Please score the projects that your organization believes are the most important for the NYISO to pursue in 2020. 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, 2019.

- **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 and individual code 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 518-356-6126.**

The organization you are completing this survey for is: NYISO SPARE

Capacity Market Products

1. BSM Evaluation for Small Resources Outside of the Class Year (SOM)

1.1 Problem / Opportunity

Per the **2018 State of the Market Report for the New York ISO Markets,** Potomac Economics recommends, *"Application of the BSM Evaluation Process Outside the Class Year Process. In its recent compliance filing in response to Order 841: Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, the NYISO highlighted issues with applying the BSM measures to generators that do not go through the Class Year process because they are smaller than 2 MW. The BSM measures are currently applied within*

the Class Year process, which was designed for conventional generators that take years to develop and bring into commercial operation. However, battery storage projects and other short lead-time projects are capable of entering in just a few months, so we recommend the NYISO develop a set of procedures and requisite tariff changes for applying the BSM measures outside the Class Year process, perhaps on a quarterly cycle."

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1.2 Project Objective(s) & Anticipated Deliverable(s)
Per the **2018 State of the Market Report for the New York ISO Markets,** Potomac Economics 2018-4 recommendation is: *"Develop tariff provisions to perform Mitigation Exemption Tests outside the Class Year process for resources that are smaller than 2 MW."*

1.3 Project Justification
Recommended by Potomac Economics per the **2018 State of the Market Report for the New York ISO Markets.**

2. Capacity Zone Elimination - Submitted by Central Hudson

2.1 Problem / Opportunity
The current capacity market rules establish the methodology for the creation of new capacity zones based on a deliverability test. While these zones can be created, there is no methodology for zones, once created, to be eliminated once the deliverability issues have been addressed. While it is understood that under the current market construct prices may substantially converge with the prices in the Rest of State, if the zone is not eliminated, mitigation rules would continue to apply.

2.2 Project Objective(s) & Anticipated Deliverable(s)
The project should develop a simple and consistent methodology to trigger the elimination of a previously created capacity zone. This project should not be expanded to include a comprehensive review of the current zone creation process and merely address the market imbalance issue.

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2.3 Project Justification
This project would address the imbalance in the capacity market rules. In the current process zones can be created but not eliminated. The current LVH or G-J zone was never identified as a zone needed to ensure reliability and was not intended to be a permanent zone. Addressing this market issue with clear concise rules before the potential for market harm and well in advance of any potential zone elimination will provide transparency to the capacity market.

3. Class Year Redesign

3.1 Problem / Opportunity

The NYISO is developing a group of interrelated proposals as part of a Class Year/Interconnection Queue Redesign project. Proposals being developed as part of this project were initially discussed with stakeholders in Q1 2019, to be further vetted and refined through Q2 and Q3 2019, followed by tariff language in Q4 2019. The proposals aim to redesign the deliverability process, Class Year procedures, and other interconnection processes in order to expedite the interconnection studies, particularly the Class Year Study and deliverability evaluations. As part of that Class Year/Interconnection Queue Redesign project, the NYISO is proposing more stringent CRIS expiration rules. More stringent CRIS rules may change the frequency and level to which CRIS-inactivity is tracked and CRIS rights are expired. Contingent upon the final proposal and stakeholder approval, the NYISO needs to be able to administer the new CRIS expiration rules.

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

This project would create a new automated process for tracking resource's ICAP market participation on a rolling historic basis, consistent with new CRIS expiration rules, that may be approved and included in the tariff as part of the larger Class Year/Interconnection Queue Redesign project. The anticipated deliverable of this project includes:

- Functional Requirements: Q4 2020
- Deployment: Q4 2021

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3.3 Project Justification

This project would be required if FERC were to accept the NYISO's tariff filing of proposed revisions to its Open Assess Transmission Tariff ("OATT") for the Class Year/Interconnection Queue Redesign project. Automated tracking of resource participation in the ICAP market on a rolling historic basis consistent with the new rule that may be approved would increase market efficiency by reducing the risk to market outcomes that would be present if the NYISO were to rely on manually processes to track this high volume of data which becomes larger as resource mix diversity grows.

4. Comprehensive Mitigation Review

4.1 Problem / Opportunity

The Installed Capacity market has undergone significant changes in both design and resource mix since the NYISO's BSM measures were first implemented in May of 2008. While there have been many incremental changes to align mitigation measures with changes in the market, there has not been a holistic evaluation of the BSM rules and methodology to evaluate whether the current framework will be adequate in a future with significant renewable resources and policy objectives that impact the capacity market. The BSM rules were originally developed to evaluate traditional generation technologies funded primarily by privately owned capital, but new resource types such as battery storage, renewable generation and distributed energy resources (DER) are fundamentally different in design and operation. Additionally, these resources are more likely than traditional generator technologies to be partially funded by governmental entities to meet policy goals or promote environmental attributes. New rules and tests may be required to provide a better evaluation of these resources for instances of buyer-side market power and thus result in more accurate BSM determinations.

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

The NYISO will perform a comprehensive review to examine the current BSM framework and principles to determine whether the rules efficiently mitigate concerns of buyer-side market power for both traditional and new resource types with both private and public funding considerations. The 2020 goal for this project is to discuss with stakeholders the scope of a study, to be performed in 2021, along with a schedule for the work to be performed and the selection of a consultant to perform the study. As part of the review, alternative methods to perform the Mitigation Exemption Test for new resources and Additional CRIS projects will be considered.

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4.3 Project Justification

In its most recent Strategic Plan (2019-2023), the NYISO identified the "comprehensive review of the NYISO's existing market products and operational and planning practices" as a key strategic initiative. Evaluating the mitigation framework is an essential part to ensuring the efficiency of resource entry and exit as the generation mix rapidly changes in the coming years.

5. Enhanced BSM Forecasts Assumptions (SOM)

5.1 Problem / Opportunity

The “Part A” and “Part B” Test mitigation exemption tests (i.e., the economic tests) include energy and capacity markets forecasted market revenues that are dependent on the generating units that are modeled as in service (among other things). Current revenue forecast inclusion rules for generating units may model units that have exited the market and are unlikely to return as in service.

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

This project will propose to revise the forecast inclusion rules to improve the economic forecast. The project goal for 2020 would be Market Design Concept Proposed.

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5.3 Project Justification

This project would produce an improved set of inclusion rules will result in a more accurate determination, which as a result would better balance between over and under mitigation.

6. Enhanced BSM Mitigation Study Period

6.1 Problem / Opportunity

The Services Tariff currently states that all Examined Facilities in a Class Year will be assumed to enter the market beginning with the Summer Capability Period three years after the start of the Class Year; the three-year period beginning three years after the start of the Class Year is referred to as the Mitigation Study Period. This assumption is an oversimplification that was made in an effort to prevent gaming the mitigation tests (Mitigation Exemption Test). However, it is generally an inaccurate assumption that overestimates the timeline of some units, such as Additional CRIS projects, and can underestimate the timeline of larger projects. An inaccurate Mitigation Study Period will result in an inaccurate ICAP Forecast for the unit, and thus an inaccurate BSM determination. Aligning the Mitigation Study Period for each unit with what is realistically expected for that unit will provide more accurate Mitigation Exemption Test

determinations.

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

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This effort would continue discussions with stakeholders on the appropriateness of the current evaluation period used during the BSM process and would identify what, if any enhancements can be made to the existing timelines to more appropriately evaluate projects. The deliverable for this project is Market Design Complete.

6.3 Project Justification

Developing a more accurate Mitigation Study Period that aligns more closely with what is expected will improve the accuracy of mitigation determinations.

7. Enhancing Fuel and Energy Security

7.1 Problem / Opportunity

New York's power grid is anticipated to face increased challenges associated with the generating fleet transitioning in response to economic, environmental, and public policy considerations. Increased dependency on natural gas and intermittent technologies creates an elevated risk to system reliability if those fuel supplies were to be interrupted. The NYISO has engaged the Analysis Group to conduct a study in 2019 to help identify the types and magnitude of potential near-term concerns that could arise by examining various scenarios that place strains on fuel and energy security in New York.

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

The objective of this project is to explore and develop any market design enhancements that may be prudent in response to conclusions from the 2019 Fuel and Energy Security assessment. These efforts would examine potential adjustments to market structures and/or operational practices that could enhance fuel and energy security in New York, as informed by any potential risks identified by the 2019 study.

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7.3 Project Justification

This work would be necessary to complete a market design that encompasses any recommendations from the 2019 study in order to maintain grid reliability in the future. Efforts during this project would seek to bolster New York's preparedness for an altered resource portfolio by elevating the markets to embrace future challenges that could arise with respect to fuel supply security.

8. Locational Marginal Pricing of Capacity (SOM)

8.1 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 would lower overall costs of satisfying capacity needs.

8.2 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 2020 would be a Market Design Concept Proposed.

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8.3 Project Justification

This proposal could reduce the costs of satisfying resource adequacy needs, facilitate more efficient investment and retirement decisions, be more adaptable to changes in resource mix (i.e., increasing penetration of wind, solar, and energy storage), and simplify market administration.

9. NYC Part A Test Exemption (SOM)

9.1 Problem / Opportunity

With significant changes to the transmission and generation facilities anticipated for southeast New York, an opportunity may exist to improve market efficiency by expanding the Part A test to address a facility located in NYC that is needed to satisfy the G-J Locality LCR. The existing Part A Test only considers a NYC facility's contribution towards meeting the NYC LCR.

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

The objective for this project would be to evaluate whether it would be prudent to expand the Part A test to exempt a NYC facility needed to fulfill the LCR for the G-J Locality. The deliverable for 2020 would be a Market Design Concept Proposed.

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9.3 Project Justification

Given the significant system changes that are expected in the coming years, this project would consider the merits of an exemption for a NYC facility whose capacity is needed to satisfy the LCR for either NYC or the G-J Locality.

10. Tailored Availability Metric

10.1 Problem / Opportunity

One of the issues identified in the Performance Assurance initiative in 2017 included ensuring the availability and performance of capacity suppliers during peak operating hours. The Tailored Availability Metric project addresses this by incentivizing resources to be available and perform during these critical operating periods. Analysis for this project will reassess the current metrics of the derating factors of all capacity resources in order to more accurately reflect performance or availability.

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

The objective of this project is to implement a market design that reflects higher value to resources that are available and can perform during peak operating hours. For the current derating factors, all hours of operation are weighted equally, following the belief that outages occur randomly. A tailored metric could weight critical operating periods higher than others, under the assumption that these stressed conditions occur during peak hours. Weighting these peak hours reflects the concept that availability and performance during these hours has higher significance to the reliability of the system. Through reevaluating the current structure of how availability and performance of capacity suppliers is measured, tailored metrics will better indicate how much capacity these resources will be allowed to sell in the market. Through a series of analysis, different weighting factors could be applied to peak hours and months, incenting resources to better perform during these critical time periods. The 2020 deliverable is Market Design Complete.

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10.3 Project Justification

The completed market design for the Tailored Availability Metric project is important to maintain reliability of Installed Capacity Suppliers and transparency by enhancing accountability of capacity suppliers.

Energy Market Products

11. 5 Minute Transaction Scheduling

11.1 Problem / Opportunity

Interchange scheduling with Hydro-Quebec (HQ) is currently achieved on either a 15-minute or an hourly basis using the NYISO's Real-Time Commitment (RTC) software. More frequent transaction scheduling with external control areas could improve convergence between prices in RTC and RTD and offer increased flexibility to the market optimization software, as the penetration of intermittent renewables increases. The NYISO has also determined that 5-minute transaction scheduling would be a pre-requisite for external resources to be eligible to provide operating reserves, and perhaps other ancillary services.

HQUS believes that allowing external resources to be scheduled based on RTD will place these on equal footing with internal generation and will reduce the occurrence of over or under commitment of external resources.

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

The project would study the potential for other interties to also be scheduled on a 5 minutes basis, depending on the discussion with HQ and other control areas, namely, PJM, ISONE and Ontario.

This project would deliver a report that considers a proposed mechanism to enhance the real-time interchange scheduling processes by allowing the economic scheduling of interchange across controllable interties with Hydro-Quebec (HQ) nominally every 5 minutes using the RTD. Interchange scheduling with HQ is performed on a 15-minute and an hourly basis using the RTC software.

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11.3 Project Justification

A market design to accommodate 5-minute interchange scheduling across controllable interties with HQ would be 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, and increase the flexibility of the NYISO's market operations to respond to fluctuations in intermittent output. More frequent interchange scheduling that aligns with internal generation scheduling will also alleviate top of hour and quarter-hour interchange discrepancies.

This is particularly important with the growing objectives in NY State for renewable generation and for the replacement of fossil fuel generation. HQ's large, flexible and low carbon hydropower generation represents a solution to support grid flexibility in a 70% by 2030 world.

12. Ancillary Services Shortage Pricing (SOM)

12.1 Problem / Opportunity

State energy and environmental policies are expected to encourage significant increases in intermittent generation. As intermittent penetration increases, the provision of ancillary services such as regulation and reserve will become increasingly important. The ongoing transition of the resource fleet presents an opportunity to incentivize increased flexibility and resilience in the NYCA as the grid evolves. In addition, new capacity market pay-for-performance programs and other market changes in neighboring ISO/RTO regions may drive net exports from the NYCA during times of high stress on the grid, which could adversely impact reliability.

The relative value of the NYISO's ancillary service shortage prices will be assessed in a 2019 study. The study will also recommend potential changes to the current shortage pricing architecture intended to strengthen incentives for flexibility and resilience in light of the grid in transition and pricing for services in neighboring markets. Potential market design enhancements will need to appropriately consider the interactions between Operating Reserves, Regulation Service, and transmission shortage cost pricing levels. The proposed market design changes will also consider the implications of other ongoing reserve and shortage pricing related initiatives, including:

- Constraint Specific Transmission Shortage Pricing
- More Granular Operating Reserves
- Reserves for Resource Flexibility

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This project was identified as beneficial by the Market Monitoring Unit, the 2018 NYISO Management Response to Analysis Group's Performance Assurance report, and the 2017 Integrating Public Policy Market Assessment report.

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

The 2020 project deliverable will be Deployment. Depending on the work completed in 2019, 2020 work may also include a Market Design Complete presentation and the development of functional requirements.

12.3 Project Justification
This project will position the NYISO to incentivize flexibility and resilience as the grid transitions to higher intermittent penetration. It will also address the implications of pricing incentives for products and services in neighboring ISO/RTO regions.

13. Constraint Specific Transmission Shortage Pricing (SOM)
13.1 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.

The NYISO's Market Monitoring Unit, the 2017 Securing 100+ kV Facilities whitepaper, and the 2017 Integrating Public Policy Market Assessment report all recommended that the existing transmission constraint pricing logic be revised.

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, the NYISO proposes to utilize a revised and more graduated demand curve mechanism that better accounts for the various non-zero CRM values assigned to facilities. Under this new construct, demand curve prices would increase proportionally with the severity of transmission overloads. The NYISO also proposes to eliminate most occurrences of constraint relaxation by instead seeking to resolve constraints for internal facilities through use of a graduated demand curve mechanism that includes pricing values for shortages that exceed applicable CRM values.

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13.2 Project Objective(s) & Anticipated Deliverable(s)
The 2020 deliverable for this project will be Functional Requirements.

13.3 Project Justification
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.

14. Grid in Transition Discussion - Submitted by LIPA

14.1 Problem / Opportunity

New York State's Green New Deal ("GND") 2040 carbon neutral end state and 2030 70% renewable energy transitional state contain specific renewable energy and energy storage capacity targets and mandates. These public policy mandates are likely to implicate multiple areas of market design. Designing markets that achieve these states in an economically efficient manner is important. The NYISO is undertaking a white paper to scope the issues that will need to be addressed in response to New York State's clean energy targets; however, further discussion on specific design objectives and prospective elements throughout 2020 is warranted. Significant cost savings in implementing the clean energy objectives could be realized with well-tailored market design. There is value in considering different stakeholder perspectives in an effort to develop lower cost solutions to achieve state policies.

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

The objective of this project is to solicit a variety of stakeholder perspectives on key market design issues that may be implicated by New York State's clean energy mandates and objectives. In a series of monthly meetings throughout 2020, the NYISO would make available a forum to address a single topic, allowing stakeholders to provide their perspectives, including presentations that describe the problem and potential solutions. For each topic and/or subject area, the NYISO would provide appropriate background, including any education on the current market design, take stakeholder input, and track issues that generate stakeholder interest. Following this comprehensive review, stakeholders will prioritize NYISO market design changes for 2021 with the target of "Market Design Proposed". Key subject areas and representative questions include but are not limited to the following:

1.Future of Fossil Generation

- What should the role of combustion units be?
    - Should combustion units be limited to biofuels?

- The role of fossil units for resilience/outage/unavailability/electrification?
    - For resilience?
    - Other reserves?
    - To address unlikely transmission outages, for example?
    - To reduce more carbon in other sectors through electrification?
    - To the extent fossil purchase offsets elsewhere?

2.Implications of a Carbon Neutral Grid

- What if any role should loads' carbon footprint offsets play in assuring carbon neutrality given remaining fossil generation?
- How should we measure and accommodate fossil units to the extent they support electrification of other higher carbon sectors reducing carbon emissions, and how should we measure and accommodate their impact?
- What is the relevance of carbon pricing for achieving the 2030 transitional 70% renewables state or 2040 carbon neutral end state?

3.Reliability and Market Considerations

- What are appropriate market structures for assuring reliability in the 2030 and 2040 cases?
- What are the appropriate ways of setting reliability requirements and measuring reliability with a system comprised primarily or completely of renewables and storage of different durations?
- How should the system accommodate potentially reduced UCAP contribution arising from correlated renewable outages?
- What role should real time retail pricing play to assure customer load reductions when correlated outage events occur?

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- Where should the cost of loss of load be considered?

4.Capacity Market Enhancements

- What, if any, capacity market changes may be needed to maintain reliability at lower cost given state mandates?
- What changes might allow optimizing the combination of storage, wind (and potentially fossil) resources?
- Given uneven renewables injection, how should balance of system costs be identified and allocated? What, if any, changes in cost allocation for these resources may be needed?
- Given a synergetic reliability contribution of storage/renewables/potential fossil facilities, how should capacity payments be allocated?

5.Energy Market Enhancements

- What, if any, energy and ancillary services market changes may be needed?
- Absent mandates and moratoria, how might energy market changes assure that transitional and end-state renewable generation targets are met?
- What, if any, ancillary service changes are needed to support flexible resources?
- What, if any, changes in cost allocation might be expected or appropriate?

6.Effective Capacity Market Mitigation

- What does BSM look like in a 2040 full renewables case?
- How should supply side mitigation change?
- What BSM and SSM outcomes should we be seeking to support the 2030 transitional mandates?
- How should bidding rules and SSM change to accommodate increased DAM v. RT risk?

7.Inter-regional Coordination

- How may these mandates affect trade with neighboring ISO/RTOs?

- How may these mandates affect New York's historic ability to provide mutual reliability support?

8.Future of the Competitive Market

- Would we and should we still have a competitive market?

14.3 Project Justification

This project should be considered given mandates highlighted in the PSC Order Establishing Offshore Wind Standard and Framework for Phase 1 Procurement (Case 18-E-0071 – In the Matter of Offshore Wind Energy), PSC Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued August 1, 2016) ("CES Order"), PSC Case 18-E-0130 In the matter of Energy Storage Deployment Program Order Establishing Energy Storage Goal and Deployment Policy (December 13, 2018) and the governor's state of the state commitments and subsequent PSC Orders. The intention is to identify means of addressing the state's goals and mandates in a cost-effective way while continuing to reliably serve load.

15. Hybrid Storage Model

15.1 Problem / Opportunity

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

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

This project seeks to develop market participation rules for front-of-the-meter renewable generators collocated with Energy Storage Resources, with a 2020 milestone of Market Design Complete. This deliverable includes a consumer impact analysis and a Market Design Complete presentation to stakeholders. 2020 project efforts will build on work completed as part of the Energy Storage Resource and DER Integration initiatives, by developing market rules that better integrate large-scale weather dependent and energy storage resources co-located behind a single interconnection point.

This project is distinct from the DER Integration initiative which has developed aggregation rules for resources that are generally distributed behind multiple interconnection points.

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15.3 Project Justification
State and Federal initiatives such as 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. Developing a market participation model for front-of-the-meter generators plus storage will better align the NYISO's market procurement with State and Federal efforts to integrate more clean energy into the grid. The new market participation model is also expected to improve grid flexibility and resilience by enabling new resource types to provide their full capabilities.

16. Linked Virtual Transactions

16.1 Problem / Opportunity
The NYISO does not currently offer a product that enables Market Participants to hedge price separation between source and sink zones due to transmission congestion and losses between the DAM and RTM. While Market Participants may currently attempt to hedge Real-Time congestion risks by purchasing offsetting Virtual Supply and Virtual Load positions in the DAM, there is no guarantee that both legs of such a transaction will clear, which exposes Market Participants to congestion risk.

16.2 Project Objective(s) & Anticipated Deliverable(s)
This market enhancement would create a new financial product, the "Linked Virtual Transaction" (LVT). An LVT will be a virtual trade in which a Market Participant submits an offer to simultaneously inject energy at a specified source and withdraw the same megawatt quantity at a specified sink location in the DAM. The Market Participant will also specify the maximum difference in LBMP between the source and sink that the Market Participant would be willing to pay. An LVT that fails to meet a Market Participant's bid criteria would fail to clear, thus protecting the Market Participant from exposure to undesired risks.

2020 project efforts will build on work completed during 2016, culminating in a Market Design Complete presentation to stakeholders and a consumer impact study. Past work, including market and credit tariff revisions will be updated as part of the 2020 project scope. The draft functional requirements that were initiated in 2016 will also be updated to prepare for eventual implementation.

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The implementation of this project is expected to ultimately require updates to the NYISO's energy market bidding software (CBMS), Settlements, Network Manager, and associated reporting functions.

16.3 Project Justification

This potential market enhancement is expected to decrease price divergence between the Day-Ahead and Real-Time Markets. It also has the potential to reduce market risk premiums for interzonal transactions, improve market liquidity, lead to more accurate price signals because the LVT product will enable price-sensitive bidding, improve competition, and allow weather-dependent resources to hedge RTM congestion volatility.

17. Mitigation Thresholds Review

17.1 Problem / Opportunity

Load Pocket Thresholds ("LPT") are mitigation measures designed to prohibit exercise of market power by the NYC units that might exist under constrained conditions. These thresholds strictly limit the bidding leeway of NYC energy generators, relative to their energy references—a general requirement explained in Services Tariff Section 23.3.1.2.2. In certain situations, the LPTs, which are based on previous months' data may over or underestimate the future month's true conditions and hence may lead to over or under mitigation. A review of the mitigation behavior thresholds could identify opportunities to improve upon the LPT methodology.

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

This project intends to perform a comprehensive review of mitigation behavioral thresholds, including solicitation of feedback from stakeholders. This project will review all thresholds used for conduct and impact for mitigation including the current Load Pocket Threshold process. The objective of this project would be to evaluate methods to improve upon the LPT methodology based on observations from the last several years of its application. For example, this project will consider the following improvements:

- Modifying the measure that predicts potential market power for each load pocket in the coming month, based on the number of transmission constrained hours in the previous 12 months. Among other problems, the existing measure mispredicts upcoming tightness of load pockets by neglecting the systematic tendency for strong summer peaks in constrained

hours, but fewer such constraints over the rest of the year.

- Revising the measure of “lowest allowable LPT.” That measure uses 12-month averaging of load-weighted and fuel-price-adjusted LBMPs, to calculate expected load-pocket LBMP in the coming month, and takes 2% of that figure to generate “lowest allowable LPT.” The formula that calculates a weighted average of past load-pocket LBMPs can be revised in ways that will better predict load-pocket LBMP in the upcoming month, and hence create a more appropriate measure of lowest allowable LPT.

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- The Tariff requires the NYISO to fuel-price-adjust the LPTs, allowing the NYISO to specify the method of fuel adjustment. Currently, MMA implements this requirement by fuel-adjusting the LBMP term in on a monthly basis. However, MMA proposes to change the frequency of fuel-adjusting LPTs from monthly to daily, so that each day LPTs maintain consistency with the daily-evolving fuel-price component of energy reference levels.

- Automating the process of calculating LPTs which currently consists of several steps, some of which are time consuming and labor intensive and hence prone to error. MMA proposes to work with IT to create a fully automated process with measures in place to validate results from each execution

17.3 Project Justification

This project would allow for a comprehensive review of the LPT methodology and process to identify ways to improve the accuracy of and verification process for LPT calculations.

18. Relocating the IESO Proxy Bus

18.1 Problem / Opportunity

The NYISO’s market software currently uses the BRUCE station as the proxy bus to schedule transactions with Ontario’s Independent Electric

System Operator (IESO). The selection of the BRUCE station as the location of the IESO proxy bus is the determining factor for how the commitment software distributes the power flow for scheduled energy between IESO and NYISO. Analysis of the actual historical delivered energy from transactions between IESO and NYISO indicate a potential improvement that can be made with the power flow results from the NYISO's commitment software. Historically, ~85%-95% of the scheduled energy between IESO and NYISO is realized over the direct ties, as compared to the ~70%-85% that is scheduled by the commitment software today.

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

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This project would explore the options for a more optimal IESO proxy bus that more closely aligns power flow shift factors for energy schedules between IESO and NYISO with actual, observed power flows. The 2020 deliverable for this effort would be Deployment of the improved IESO proxy bus.

18.3 Project Justification

Developing a more accurate power flow result out of the commitment optimization is expected to lead to improved resource scheduling and pricing outcomes.

19. Reserve Enhancements for Constrained Areas (SOM)

19.1 Problem / Opportunity

The NYISO is required to satisfy reliability criteria in New York City (NYC) to meet New York State Reliability Council (NYSRC) local reliability requirements (LRR) under certain conditions. These local requirements are modeled as capacity constraints, where resources may be committed at minimum generation, or satisfied through Day Ahead Reliability Unit (DARU) and Supplemental Reserve Evaluation (SRE) commitments. This treatment for managing LRR constraints has the potential to result in suboptimal price formation in NYC load pockets and a requirement for uplift payments to resources needed to maintain reliability.

Based on NYSRC rules, the NYISO is also required 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 NYC 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.

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 does not reflect the flexibility of the grid to respond to system needs by utilizing the transmission system to import capacity into generation-constrained regions. As reserve regions become smaller, this static modeling can potentially lead to market inefficiencies and unnecessary price volatility.

The NYISO recently proposed to introduce a Zone J reserve region with 10 and 30-minute reserve requirements beginning in late-June 2019. The Zone J reserve region will provide region-specific market signals consistent with reliability needs in New York City. During 2019, the NYISO is also exploring the potential implementation of more granular reserve requirements within certain New York City load pockets that would better represent the value of short-notice resources in desirable locations. This evaluation will consider cost allocation and an approach to address potential mitigation concerns. As the implementation of load pocket reserve requirements is considered, a dynamic reserve procurement methodology that does not exist today would be useful to improve market efficiency, better aligning market outcomes with how the power system is operated, and avoid the potential for unnecessary price volatility.

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

The deliverable for this effort in 2020 will be Study Complete. The study will seek to develop potential changes to the NYISO's market software such that the Energy market's economic optimization would more efficiently schedule operating reserves based on system conditions. Such enhancements would 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. This study will also evaluate potential ways to compensate operating reserve providers that help manage transmission congestion to determine if market incentives can be improved to maintain resource flexibility. Finally, the study will explore how to most efficiently incorporate the NYC load pocket reserve requirements expected to be developed in 2019 into the market software.

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If the NYISO were to determine as a result of its study that the implementation of a dynamic reserve procurement methodology is not currently feasible, the NYISO would pursue alternative approaches to improving reserve procurement for constrained areas.

19.3 Project Justification

In 2015, the Market Monitoring Unit (MMU) 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 [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 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 reserves present opportunities to enhance grid resilience, incentivize resource flexibility, lower total production costs, and increase efficiency in meeting applicable reserve requirements.

In the absence of an appropriate market product/construct, economic incentives for investment in resources capable of providing the required services within load pockets may be insufficient and/or fail to fully reflect the value of these services. As the grid evolves, this could eventually lead to insufficient availability of reserve capability in highly constrained areas of New York City as existing generation retires.

This project also considers two additional recommendations made by the MMU in past State of the Market Reports. In 2016, the MMU recommended that the NYISO “[c]onsider rules for efficient pricing and settlement when operating reserve providers provide congestion relief [Recommendation 2016-1].” Finally, in 2017, the MMU recommended that the NYISO “[m]odel local reserve requirements in New York City load pockets [Recommendation 2017-1].”

20. Reserves for Resource Flexibility

20.1 Problem / Opportunity

The 2017 Integrating Public Policy Market Assessment demonstrated that the volatility of NYCA load may increase significantly from one 5-minute real-time market interval to the next as more weather-dependent renewable resources are added to the grid. As load forecast uncertainty increases, it will become more important to ensure that adequate load following capability is available to instantaneously balance load and generation. The NYISO anticipates that intermittent generators will be able provide adequate down-ramp capability when needed, because both wind and solar units will be dispatchable in the future. However, a product that procures more up-ramp capability could confer significant operational benefits.

The NYISO currently procures the minimum amount of operating reserve required to meet applicable reliability requirements. With this project, the NYISO proposes to examine the potential to increase the amount of reserves procured, thus incentivizing resource flexibility to support grid reliability and improve grid resilience.

The 2018 Master Plan proposed further investigation into a “Flexible Ramping Product,” as well as the procurement of additional reserves, under an initiative titled “Reserve Procurement for Resilience.” Subsequent research into the flexible ramping products offered by other control areas and discussion with stakeholders led NYISO staff to conclude that these two project descriptions ultimately offered different ways of addressing the same market need for more up-ramp capability, which NYISO staff believes can best be achieved in the near-term by assessing changes to the amount of reserves procured.

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20.2 Project Objective(s) & Anticipated Deliverable(s)
The deliverable for this project in 2020 will be Deployment. 2020 work will further develop the market design concept that is expected to be proposed in 2019 as part of the “Reserve Procurement for Resilience” project. Depending on the 2019 progress, 2020 efforts may include the development of a Market Design Complete presentation and functional requirements.

20.3 Project Justification
Procuring additional reserves could yield more efficient market outcomes by enabling procurement of reserves to respond quickly to the volatility introduced by additional intermittent resources. This project will also support improved incentives for flexible resources and price signals that reflect the resource capabilities required to maintain reliability. By procuring reserves through the market and providing schedules for such service, resources are provided improved incentives for performance and to take the required actions to ensure availability of the capability procured.

21. WEELR Participation Model

21.1 Problem / Opportunity
The NYISO is currently developing software for a dispatch-only Energy Storage Resource (ESR) participation model for Deployment in Q2 of 2020. The dispatch-only model considers an Energy Storage Resource to be available for all hours in which it submits a Bid and allows the resource to be dispatched in the full range between its maximum injection capability

and maximum withdrawal capability, including to zero MW. The NYISO's use of a dispatch-only model aligns with the characteristics of the advanced storage technologies that are being contemplated for future Deployment in New York. These facilities are expected to be continuously dispatchable while they are participating in the NYISO-administered markets.

At the present time, there is one electric storage facility in the NYISO's markets that is eligible to submit start-up bids, to recover minimum generation costs, and to withdraw Energy as negative generation in the NYISO's markets. That resource is the Blenheim-Gilboa Pumped Storage Power Project ("Gilboa"), which has participated the NYISO's markets since their inception in 1999. Unlike a battery, Gilboa relies on enormous hydroelectric turbines to produce Energy and to pump water back into its reservoirs.

The NYISO's market and settlement systems are not presently designed to economically evaluate Bids to withdraw Energy or settle Energy withdrawals as negative generation at the generator bus for any resource other than the Gilboa pumped storage facility. The market and settlement software that NYISO developed to accommodate pumped storage as Withdrawal-Eligible Energy Limited Resource (WEELR) is specifically tied to the Gilboa unit's operation and to its associated generator buses. The existing software does not include the functionality to add new resources; not even resources that have operating characteristics similar to Gilboa's. Furthermore, the current software design provides limited bidding flexibility that is sufficient for pumped storage, but that the NYISO no longer expects to be adequate to accommodate new storage technologies.

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21.2 Project Objective(s) & Anticipated Deliverable(s)
The NYISO will define the market and settlement upgrades that would be necessary to enhance the existing software to permit the flexible scheduling and settlement of new Energy Limited Resources that withdraw Energy. Alternatively, if determined to be implementable through more research, the NYISO would expand the capabilities and attributes of its ESR participation model. The deliverable for this effort in 2020 will be Market Design Concept Proposed.

21.3 Project Justification
This project will contemplate market rules that would enable the NYISO to accommodate new, non-continuous, withdrawal-eligible Generators that have operating characteristics similar to the Gilboa pumped storage facility. Although no such projects are currently being developed for the bulk electric system in New York State, new technologies may require this functionality in the future. In addition, the development of an advanced WEELR participation model would help the NYISO develop a participation model capable of accommodating a broad range of Energy Storage Resources.

Operations & Reliability Products

22. Communication of Voltage Schedule to Generators

22.1 Problem / Opportunity

This section describes the business problem to be addressed or opportunity to be studied by the proposed project. Supporting background information, prior work, and analysis to the extent it is available should be included.

NERC Reliability Standard VAR-001, Requirement 5 requires registered NERC Transmission Operators (TOP) to specify and provide a voltage schedule to Generator Operators. Pursuant to a Coordinated Functional Registration (CFR) with NY Transmission Owners for the TOP function accepted by NPCC and NERC, the NYISO and NY TOs share compliance responsibility for VAR- 001, R5. Under the CFR, the NYISO sets forth a default generator voltage schedule. In June, 2015, following a comment period, the NYISO posted Technical Bulletin 229 setting forth the default generator voltage schedule. As part of the NYISO's efforts to retire technical bulletins, where possible, in favor of incorporating the information set forth in the technical bulletin in the relevant manual, the NYISO folded that default generator voltage schedule into the NYISO Transmission and Dispatch Manual on April 28, 2016, following stakeholder notification and committee approval.

In both cases, the NYISO notified market participant designated main contacts via its e-mail distribution list, but did not otherwise make direct contact with generator facilities affected to advise them of the change and confirm that the information had been received by them nor has the NYISO revised its T&D Manual since that time to provide for such direct communications about future changes to the default levels. This project proposes an enhanced communications protocol for default generator voltage schedules.

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

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This section describes what the project should do to address the business problem or opportunity. It summarizes the approach and desired outcome, and may build on project work in a prior year. It includes the expected deliverables to satisfy the project objective and is tied to the proposed project milestone. The NYISO will work with the stakeholder(s) proposing a project to formulate what may be feasibly delivered in a particular time frame based on resourcing estimated for the effort.

The project should implement a communications protocol to facilities that are or have been voltage support suppliers in the NYISO markets to advise them when changes are made to the default generator voltage schedules or related information and to subsequently confirm receipt of such notice. ISO-NE has adopted a communications protocol along these lines which should be consulted to provide guidance on form and substance.

22.3 Project Justification
This section provides reason(s) why the candidate project should be considered. Examples would include addressing a FERC Order, Tariff requirements, automate manual processes, mitigate risk, market enhancements, State of the Market recommendations.

The project should be considered because it will constitute an enhancement to the NYISO's current communications protocols in this area that will provide personalized compliance documentation for NERC Standards VAR-002 and VAR-001, respectively, and will support the reliability of the system.

TCC Products

23. Reserving Capacity for Balance-of-Period (BoP) Auctions

23.1 Problem / Opportunity
The ISO currently conducts Centralized TCC Auctions twice each year. In each of those auctions, six-month and one-year TCCs are available for purchase, and two-year TCCs are available in some of these auctions. However, TCCs covering periods shorter than six months are not available in those auctions. Instead, market participants wishing to purchase shorter-term TCCs must do so in the BoP Auctions, which are held each month.

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 market participants 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 modify the ISO's current software

and procedures to permit the ISO to reserve a portion of available system transfer capability, which it would then release into the BoP Auctions. This will permit auction participants to purchase additional shorter-term TCCs in the BoP Auctions.

23.2 Project Objective(s) & Anticipated Deliverable(s)
This project includes working with stakeholders to develop market rule changes to accommodate the potential for reserving a portion of otherwise available transmission capacity for release in the BoP Auctions. This would entail tariff changes to permit the ISO to reserve this transfer capability, modifications to the ISO's current procedures for ensuring that transfer capability is allocated among auction rounds, modification of the ISO's current software and procedures for allocating revenue collected from the sale of TCCs in the auction, and development of procedures for determining the BoP Auctions into which the reserved transfer capability would be released.

Due to the potential increased complexity that could arise from making less than the full quantity of the transmission capacity associated with ETCNL available for sale in the Centralized TCC Auctions, the implementation of reserving a portion of otherwise available transmission capacity for release in the BoP Auctions may have a dependency on the automation of the ETCNL feasibility analysis process and the automation of an inventory system to calculate the remaining feasible ETCNL

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23.3 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. Certain stakeholders have previously requested this capability.

The proposed solution is intended to:

- Generate more efficient market outcomes; consistent with the MMU's expectation that "selling more of the capability of the transmission system in the [BoP] auctions (by holding back a portion of the capability from the six-month auctions) would likely raise the overall amount of revenue collected from the sale of TCC's (2018 State of the Market Report for the New York ISO Markets at 39);

- Address stakeholder requests for such enhancements to the current TCC auction design; as auction participants have indicated interest in reserving transfer capability for release in BoP Auctions in surveys of auction participants preceding each of the last six Centralized TCC 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.

Total 0

Please enter any additional comments below:

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