities and the New York State Department of Public Service. Improvements to consumer metering, communication platforms, and access to retail real-time rates are likely to improve end-user load flexibility, and therefore, Load Serving Entity flexibility. These enhancements have the potential to provide end-use consumers with visibility to real-time prices and the opportunity to make informed decisions about when and how to consume energy.

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

The NYISO will work with both internal and external stakeholders to study opportunities for enhanced Load flexibility in the wholesale markets. 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. Evaluation of potential changes to Special Case Resources program to better align with the operational needs may also be considered. Opportunities identified in this effort can then be evaluated to determine whether they merit

future market design enhancements. The 2022 deliverable for this project will be Study Complete.

13.3 Project Justification

The NYISO-administered markets may benefit from flexible, price-responsive Load. End-use customers that understand their consumption patterns and have access to real-time prices are enabled to modify behaviors to take advantage of dynamic pricing. 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 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. : _____ (13)

14. Enhanced BSM Forecasts Assumptions (SOM)

14.1 Problem / Opportunity

The "Part A" and "Part B" mitigation exemption tests require the NYISO to forecast energy and capacity market revenues. These forecasts are dependent on whether proposed and existing generating units and UDRs are treated as in service (among other things) when forecasting market outcomes. Current revenue forecast inclusion rules inform the inclusion of new units and exit of existing units based upon unit costs and certain market factors that inform the likelihood of the entry and exit.

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

This project will evaluate proposed revisions to the forecast inclusion rules in order to improve the economic forecast to better reflect market conditions. The project goal for 2022 would be Market Design Concept Proposed.

14.3 Project Justification

This project is proceeding in conjunction with the ongoing Comprehensive Mitigation Review effort. This project would seek to enhance the rules for including new entry and exit of generators in the forecasting models in order to result in a more accurate BSM determination, which would improve the balance between over- and under-mitigation. : _____ (14)

15. Expanding Application of Peak Hour Forecasts

15.1 Problem / Opportunity

In 2021, the NYISO and its stakeholders collaborated to produce a Market Design Concept Proposal (MDCP) for Expanding Application of Peak Hour Forecasts. This project does not propose to change the NYISO processes to develop the ICAP market forecast, nor does it

propose to change the IRM study. Instead, this project will consider whether to build upon the MDCP to allocate ICAP obligations based on multiple peak load hours.

Current practice dictates that the Transmission Owners share out their capacity obligation to their LSEs based on the measured share of load consumed by each LSE during the NYCA peak load hour. Using multiple peak and near-peak load hours to allocate obligations within a Transmission District may improve this process and create more robustly defined and consistent LSE shares.

Basing any given customer's capacity cost responsibility on metered demand during a single hour or day can place too much weight on an idiosyncratic, random event and not accurately measure the true impact that a customer's use has on the system's capacity need. Using multiple peak load hours would be more stable, and more reflective of long run cost causation.

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

The NYISO and its stakeholders will move forward to Market Design Complete as part of this project, with the objective of balancing the incentive of flexible load to reduce demand during the peak hour with the fair and equitable allocation of costs. This project will further investigate the issues pertaining to capacity obligation shares over multiple peak-type hours to inform a further developed set of market design rules, including tariff revisions.

15.3 Project Justification

Many other jurisdictions consider more than a single hour when determining peak obligations for demand and resources. Ensuring the determination of peak load hours used for capacity allocations is robust will be important for maintaining reliability, as well as fair and equitable. :
_____ (15)

16. Grid Services from Renewable Generators – Requested by NYSERDA

16.1 Problem / Opportunity

According to two recent studies by the California Independent System Operator, National Renewable Energy Laboratory, General Electric, Avangrid Renewables, and First Solar, wind and solar resources equipped with inverter controls may be capable of providing certain grid services, including regulation, voltage control, frequency response, and ramping. In 2021, the NYISO is performing a study to evaluate the capabilities of renewable generators to provide grid services under the "Grid Services from Renewable Generators" project.

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

This project will develop market concepts based on the findings of the 2021 study. The 2022 deliverable for this project will be a Market Design Concept Proposed.

16.3 Project Justification

Significant quantities of renewable generation will be required to meet the targets in the CLCPA. These renewable generators may also have the ability to provide grid services, thereby

decreasing the cost of renewable integration while decarbonizing the provision of many essential reliability services. Developing market concepts would elevate the ability of renewable generators to provide grid services, while also supporting reliable grid operations. : _____ (16)

17. Hybrid Aggregation Model

17.1 Problem / Opportunity

The NYISO's market rules do not currently allow an ESR and another Generator to be co-located at a single point of interconnection and share the same point identifier (PTID). Instead, where an ESR and another Generator are co-located behind the same point of interconnection, each resource type must be separately metered and have its own PTID.

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

This project is distinct from the DER and ESR Integration initiatives, but it will build on work completed as part of those initiatives. This project is a continuation of the 2021 Market Design Complete effort. The 2022 project deliverable is Functional Requirements.

17.3 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 2020 deliverable developed a market participation model(s) 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 2022 deliverable will establish the functional requirements necessary to implement a new market participation model to improve grid flexibility and resilience by enabling new resource types to provide their full capabilities. : _____ (17)

18. Improved Duct-Firing Cycle Modeling (SOM)

18.1 Problem / Opportunity

Combined-cycle generators with duct-firing capability are able to offer such capability into the NYISO's RTM as a portion of their dispatchable range. However, a generator's duct-firing capacity is generally not capable of following a 5-minute dispatch or a 6-second regulation signal. Many generators with duct-firing capability do not offer it into the RTM, while others may self-schedule this capacity inflexibly. Further, a generator may not be able to provide the expected energy during a reserve pickup event when dispatched into its duct-burning range. Enhancing the scheduling of duct-fired capability into the RTM would more accurately reflect the operational characteristics of combined-cycle generators. Additionally, this enhanced scheduling

capability could increase the availability of operating reserves and regulation service associated with such capability.

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

The 2022 project deliverable would be Market Design Complete. The study would evaluate the market enhancements that would be required for a combined-cycle generator to reflect its operating characteristics in the duct-burning range as well as the benefits of this functionality.

18.3 Project Justification

The project would seek to evaluate the enhancements to the scheduling of a generator's duct firing range capacity that would provide more flexibility for a unit to respond to 5-minute dispatch signals and increase the availability of operating reserves. : _____ (18)

19. Improving Capacity Accreditation (SOM)

19.1 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.

19.2 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 deliverable for 2022 would be a Market Design Concept Proposed.

19.3 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 allow the Installed Capacity market to continue to support grid reliability as the transition of the resource mix unfolds. : _____ (19)

20. Internal Controllable Lines

20.1 Problem / Opportunity

As of April 2021, there are no internal controllable lines in operation within the NYCA. Although 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.

20.2 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 will proceed to a Market Design Complete on a point-to-point internal controllable line and complete an assessment on the feasibility of implementing a multi-terminal internal controllable line, and at a minimum present the full set of market rules to the Business Issues Committee in 2022. This would allow the NYISO to proceed with a market design on a point-to-point internal controllable lines if it is determined that the multi-terminal line problem is extremely complicated, but allow the NYISO to complete a market design for both point-to-point and multi-terminal internal controllable lines if no issues are found.

20.3 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. The 2022 deliverable will create new market participation rules for the operation of internal controllable lines. : _____ (20)

21. Lines in Series Constraint Pricing

21.1 Problem / Opportunity

The NYISO developed a process to determine and incorporate transmission facilities into the market models. Following the incorporation of new facilities, the NYISO identified that some of the new facilities consisted of line segments that make up the same transmission line. These

line segments are known as being “in-series.” It was observed in real time that some of these line segments were binding and being priced via the existing graduated transmission demand curve mechanism due to a lack of available physical resources capable of providing the needed relief. Other line segments that are in-series with the binding facility were observed to be binding simultaneously. Therefore, they were also being priced by the graduated transmission demand curve mechanism.

The graduated transmission demand curve mechanism as currently implemented applies needed relief from the demand curve to an individual facility in an isolated fashion. Therefore, any relief provided by the demand curve applies only to a particular constrained line segment without consideration of the corresponding impacts that such relief may have on other, lesser overloaded line segments. In contrast, if a physical resource were available to provide relief under similar conditions, the market software would account for the relief available from the physical resource when assessing multiple constraints on a single line segment, as well as the ability of the physical resource to simultaneously provide relief to in-series line segments.

As a result, in September 2019, the NYISO removed a number of in-series line segments from the market model so that the normally most limiting line segment among the segments in-series is modeled in the market. This solution reduced the impact of multiple constraints in-series from being priced by the graduated transmission demand curve mechanism simultaneously, but this method is not as dynamic or robust as allowing the relief provided by the graduated transmission demand curve to be accounted for on other facilities.

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

The 2022 project deliverable would be a Study Complete that evaluates the feasibility for a more dynamic solution. However, the design and implementation of this project will be dependent on the Constraint Transmission Shortage Pricing project.

21.3 Project Justification

A more dynamic solution to the current methodology for addressing the application of the graduated transmission demand curve mechanism to in-series line segments could enable all of

the line facilities that are in-series to be modeled in the market model while ensuring appropriate and efficient pricing outcomes. : _____ (21)

22. Locational Marginal Pricing of Capacity (SOM)

22.1 Problem / Opportunity

An opportunity exists to better align capacity market clearing prices with the marginal reliability value of capacity in each Locality. Achieving this alignment could lower overall costs of satisfying capacity needs.

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

The objective for this project would be to devise a capacity pricing framework where the clearing price at each location is set in accordance with the marginal reliability value of capacity at the location. The deliverable for 2022 would be a Market Design Concept Proposed.

22.3 Project Justification

This proposal could reduce the costs of satisfying resource adequacy needs, facilitate more efficient investment and retirement decisions, and be more adaptable to changes in resource mix (i.e., increasing penetration of wind, solar, and energy storage). It may also lead to capacity pricing outcomes that are difficult to anticipate and a market that is administratively complex. : _____ (22)

23. Long Island Reserve Constraint Pricing (SOM)

23.1 Problem / Opportunity

The Day-Ahead Market (DAM) and Real-Time Market (RTM) schedule resources to satisfy reserve requirements, including specific requirements for 10-minute spinning reserves, 10-minute total reserves, and 30-minute total reserves on Long Island. However, reserve providers on Long Island are currently paid based on the clearing prices for the larger Southeastern New York (SENY) reserve region (Load Zones G-K).

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

The project scope would include conducting a study to further evaluate the current compensation rules for Long Island reserve providers, and whether revisions thereto may be reasonable and provide for improved efficiency in pricing outcomes and performance incentives

for Long Island reserve providers. The 2022 project deliverable would be a Market Design Complete.

23.3 Project Justification

The project would seek to evaluate whether revisions to the current compensation rules for Long Island reserve providers may better reflect the value of reserve capability on Long Island. : _____ (23)

24. Monthly Demand Curves (SOM)

24.1 Problem / Opportunity

The capacity market is divided into summer and winter Capability Periods of six months. Within each Capability Period, the capacity requirements and Demand Curves remain constant, although the reliability value of resources is much greater in high-demand months (e.g., July) than in low-demand months (e.g., October). The constant Demand Curves ensures that resource owners have an incentive to coordinate their planned outages through the NYISO outage scheduling process throughout the year; however, it may lead to inefficient incentives for resources that are not consistently available during all 12 months of the year. There may be value in setting the Demand Curves in a manner that allocates the annual net cost of new entry value in proportion to the marginal reliability value of capacity across the 12 months of the year.

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

This project will evaluate the implications of translating the annual net cost of new entry value into monthly capacity Demand Curves. Findings and resulting suggestions will be reported and discussed with stakeholders. The project deliverable for 2022 will be Issue Discovery.

24.3 Project Justification

This effort would concentrate incentives for resources to sell capacity into New York during the months when the reliability value of capacity is greatest. This change would also enable flexibility in the ability to allocate incentives to different months, as the evolution of the New York generating fleet may drive changes in which months carry the peak demand. : _____ (24)

25. More Granular Operating Reserves (SOM)

25.1 Problem / Opportunity

In 2020, the NYISO proposed enhancements to implement reserve requirements for certain load pockets within New York City to provide location-specific market signals consistent with reliability needs. In 2021, as part of the Reserve Enhancements for Constrained Areas study, the NYISO investigated the feasibility of modeling local reserve requirements in New York City load pockets based on available transmission capability. These new requirements would account for the flexibility of the grid to respond to system needs by utilizing the transmission system to import capacity into generation-constrained regions. Additionally, load pocket

reserves could provide further incentives for resources to locate in important, supply constrained areas of the NYCA.

As the potential implementation of load pocket reserve requirements is considered, a dynamic reserve procurement methodology that does not exist today is an important pre-requisite to improve market efficiency, better aligning market outcomes with how the power system is operated, and avoid the potential for unnecessary price volatility.

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

The 2022 project deliverable will be Market Design Concept Proposed. The More Granular Operation Reserves design and implementation would be dependent on the market design for Dynamic Reserves in 2022.

25.3 Project Justification

The MMU has recommended that the NYISO “[m]odel local reserve requirements in New York City load pockets [Recommendation 2017-1].” This effort has also been identified as beneficial in both the 2018 Performance Assurance Management Response and the 2017 Integrating Public Policy Market Assessment Report. Additionally, this effort will reflect the locational reliability value provided by resources in certain load pockets within New York City. : _____
(25)

26. Multi-Level References

26.1 Problem / Opportunity

This project supports the gas electric system coordination by providing more sophisticated and efficient methods for MPs and the NYISO to model generator fuel availability, fuel costs, and operational situations.

The enhanced functionality will also allow the MMU and Market Mitigation and Analysis Department to more effectively implement tariff requirements, allow greater flexibility in creation of references to meet market conditions, and provide additional transparency to MPs. This will allow for more accurate reference levels for non-traditional generation (e.g., DER, CSR, Hybrid Storage resources).

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

This project will implement several functional enhancements to the Reference Level Software (RLS) web application as well as the Reference Calculation Engine. Some functional

enhancements include allowing multiple fuels for a single reference and cost adjustment reports. The project deliverable for 2022 will be completion of Functional Requirements.

26.3 Project Justification

The functional enhancements will allow MMA analysts a greater ability to quickly and accurately identify potential problems with reference levels, which could subsequently lead to erroneous mitigations potentially affecting both LBMP and uplift. : _____ (26)

27. Expanding Peak Hour Forecasts

27.1 Problem / Opportunity

The NYISO currently conducts Centralized Transmission Congestion Contracts (TCC) Auctions twice each year. In each of those auctions longer duration TCCs (six-month, one-year, and/or two-year) are available for purchase. However, TCCs covering periods shorter than six months are not available in those auctions. Instead, MPs wishing to purchase shorter-term TCCs must do so in the Reconfiguration Auctions, which are held each month. Reconfiguration Auctions may be conducted as either single month auctions or Balance-of-Period (BoP) Auctions. BoP Auctions encompass all remaining months of the applicable Capability Period.

Currently, the NYISO's tariffs require that all transmission capacity not associated with Existing Transmission Agreements or outstanding TCCs and not reserved through conversion of Existing Transmission Capacity for Native Load (ETCNL) to ETCNL TCCs or Residual Capacity Reservation Rights (RCRR) to RCRR TCCs be made available for sale in the Centralized TCC Auctions. As a result, the opportunity for MPs to acquire shorter-term TCCs in BoP Auctions may be significantly limited. Other ISO/RTOs reserve some transmission capacity for sale in their monthly Financial Transmission Right auctions.

Consequently, this proposal seeks to build upon the 2020 and 2021 project efforts related to the development of software and rule/procedure revisions to permit the NYISO to reserve a portion of available system transfer capability, which it would then release into the BoP Auctions. Such functionality would permit auction participants to purchase additional shorter-term TCCs in the BoP Auctions.

27.2 Project Objective(s) & Anticipated Deliverable(s) This project is intended to build on the efforts undertaken in 2020 and 2021 to develop market rule changes to accommodate the potential for reserving a portion of otherwise available transmission capacity for release in the BoP Auctions. The project will complete the software changes to the TCC Automated Market

System and other associated systems needed to support the market changes in 2022, and the deliverable will be Development Complete.

27.3 Project Justification Today the TCC Automated Market System and other supporting systems do not support the reservation of transmission Capacity for sale in BoP Auctions. The proposed solution is intended to:

- Address stakeholder requests for such enhancements to the current TCC auction design, as auction participants have consistently indicated interest in reserving transfer capability for release in BoP Auctions; and
- Provide additional opportunities for interested parties to obtain shorter-duration TCCs because it would remove a constraint that limits the availability of shorter-term TCCs in the BoP Auctions. : _____ (27)

28. Storage as Transmission – Requested by NYSERDA

28.1 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. In some instances, storage used exclusively as a transmission asset may be able to 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. Current market rules treat storage as a Generator, and therefore as a resource. There is currently no pathway by which a storage project could be treated as providing a transmission function and therefore be compensated as transmission. 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 transmission rates. The project should also consider whether modifications to the interconnection and/or transmission expansion procedures would be required to accommodate such projects. Finally, the project should consider whether it is feasible for storage to provide a transmission function, and if so, whether compensation as a transmission asset in transmission rates is appropriate.

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

This project has two primary components. The first component would have the NYISO develop a process to consider whether storage could perform a transmission function and be operated as such, and if so, whether it is appropriate to provide compensation for storage in transmission rates. If such treatment is feasible, 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

deliverable of this project would be a report evaluating the feasibility of storage providing a transmission function and market rules for evaluating and operating storage as a transmission asset. The 2022 deliverable for this project would be Market Design Concept Proposed.

28.3 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. If it is feasible for storage to provide a transmission function, utilizing storage as transmission could provide another alternative for providing these services on a shorter timescale and potentially at lower cost, while preserving valuable optionality in the process. Such treatment would provide another path for storage to be integrated into the New York State power system. : _____ (28)

29. Time Differentiated TCCs – Requested by Calpine and Vitol

29.1 Problem / Opportunity

The project seeks to disaggregate the TCC product from its current 24-hour time span to include additional, more granular products covering shorter timeframes. This enhancement, which is a feature requested by certain Market Participants (MPs), is intended to improve the commercial function and forward congestion price transparency. Currently, the availability of only a 24-hour product may limit the effectiveness in serving as an efficient forward hedging mechanism against congestion for certain MPs' interests because it does not provide forward congestion price signals from TCC auctions that distinguish between the congestion patterns that can occur during different periods of the day or week. MPs could utilize more granular TCC products to tailor portfolios to better hedge congestion costs during different periods of the day or week. This additional flexibility could benefit MPs under current grid conditions, as well as future grid topologies with increased levels of intermittent resources, which have notable variations in output in daytime hours versus nighttime hours. Additionally, defining more granular TCCs may make other market design improvements possible.

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

This project's deliverable would be a Market Design Complete building upon the 2021 project efforts to develop a Market Design Concept Proposed and would include working with stakeholders to finalize market rule changes needed to facilitate the creation of TCC products that apply to different periods of time and the market design proposed in 2021.

Due to the potential increased complexity of multi-period granular TCC auctions, the implementation of more granular TCC products may depend on the automation of the Existing Transmission Capacity for Native Load (ETCNL) feasibility analysis process and the automation of an inventory system to calculate the remaining feasible ETCNL and Original Residual TCCs.

29.3 Project Justification

Breaking out the TCC product into time differentiated products may: (1) improve the commercial functionality of TCCs to provide tailored congestion hedges for all MPs, including intermittent

generation; (2) reduce the cost of congestion hedging for MPs; (3) improve forward congestion price signals from TCC auctions to distinguish between time periods where congestion patterns can vary; and (4) permit other market design improvements. : _____ (29)

30. Transmission Security in the ICAP Market

30.1 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 ICAP market, a review of reliability criteria used for the determination of minimum installed capacity requirements, as well as each resource's 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. Including Transmission Security more explicitly in the ICAP market can help send price signals to incent resources to meet both Transmission Security and Resource Adequacy requirements and avoid out of market constructs to maintain reliability.

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

The objective for this project would be to evaluate how to incorporate the impact the resource mix has on Transmission Security more holistically into the Installed Capacity market. The deliverable for 2022 would be Deployment to implement any approved changes.

30.3 Project Justification

The NYISO believes that expanding the measures of reliability used to establish installed capacity requirements by including Transmission Security could be a key to the future success of the Installed Capacity market to better facilitate the transition of the resource mix. : _____

(30)

Total : _____

Please enter any additional comments below:

Please provide any recommendations you may have for future enhancements to the Project Prioritization Process:

SUBMIT After clicking submit, you will be able to see a summary of your responses. After reviewing, if you wish to make any changes, you can click the left arrow and return to this page to make any changes.

SUBMIT2 Your project priorities will not be submitted until you click submit on this page. If you want to continue working, **DO NOT CLICK SUBMIT UNTIL YOU ARE COMPLETELY DONE** - you can click the left arrow below to edit your responses.

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