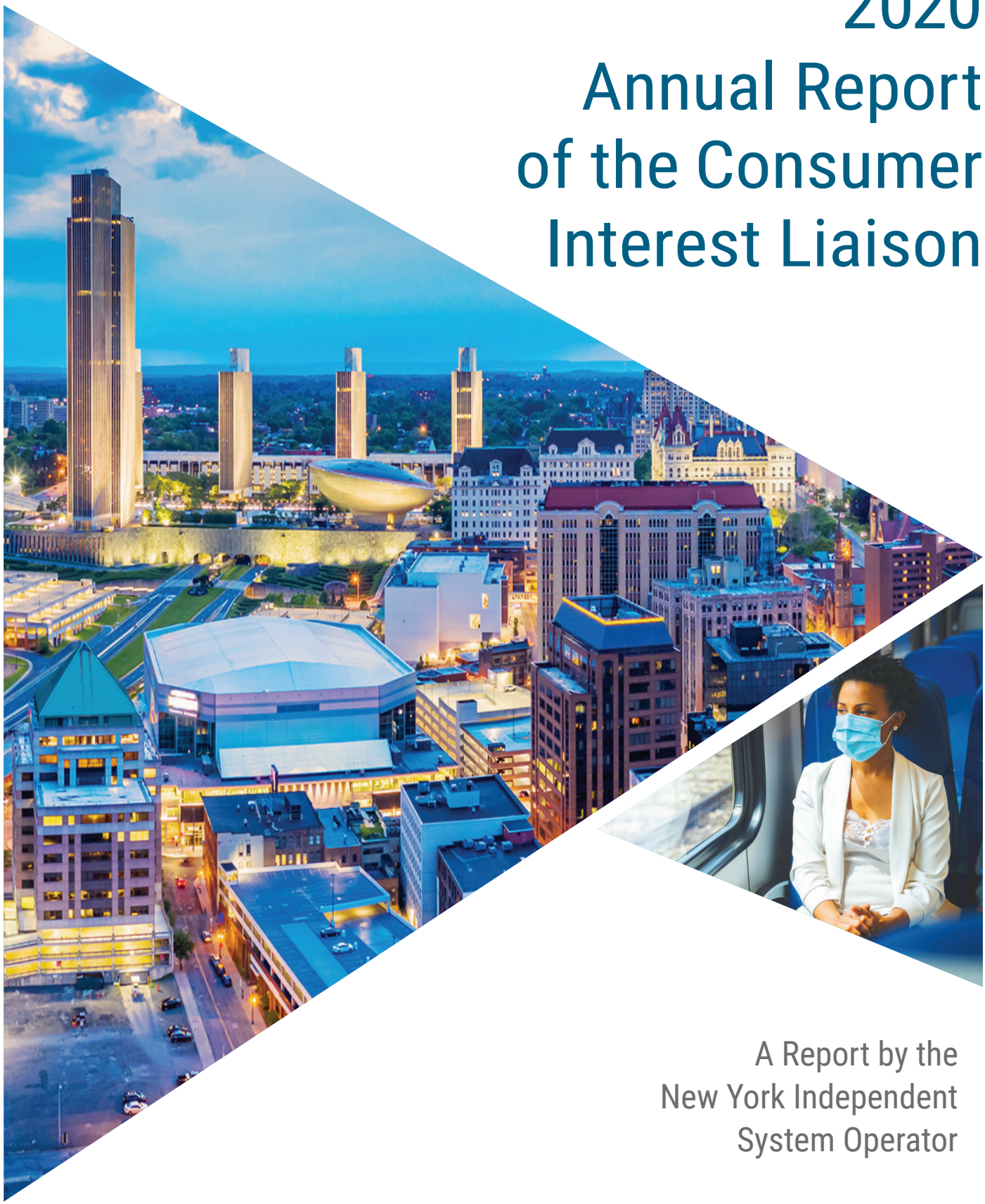
New York ISO

2020 Annual Report of the Consumer Interest Liaison



A Report by the
New York Independent
System Operator

January 2021

The mission of the NYISO, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

Table of Contents

Message from the President and CEO

At the time of this writing, the pandemic continues to impact our lives and our economy in unprecedented ways. Despite the challenges, we remain committed to our mission of maintaining system reliability at the least-cost possible.

We also remain committed to transparency, accessibility and the rigor of our open governance process, which is exemplified in consistent and meaningful fashion by the office of the NYISO Consumer Interest Liaison. Tariq Niazi and his team provide a unique forum for the end-use sector and other stakeholders to engage in our processes and aid in the development of the grid of the future.

This collaboration showed its strength in 2018 and 2019, when we laid the foundation for transitioning to a grid with zero carbon emissions under the state's Climate Leadership and Community Protection Act (CLCPA). That work helped us deliver on important tariff changes that provide access to competitive wholesale electricity markets for Distributed Energy Resources (DER) and Energy Storage technologies. We kept that momentum going in 2020, by fulfilling our commitment to projects like Ancillary Services Shortage Pricing, creating a Hybrid Storage Model, and establishing Reserves for Resource Flexibility, which will further prepare us for this transition. I am glad to report that we successfully delivered on those commitments and included a Comprehensive Consumer Impact Analysis for all those projects.

The consumer impact projects for 2021 were identified at the August 27, 2020 Budget and Priorities Working Group. We will complete the consumer impact analyses for those projects and present them to you over the course of the coming year. The NYISO remains committed to this office and the unique role it serves. It is my pledge that we will continue to devote time and resources to conducting consumer impact analyses as it is an integral part of the project completion process.

We know 2021 will be challenging. However, I am optimistic about our future as we continue to collaborate across our broad and expanding stakeholder group on the design and implementation of the grid of the future.

I look forward to working with you as we continue to keep the lights on and serve the best interests of New York consumers.

Richard Dewey

President and CEO

Message from the Consumer Interest Liaison

The objective of this Annual Report is to update stakeholders on the activities of the Consumer Interest Liaison over the past year. The core of those activities is the consumer impact analyses of major market design changes that were presented to stakeholders as part of the project development process. During 2020, we performed consumer impact analysis on three major projects: Reserves for Resource Flexibility, Hybrid Storage Participation Model, and Ancillary Services Shortage Pricing. We also presented the methodology for More Granular Operating Reserves

We started the year with presenting the methodology for More Granular Operating Reserves to a Joint ICAP/MI/PRL working group meeting on February 6, 2020. However, work on this project was suspended to allow for more time to focus on the Reserve Enhancements for Constrained Areas project.

The next presentation was the methodology for Reserves for Resource Flexibility on April 27, 2020. This was followed by the consumer impact analysis presentation on June 2, 2020. The NYISO proposed to procure an additional 500 MW of 30-minute reserves in the SENY reserve region (Zones G-K) at all times in both the Day-Ahead and Real-Time Markets. The consumer impact analysis computed the impact of the Reserves for Resource Flexibility proposal on energy and capacity prices and uplift payments.

The next analysis was Ancillary Services Shortage Pricing. The methodology was presented on July 14, 2020 followed by the Consumer Impact Analysis on September 1, 2020. The objective of NYISO's proposal was to revise the current reserve demand curves by adjusting shortage pricing values and adding steps for a more graduated demand curve for NYCA 30-minute reserves. The consumer impact analyzed the impact of these changes on energy and capacity prices.

The methodology for the third analysis, Hybrid Storage Participation Model, was presented on August 10, 2020 and followed by the analysis on September 25, 2020. This project developed interconnection and market participation rules that would integrate weather dependent and energy storage resources co-located behind a single interconnection point. The analysis studied the impact of the modified pricing logic on consumer costs.

We continued to support the end-use sector in other important ways. A summary of all stakeholder committee and working group meetings was sent to the end-use sector weekly and posted on the NYISO website. We conferenced every month with end-use sector representatives and New York State Department of Public Service staff. We also responded to consumer inquiries and questions, and provided training and information sessions as required. All the services we provided are briefly discussed in the beginning of this report.

We expect another very busy year during 2021 as we continue working on transitioning to a zero emissions grid and look forward to continue supporting the end-use sector in all respects.

Tariq Niazi

Consumer Interest Liaison

Role of the Consumer Interest Liaison

The role of the Consumer Interest Liaison is to enhance the market participation of end-use consumer representation. The function of the Consumer Interest Liaison was created in 2011 to fill a need in the interests of end-use consumers. Previously, there was a realization that the complexity of the markets presents challenges for consumers, and groups representing consumers, to participate effectively in the NYISO governance structure. The end-use consumer group did not have the expertise nor the resources to perform the analyses necessary to confidently advance their position. To address this limitation, the NYISO took several initiatives to improve the opportunities for consumer representation to engage in its governance process. The liaison was appointed to:[1]

- Assist end-use consumers in gaining valuable insight into proposed system changes.
- Provide consumers a communication link with the NYISO Board of Directors and senior management.
- Provide consumers with the short-term and long-term impact of NYISO initiatives and changes.
- Improve the education and outreach with end-use consumers.
- Improve overall transparency of NYISO actions and processes.

The NYISO continues to devote numerous resources to improving the participation of end-use consumers. Representatives of end-use consumers have validated the work of the Consumer Interest Liaison and used the several channels of communication and detailed consumer impact analyses to enhance the effectiveness of their participation in the NYISO's shared governance process.

The NYISO will continue to provide these vital services to assist in keeping end-use consumers informed, as detailed below.

Consumer Interest Liaison/Sector Meetings

The electric markets are constantly evolving to meet new goals and adapt to new technologies. To keep up with this ever-changing industry, the liaison meets annually with each of the stakeholder sectors participating in the NYISO's shared governance process. The objective of these meetings is to understand each sector's view of the consumer impact analyses that are presented at stakeholder meetings. Past and future consumer impact analyses are discussed with stakeholders to assure that all aspects of the process are as useful and relevant as possible.

[1] In 2011, the NYISO named Tariq Niazi as the Consumer Interest Liaison. Mr. Niazi brought 30 years of experience with him from the New York State Consumer Protection Board (CPB). Mr. Niazi's experience as the former director of the CPB Utility Intervention Unit and Chief Economist uniquely qualifies him to assist New York's electricity consumers in understanding the complexities of the NYISO marketplace.

Hearing the viewpoint of each sector participating in the market helps the liaison obtain a deeper understanding of the different aspects of issues. This feedback helps the liaison conduct more comprehensive impact analyses that address the concerns of all sectors involved.

Weekly Summaries

Each week the Consumer Interest Liaison produces a summary of activity and sends it to the End-Use Consumer mailing list. Summaries of committee meetings and working groups are presented to keep consumer stakeholders informed of relevant issues. FERC filings and orders for the week are included. Also, relevant notices are highlighted such as meeting reminders, deadlines for input, and NYISO manual revisions, just to name a few. An example of the weekly summaries has been provided in the appendix for your perusal. These summaries are also posted on the Consumer Interest Liaison section of the NYISO website.

Monthly End-Use Consumer Conference Calls

Each month a conference call is conducted with the End-Use Consumer stakeholders and the Consumer Interest Liaison. At the beginning of every month, the Consumer Interest Liaison also meets with NYISO Product and Project Management to review the upcoming meeting and working group schedules. This information is then conveyed to the End-Use Consumer group during this call to assist in tracking issue progress and milestones. Also, relevant projects, current issues and training topics are discussed on the monthly call.

Email Reminders

On a daily basis the NYISO sends out several emails through several email databases. The NYISO Technical Information Exchange (TIE) email list is the primary list for notices. There are also mailing lists for each committee and working group, as well as several specialized mailing lists such as “Generator Operators”, “Demand Response”, “Main Contacts”, etc. The Consumer Interest Liaison participates as a recipient of all these mailing lists and summarizes and resends important relevant and pertinent emails to the End-Use Consumer email list. Although this acts as a duplicate mailing, it affords end users the security of not missing important information.

Consumer Inquiries

End-Use Consumers regularly have questions and inquiries for the NYISO. These inquiries are frequently questions on NYISO policy, meeting activity, or relating to Consumer Impact Analyses. The Consumer Interest Liaison is in a unique position to answer these inquiries directly or seek the assistance of a subject matter expert to clarify issues consumers may face.

Training and Information Sessions

Through discussion with the End-Use Consumer group, the Consumer Interest Liaison determined there was an ongoing need for a better understanding of specific areas of the NYISO markets. By providing additional information on the complex NYISO markets and processes, End-Use Consumer stakeholders would be better informed on current market issues and, therefore, able to make better decisions on issues concerning the markets.

In recent years, there have been several instances where the End-Use Consumer group expressed the need to more fully understand the structure of markets in order to arrive at an informed decision on the issue. The Consumer Interest Liaison arranged for Subject Matter Experts (SMEs) to meet with the consumer group and provide background on the market. In recent years, the Consumer Interest Liaison has arranged for sessions for issues such as:

- Exporting Installed Capacity to an external control area
- Potential market problem related to the current implementation of its graduated Transmission Shortage Cost
- NYISO orientation session for new employees with little or no experience in the energy industry who had recently join their organizations
- Modelling changes to the representation of 115kV transmission lines in the bidding and scheduling software
- TCC Market Operations

Through the arrangement of these informational sessions, the End-Use Consumer group was better equipped to fully understand the issues to represent their clients' interest.

NYISO Governance

The NYISO has a shared governance structure where issues are debated and voted on by stakeholders, then sent to the NYISO Board of Directors for approval and the FERC for acceptance. All sectors of the NYISO shared governance structure, including end-use consumer representatives, play a significant role in the decision-making process. Stakeholders participate in the NYISO's governance through three standing committees: the Management Committee (MC), the Business Issues Committee (BIC), and the Operating Committee (OC). Each of these committees oversees their own working groups, task forces and subcommittees. These committees provide stakeholders the forums to discuss, debate and vote on issues regarding the administration of the markets, the operation of New York's bulk power system, and the planning for system reliability, among other topics.

Like previous years, in 2019 the NYISO conducted more than 200 meetings, including monthly sessions of the three standing committees and near-daily meetings of subcommittees, working groups, and task forces.

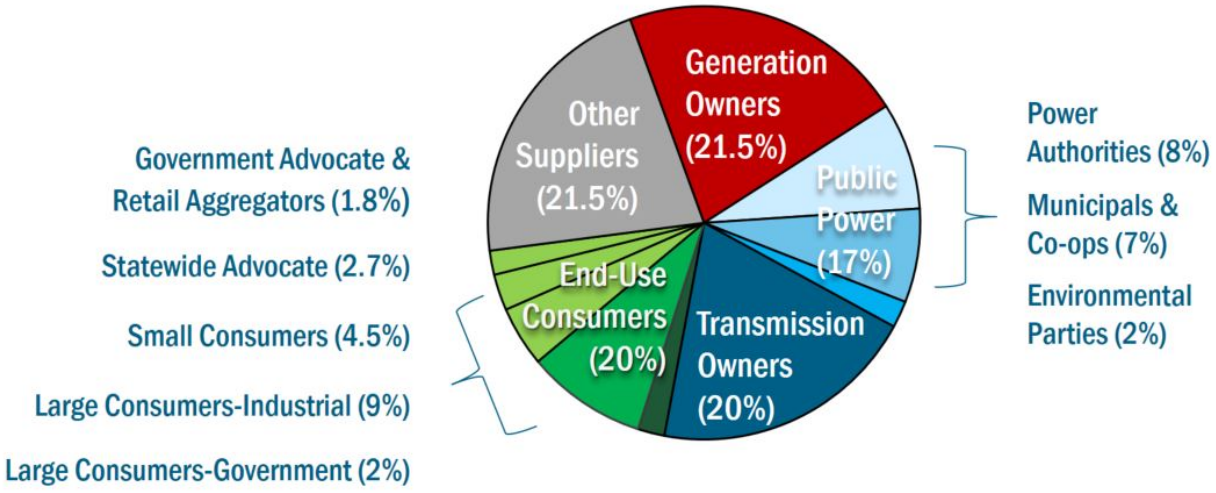
The NYISO's three standing stakeholder committees perform their responsibilities in accordance with their bylaws and in coordination with work performed by NYISO management and staff. The NYISO's governing agreements establish their specific responsibilities. Stakeholders are responsible for a range of duties in the shared governance process, including:

- Reviewing and recommending candidates for Board vacancies.
- Developing and reviewing technical guidelines for the operation of the bulk power system.
- Developing and reviewing enhancements to market design.
- Developing and reviewing system planning reports.
- Reviewing the preparation of and approving the NYISO's annual budget.

The NYISO stakeholders and the NYISO Board of Directors share responsibility for developing and approving proposed changes to the NYISO's governing documents and federally accepted tariffs. The Management Committee must endorse any proposed change to the NYISO's governing documents before they can be approved by the Board of Directors and filed for review by FERC under Section 205 of the Federal Power Act. FERC noted the collaborative results of the NYISO's shared governance system, stating in 2008, "The Commission commends NYISO and the stakeholders for working together to resolve many issues…"[2]

[2] New York Independent System Operator, Inc., 122 FERC ¶ 61,064 (2008) (January 29, 2008 Order).

Upon acceptance as a voting member, stakeholders enter a voting sector. Sector representatives, including transmission owners, generation owners, other suppliers, end-use consumers, and public power/environmental interests, vote in the stakeholder committees. Each stakeholder's vote in a committee contributes to the voting percentage allocated to its sector. Actions by the committees require a 58% vote of approval to pass. The voting shares in all three standing committees are allocated among the sectors and subsectors as follows:



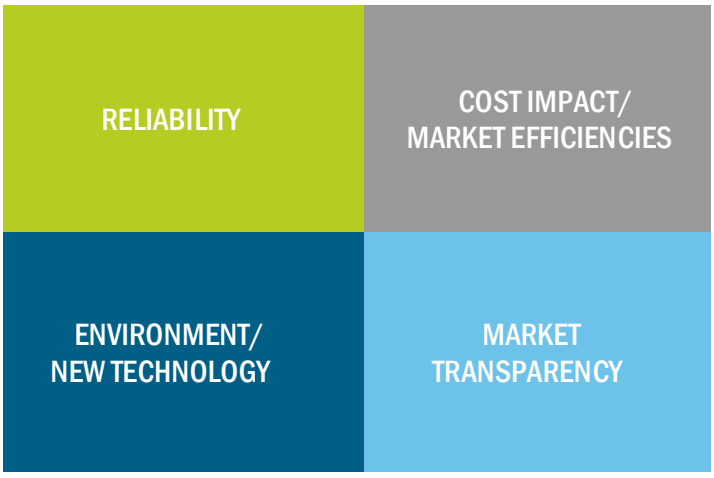
In addition to stakeholders with voting rights, entities with significant interests in the NYISO markets may join the shared governance process as non-voting members. Further, staff of the Public Service Commission (PSC) and FERC regularly participate in and monitor issues addressed by the NYISO committees.

Consumer Impact Analysis Process

The foremost responsibility of the liaison is to evaluate the impact of major market design changes on consumers. Consumer Impact Analyses are conducted for all major projects and presented to stakeholders. These analyses look at how a new market rule will impact reliability of the bulk power system, the impact on the competitiveness and efficiency of the market, the impact on transparency, and the impact of the market rule change on the environment.

The Consumer Impact Analysis is a formal process for systematically assessing a new market rule, designed to include qualitative and quantitative metrics for each of the areas analyzed. The analysis reviews the impacts of new rules under four evaluation areas: reliability, cost impact/market efficiencies, environment/new technology, and transparency. Each study area's impact is described below:

- **Reliability** analyzes how a new project improves the reliability of the current system. A project would not be implemented if it caused reliability issues or concerns.
- **Cost Impact/Market Efficiencies** analyzes the overall costs and benefits of implementing a project. It also reviews whether the project improves market operations and produces proper price signals to help spur investment.
- **Market Transparency** assesses the extent to which the project will impact the transparency and clarity of market rules.
- **Environment/New Technology** reviews how the project may affect the environment, focusing primarily on emission levels.



The list of projects selected for Consumer Impact Analysis are a subset of all NYISO projects chosen during the annual Budget Project Prioritization Process. The list of projects identified for Consumer

Impact Analysis is presented annually to both the Budget and Priorities Working Group (BPWG) and Business Issue Committee (BIC) for stakeholder input. This occurs during the annual Budget Project Prioritization Process. The process typically begins in May and ends in the fourth quarter with the NYISO Board of Directors approval of the annual budget.

Prior to the NYISO Board's approval, NYISO staff and stakeholders discuss the proposed projects and budgetary costs for the year during BPWG meetings. The projects that are included on the Consumer Impact Analysis Project list generally meet one or more of the following analysis guidelines:

- Anticipated net production cost impact of $5 million or more.
- Expected consumer impact from changes in energy or capacity market prices is greater than $50 million per year.
- Incorporates new technology into New York markets for the first time.
- Allows or encourages a new type or category of market product.
- Creates a mechanism for out-of-market payments for reliability.

Consumer Interest Liaison Presentations During 2020

- Methodology for More Granular Operating Reserves
  (Joint ICAP/MI/PRLWG, February 6, 2020)
- Methodology for Reserves for Resource Flexibility
  (Joint ICAP/MI/PRLWG, April 27, 2020)
- Consumer Impact Analysis: Reserves for Resource Flexibility
  (Joint ICAP/MI/PRLWG, June 2, 2020)
- Methodology for Ancillary Services Shortage Pricing
  (Joint ICAP/MI/PRLWG, July 14, 2020)
- Methodology for Hybrid Storage Participation Model
  (Joint ICAP/MI/PRLWG, August 10, 2020)
- 2021 Consumer Impact Analysis Project List
  (BPWG, August 27, 2020)
- Consumer Impact Analysis: Ancillary Services Shortage Pricing
  (Joint ICAP/MI/PRLWG, September 1, 2020)
- Consumer Impact Analysis: Hybrid Storage Participation Model,
  (Joint ICAP/MI/PRLWG, September 25, 2020)

Methodology for More Granular Operating Reserves[3]

Background

The More Granular Operating Reserves project included several components, some of which were approved by stakeholders while others will be discussed in the future. The market design for establishing a reserve region in Zone J was approved by stakeholders in March 2019 and a reserve requirements for Zone J was implemented on June 26, 2019. The focus of the February 6, 2020 presentation was to review with stakeholders the consumer impact methodology for establishing reserve requirements for certain load pockets in New York City (NYC). The proposal evaluating load pocket reserves in NYC was developed in 2019 and reviewed with stakeholders at the November 6, 2019 BIC meeting. The additional component of the More Granular Operating Reserves project was assessing reserve provider performance. This component of the project was presented to stakeholders at the April 6, 2020 ICAP/MIWG working group meeting.

Project Description

The NYISO recognizes that resources within load pockets are often committed out-of-merit for local reliability based on their ability to meet Local Reliability Requirements (LRRs). The LRR evaluation can result in committing resources that would not otherwise be committed economically. These commitments may result in uplift if the resource does not earn enough revenue to recover its Day-Ahead Bid Cost. Uplift payments may result in market outcomes where the full cost of the resources required to meet system needs are not transparently reflected in energy prices. The 2018 SOM report noted that the total value of Day-Ahead Bid Production Cost guarantee (BPCG) payments incurred to satisfy N-1-1 contingency requirements for NYC load pockets was over $26 million in 2018.

NYISO's Proposal

As shown in Figure 1 below, the NYISO proposed to establish three new reserve regions within Zone J and associated 30-minute reserve requirements to be procured in both the Day-Ahead and Real-Time Markets. Load pocket reserve regions would be nested within existing upstream reserve regions (Zone J, SENY, East and NYCA).

Figure 1: Load Pocket Reserve Regions and 30-minute Operating Reserve Requirements (MW)

Load Pocket	30-Minute Operating Reserve Requirement (MW)
Astoria East/Corona/Jamaica	325
Astoria West/Queensbridge/Vernon	225
Greenwood/Staten Island	250

[3] At the August 12, 2020 presentation to BIC on Coordination of Energy & Ancillary Service Projects, the NYISO recommended suspending work on the More Granular Operating Reserve project to allow for more time to focus on the Reserve Enhancements for Constrained Areas project.

A 30-minute reserve requirement reflects the resource capability necessary to restore transmission flows to applicable limits following a contingency event within 30 minutes, consistent with rules for NYCA reliability. The NYISO proposed to establish operating reserve demand curves for each load pocket that assign a $25/MWh value to the proposed reserve requirements.

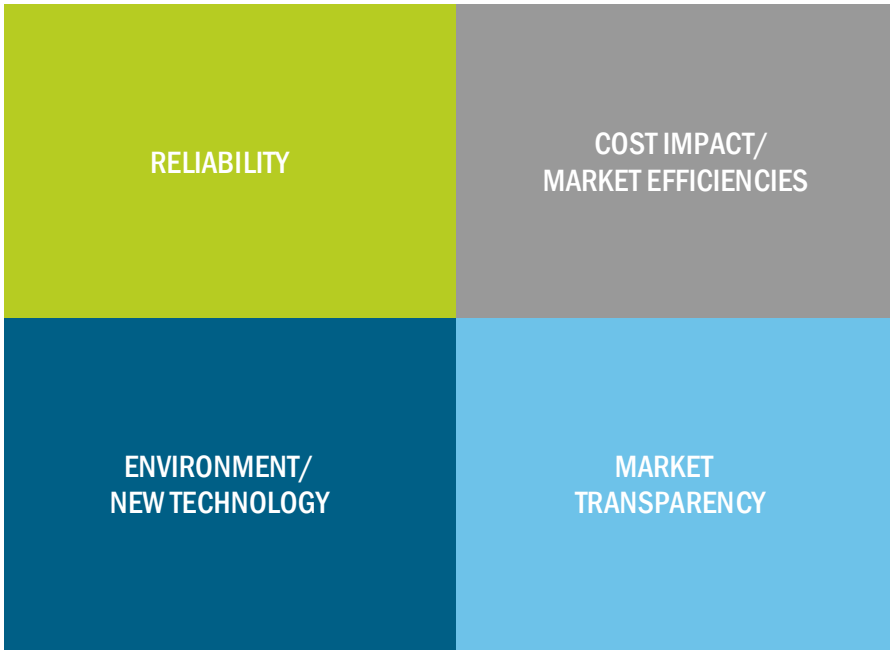
Benefits of the Proposal

The NYISO's proposal would more efficiently schedule and procure resources, since generators providing local reliability needs would be scheduled economically through a market-based mechanism. Such a mechanism would help to offset some of the out-of-market commitment costs required to satisfy LRRs. Additionally, a market-based mechanism would provide locational specific market price signals. Aligning reserve regions with load pockets would provide a clear signal as to the additional value that may be attributable to resources located in certain areas. Finally, the NYISO's proposal would also incent investment in resources that can supply 30-minute reserve products. In the absence of a market mechanism, economic incentives for investment in resources in load pockets capable of providing the required reserves are muted.

Consumer Impact Analysis (IA) Evaluation Areas

The consumer impact analysis will evaluate the potential impact of the NYISO's proposal on all four evaluation areas shown below.

Cost Impact Methodology



In assessing the cost impact, the NYISO proposed to use its Day-Ahead (DA) Market software and re-run select market days from 2019 with the addition of the proposed load pocket reserve requirements. Several factors would be considered in selecting the days to analyze, including: amount of DA BPCG, load, seasonality (*e.g.*, summer and winter), LRR commitments. All the days selected would include the deployment of the Zone J reserve region. The next step would be to compare LBMPs from re-run cases to original LBMPs to find the LBMP delta. The LBMP delta will be based on the subset of days analyzed. The LBMP delta would be used to estimate the consumer impact on energy prices by multiplying the LBMP delta by the DA LBMPs to compute an adjusted DA LBMP accounting for the proposed reserve requirements. These adjusted DA LBMPs will then be multiplied by the actual real-time integrated hourly load and summed to determine an estimated annual LBMP impact. The cost impact analysis would also discuss the potential impact on resource commitment in each load pocket and assess the potential impact on DA BPCG payments incurred to satisfy N-1-1 contingency requirements for NYC load pockets.

Other Impacts

In addition to the methodology for evaluating cost impacts discussed above, the NYISO will evaluate the following other impacts:

1. Reliability Impacts
2. Environmental Impacts
3. Impact on Transparency

Reserves for Resource Flexibility[4]

Proposed Enhancements

The NYISO proposed to procure an additional 500 MW of 30-minute reserves in the SENY reserve region (Zones G-K) at all times in both the Day-Ahead and Real-Time Markets. This proposal would increase the reserve requirement carried in SENY from 1,300 MW to 1,800 MW. Consistent with current procedures, the NYISO will reduce the SENY 30-minute reserve requirement to zero in real-time during a Thunderstorm Alert (TSA). The NYISO's proposal contemplates shifting of the current locational reserve procurements only and does not propose to increase the 2,620 MW level of 30-minute total reserves procured statewide (NYCA).

With regards to charges, the NYISO is proposing a reserve demand curve price of $25/MWh for the 500 MW increase in the SENY 30-minute reserve requirement. The $25/MWh price will continue to apply to the additional 500 MW during SCR/EDRP activations in real-time; any Scarcity Reserve Requirements for SENY would be added to the $500/MWh "step" of the SENY 30-minute reserve demand curve. Finally, consistent with the treatment of SENY reserves, the NYISO is also proposing to reduce the NYC (Zone J) reserve requirement to zero MW in real-time during Thunderstorm Alerts (TSAs) as part of this project.

Benefits of the Proposal

The current SENY 1,300 MW 30-minute reserve requirement serves to bring transmission assets to only an Emergency Transfer Criteria after suffering a contingency. To return facilities to Normal Transfer Criteria following a contingency would require access to additional reserves. The proposal to procure an additional 500 MW of 30-minute reserves in the SENY reserve region is intended to provide ready access to additional resource flexibility through a market-based mechanism to bring transmission assets to Normal Transfer Criteria following a contingency. Absent such a mechanism, out of market actions may be required to return facilities to Normal Transfer Criteria following a contingency.

Consumer Impact Analysis (IA) Evaluation Areas

The consumer impact analysis evaluated the potential impact of the NYISO's proposal on all four evaluation areas shown below. The summary of the findings appear in the diagram below.

[4] The Consumer Impact Analysis was presented at the June 2, 2020 ICAP/MIWG working group meeting; a revised version with additional information requested by stakeholders was reposted on July 30, 2020.

RELIABILITY	COST IMPACT/MARKET EFFICIENCIES
Procuring an additional 500 MW of 30-minute reserves in the SENY reserve region provides ready access to resource capability to bring transmission assets to Normal Transfer Criteria following a contingency.	A potential increase in short run consumer cost is estimated at $330,000. Potential for some savings in Bid Production Cost guarantee (BPCG) payments are not reflected in the potential impact shown above
ENVIRONMENT/NEW TECHNOLOGY	**TRANSPARENCY**
No Impact Expected	Reflecting the value of the operational flexibility required in SENY to bring transmission assets to Normal Transfer Criteria following a contingency in market outcomes should provide for greater transparency.

Energy Market Impact

Potential Consumer Impact Estimate

The NYISO estimated the short run annual consumer impact from implementing the Reserves for Resource Flexibility proposal as $330,000. This estimate does not include any reduction for potential BPCG savings. Data regarding the analysis of potential BPCG impacts are provided separately in this presentation. This estimate also does not include any offset for potential savings from reducing the NYC (Zone J) reserve requirement to zero MW during Thunderstorm Alerts (TSAs).

Using the NYISO's Day-Ahead Market (DAM) software, select market days were re-run during the period from July 2019 through April 2020.[5] The following revisions were included in the market software re-runs:

- Increasing the SENY 30-minute reserve requirement to 1,800 MW
- Assigning a $25/MWh shortage pricing value to the additional 500 MW of SENY 30-minute reserves; the current 1,300 MW requirement will retain a shortage price value of $500/MWh.

The day-ahead days selected for the re-run reflected days where less than 1,800 MW of 30-minute operating reserve was procured in SENY in at least four hourly intervals. The highest number of DAM hourly intervals on any day for which less than 1,800 MW of 30-minute reserves was procured in SENY was 8-hours. These days are the most relevant when considering the proposed change, as they require a

[5] Note: The NYISO used this period to ensure that the days selected included the New York City reserve region requirements implemented on June 26, 2019

change in resource schedules in order to procure the proposed additional 30-minute reserves in SENY.

The following Day-Ahead Market days were re-run in the market software.

- August 13, 2019
  - 8 hours with less than 1,800 MW of 30-minute reserve in SENY
- September 23, 2019
  - 7 hours with less than 1,800 MW of 30-minute reserve in SENY
- October 22, 2019
  - 4 hours with less than 1,800 MW of 30-minute reserve in SENY
- December 20, 2019
  - 4 hours with less than 1,800 MW of 30-minute reserve in SENY

The NYISO compared prices from re-run cases to the original prices to determine representative impact percentages. Representative impact percentage values were determined for each hour of the day for each Load Zone. The representative impact percentage values were used to estimate the consumer impact due to changes in DAM prices (energy, reserves, and regulation). Actual DAM energy prices from 2019 were used to calculate the consumer impact due to changes in energy prices. The price impacts were applied only to hours in 2019 where less than 1,800 MW of 30-minute reserve was procured in SENY. The impact was estimated by calculating revised prices in only those DAM hours where less than 1,800 MW of 30-minute reserves were procured in SENY.

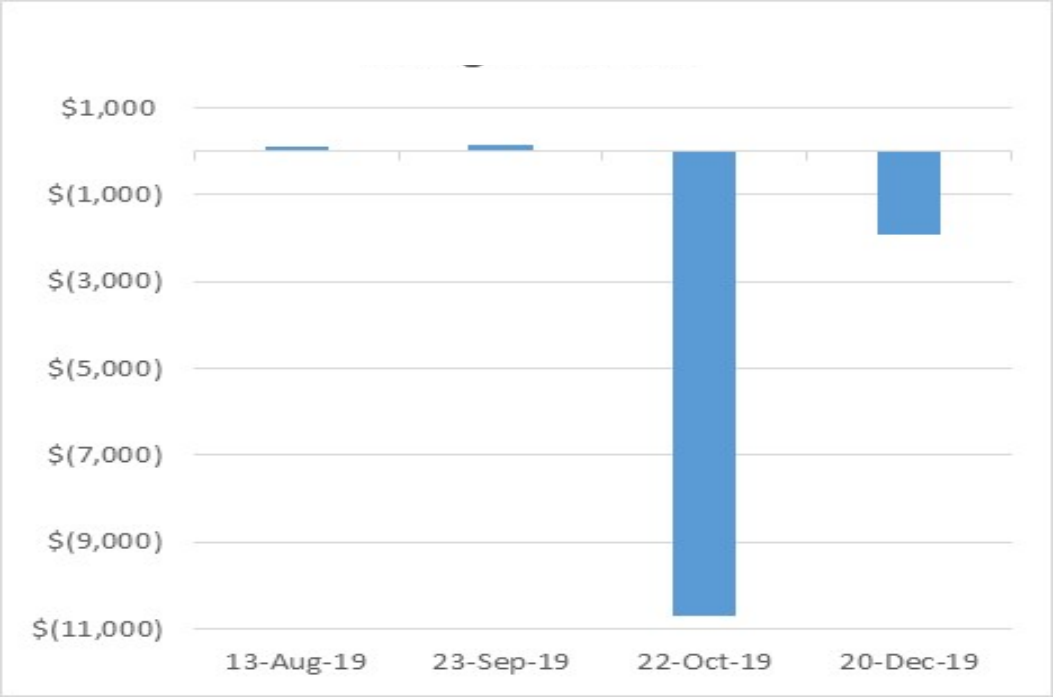
The adjusted 2019 DAM energy prices were then multiplied by the actual corresponding hourly demand (load in the case of LBMPs, ancillary services requirements in the case of reserves and regulation) during the historic one-year period. The result of this calculation was summed to determine an estimate of the potential annual consumer impact due to changes in energy prices. The resulting potential annual impact was approximately $330,000.

Potential BPCG Impacts

Potential Uplift Cost (DAM BPCG) Impact

The NYISO assessed changes in total BPCG for days that were re-run in our analysis. The impacts on BPCG varied significantly across the four market days that were re-run as shown in Figure 2 below. The impacts tend to be specific to the resource schedules for a particular day and no particular pattern emerged across the four days. As a result, the NYISO did not extrapolate the data to estimate an average level of potential DAM BPCG savings.

Figure 2: Change in Bid Production Cost Guarantee (BPCG)



Capacity Market Impact

Potential Consumer Market Impact Estimate

Using the 2020-2021 ICAP Demand Curve inputs and parameters, the NYISO calculated revised net EAS revenue offset values and resulting reference price values to estimate the potential impact of the Reserves for Resource Flexibility proposal on the ICAP Demand Curves.[6] Adjusted DAM and Real-Time Market (RTM) LBMPs were developed for each hour of "year 3" of the historic three-year study period used for the most recent annual update (9/1/2018 – 8/31/2019), using the results from the energy market analysis. Data for years 1 & 2 (9/1/2016 - 8/31/2018) were retained and unadjusted. All other inputs and parameters of the annual update for the 2020-2021 Capability Year were held constant.

The potential impact on energy market prices was minimal. As shown in Figure 3 below, the net EAS revenue model produced minimal changes only to Zones G and K.

[6] Note: The current peaking plant technology underlying each ICAP Demand Curve is a simple cycle F-class frame turbine

Figure 3: Net EAS Revenue Model Changes

Zone	Net EAS Revenue Delta
F – Capital	$0.00
G – Hudson Valley (Dutchess)	$0.01
J – New York City	$0.00
K – Long Island	$0.02

The minimal change to the net EAS revenue offset values did not result in any change to the resulting reference prices for the 2020-2021 ICAP Demand Curves. As a result, no potential impact was identified for the capacity market.

Additional Impacts

Reliability Impacts

Procuring an additional 500 MW of 30-minute reserves in the SENY reserve region provides ready access to resource capability to bring transmission assets to Normal Transfer Criteria following a contingency.

Environmental Impacts

No impact expected.

Impact on Transparency

Reflecting the value of the operational flexibility required in SENY to bring transmission assets to Normal Transfer Criteria following a contingency in market outcomes should provide for greater transparency.

Additional Information

Stakeholders requested some additional information, asking that the NYISO re-run the Reserves for Resource Flexibility consumer impact analysis using $40/MWh as the demand curve price for the incremental SENY reserve requirement.

The NYISO reviewed the results of the initial Day-Ahead Market (DAM) simulation assessing the potential impacts of the incremental SENY reserves using a $25/MWh shortage price value and concluded that these DAM simulation results and the estimated impact calculated by the NYISO would be unchanged using a $40/MWh shortage price value. Further review of the results of the initial simulation concluded that there were no instances in this simulation where a shortage of meeting the incremental SENY 30-minute reserve occurred. As a result, there were no instances in which the $25/MWh shortage price value

was applied. In other words, within the simulations, the market software was capable of satisfying the incremental SENY reserve requirement at costs of less than $25/MWh. Thus, there would be no impact to the previously determined estimate of the DAM consumer cost impact if the NYISO were to re-run the analysis with a $40/MWh demand curve price.

The consumer impact estimate is based on simulation results obtained using the existing resource bids from the DAM days that were rerun, however, there may be a de minimis increase in consumer costs due to changes in resource bidding behavior. Considering previous experience, resource bids typically increase slightly when reserve demand curve prices increase. This occurs because resources may incorporate into their bids the potential risk that the resources will be scheduled for reserve in the DAM and be unable to fulfill the schedule in real-time.

Hybrid Storage Participation Model[7]

Project Description

The primary objective of the Hybrid Storage Participation project was to develop interconnection and market participation rules for front-of-the-meter renewable generators co-located with Energy Storage Resources by developing market rules that integrate large-scale weather dependent and energy storage resources co-located behind a single interconnection point.

Proposed Options for Hybrid Storage Resources (HSR) Participation

- Hybrid Option 1 (Co-located Storage Resources or CSR):
  - Under Option 1, each resource component within the CSR will have a distinct PTID/bid/schedule/settlement. The injection limit for the CSR can be less than the combined capability of the component resources.[8] The NYISO is pursuing this option with stakeholders for Market Design Complete in 2020.
- Hybrid Option 2 (Aggregated Hybrid Storage Resources or HSR):
  - Under Option 2, HSR will have a single PTID/bid/schedule/settlement.9 The injection limit for the HSR can be less than the combined capability of the component resources. The NYISO is evaluating the feasibility of allowing HSRs that include a combination of Intermittent Power Resources (IPR) and Energy Storage Resources (ESR) to provide ancillary services. The NYISO is pursuing this option with stakeholders for Market Design Concept Proposal in 2021.

[7] The Consumer Impact Analysis was presented at the August 25, 2020 ICAP/MIWG working group meeting; a revised version responding to additional stakeholder questions was reposted on September 25, 2020.

[8] For more details on the options, please refer to 4.14.20 ICAPWG/MIWG discussions on "Hybrid Storage Model – Initial Market Design Concept Overview"

https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad

[9] For more details on the options, please refer to 4.14.20 ICAPWG/MIWG discussions on "Hybrid Storage Model – Initial Market Design Concept Overview"

https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad

Potential Benefits

Developing a market participation model for front-of-the-meter generators plus storage will better align the NYISO's market procurement with State efforts to integrate more clean energy into the grid. Hybrid resources have the potential to reduce output volatility and improve the availability of intermittent resources. Developers may avail themselves of State and Federal initiatives/incentives such as Federal Investment Tax Credit (ITC), REC procurements, to couple storage and intermittent renewable assets.

Overview

To compute consumer impacts, a spreadsheet analysis was conducted to test the impact of CSR/HSR on energy market LBMPs. Due to a lack of operational experience with actual CSR/HSR, a sensitivity analysis was performed on the impact of different levels of CSR/HSR penetration, the diminishing impact of additional MWs, and the resource availability factors of CSR/HSR in the market. With regards to duration, we computed the impact of 4-hour duration CSR/HSR. For the capacity market, in addition to the sensitivities discussed above, we also conducted a sensitivity analysis for the assumed comparability of CSR/HSR with traditional resources to account for the impact of CSR/HSR on IRM and LCRs (25%, 50% and 75% impact on capacity requirements).

Uncertainty remains with respect to where CSR/HSR will locate, how they will bid, their penetration and availability. These factors and others will ultimately shape the impact that CSR/HSR have on consumer costs. The purpose of this consumer impact analysis is to provide a range of possible outcomes based on the sensitivities discussed.

Consumer Impact Analysis (IA) Evaluation Areas

The potential impact of NYISO's Hybrid Storage Participation Model on all four evaluation areas is summarized below.

RELIABILITY	COST IMPACT/MARKET EFFICIENCIES
From an operational perspective, additional supply could be a reliability benefit, however, properly determining the capacity value of CSR/HSR and their impact on IRM/LCRs is important to avoid unintended adverse impacts to reliability	The wholesale energy market consumer impact varies widely from an estimated savings of roughly $1.6 million to $15.5 million based on CSR/HSR penetration and availability. The short-term analysis shows significant capacity market savings, however, these savings may not be sustainable as retirements and other changes will result from the influx of CSR/HSR penetration. The long-term analysis shows no capacity market savings as the market moves towards equilibrium
ENVIRONMENT/NEW TECHNOLOGY	**MARKET TRANSPARENCY**
CSR/HSR could enable greater adoption of renewables and that should further increase decarbonization	No impact expected

Potential Energy Market Impact Estimates

Energy Market Impact Estimate Assumptions

Since we don't know how much CSR/HSR capability will be available, we provided estimates over a range of expected values. It was assumed that a range of CSR/HSR penetration of 100 MW, 250 MW and 500 MW would be added to the fleet. The impact to the day-ahead NYISO reference bus historical energy prices for all intervals in 2019 was calculated using the assumptions outlined below. The short-run energy market impact of CSRs/HSRs was approximated using:

- Day-Ahead NYISO reference bus prices
- Real-time actual time weighted integrated load

The consumer impact of CSR/HSR resources for both upstate (Zones A-F) and downstate (Zones G-K) was estimated for multiple scenarios as shown in the table below. A diminishing impact for additional MWs was considered, as outlined in Figure 4 below:

Figure 4: Diminishing impact of Additional MWs

MW	Impact	Percent impact calculation
100	1.00%	1% x 100 = 1.0%
250	1.75%	0.5% x 150 + 1.0% = 1.75%
500	2.375%	0.25% x 250 + 1.75% = 2.375%

Energy Market Impact Estimate Approach

The analysis considered a 4-hour duration for CSRs/HSRs. Injections were assumed to take place during two sets of seasonal hours:

- Summer (May - October) from HB12:00 to HB 19:00
- Winter (November - April) from HB 14:00 to HB 21:00

The consecutive hours of production with the highest revenue was used in the analysis for the 4-hour duration calculations. The hourly price impact was multiplied by its respective hourly load for both upstate and downstate. A constant resource availability factor of 20%, 50%, or 80% was then be applied to provide the estimated consumer impact range.

Energy Market Impact Estimate Analysis

The energy market estimate was based on computing the hours expected to be impacted by CSR/HSR MW for each day. For example, if the highest revenue 4-hour range on one summer day occurred during hours beginning 13, 14, 15, and 16, then this set of hours for the given day was included when calculating the impact from a 4-hour duration CSR/HSR. Prices of the DA hours were adjusted by the percentage associated with the CSR/HSR MW (100 MW, 250 MW or 500 MW) shown in figure 4 above to calculate the price delta. For example, -1.75% times a $30 price equals a savings of $0.525.[10] The next step was to multiply the price delta with its respective hourly real-time TWI (Time Weighted Integrated) load value to compute the consumer impact for both upstate and downstate locations. The final step to arrive at the energy market impact estimate was to apply an availability factor (20%, 50%, or 80%) to the above calculation.

[10] The analysis essentially assumes that hybrid resources are infra-marginal

Conclusion - Energy Market Impact Estimate Results

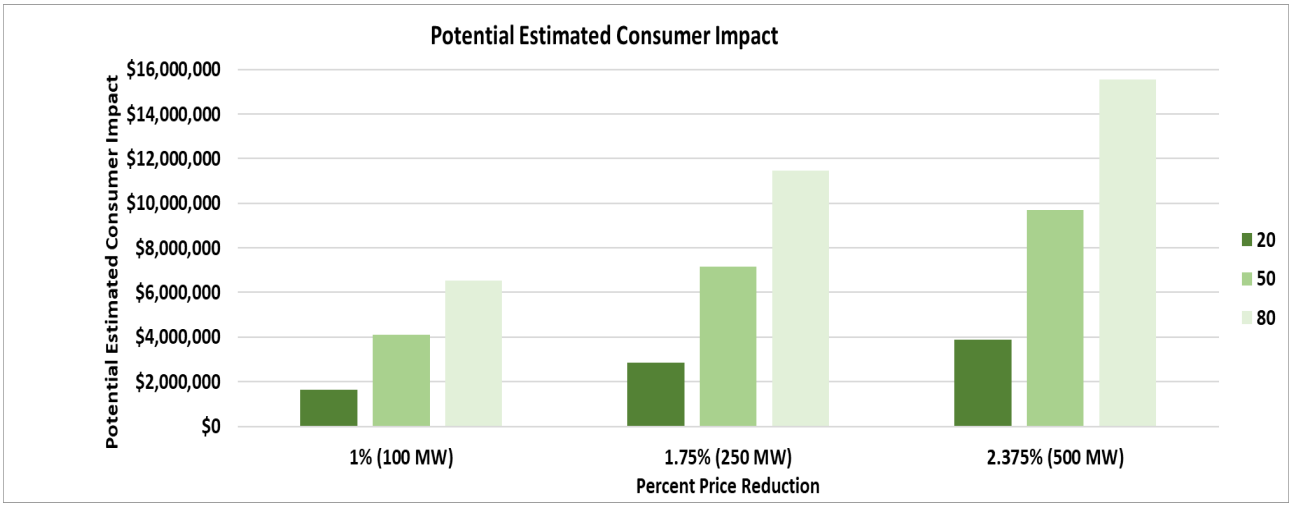
Based on the assumptions used for availability, total CSR/HSR MW, and a 4-hour duration, the potential statewide energy market consumer impact estimate can vary widely from an estimated savings of roughly $1.6 million to $15.5 million if HSRs and CSRs are added to the NYCA.

Figure 5 below shows the potential statewide energy market impact estimates for various levels of CSR/HSR MW additions (100 MW, 250 MW, or 500 MW), while Figure 6 shows the impact based on availability (20%, 50% and 80%). The impacts for upstate and downstate are shown separately in Figures 11 and 12 at the end of this section.

Figure 5: Potential Energy Market Impact Estimate

Percent Price Reduction	Estimated Potential Consumer Impact (Upstate)	Estimated Potential Consumer Impact (Downstate)	Estimated Potential Consumer Impact (Statewide)
1% (100 MW)	$0.7 Million to $2.7 Million	$1 Million to $3.9 Million	$1.6 Million to $6.5 Million
1.75% (250 MW)	$1.2 Million to $4.7 Million	$1.7 Million to $6.8 Million	$2.9 Million to $11.5 Million
2.375% (500 MW)	$1.6 Million to $6.3 Million	$2.3 Million to $9.2 Million	$3.9 Million to $15.5 Million

Figure 6: Statewide Estimate with Availability: 20%, 50%, or 80%



Potential Capacity Market Impact

Capacity Market Impact Assumptions

Consistent with the energy market impact analysis, the capacity market impact scenarios used 100

MW, 250 MW and 500 MW for CSRs/HSRs. The analysis assumed 90% of CSRs/HSRs Upstate (Zones A-F) and 10% Downstate (Zone J). Further, 80% intermittent and 20% storage was assumed in all scenarios and zones. It was additionally assumed that 75% of the upstate intermittent components were wind and 25% were solar while 100% of the downstate intermittent components were assumed to be solar.

For production factors for intermittent units within CSRs/HSRs, the analysis used the default values from the ICAP Manual:

- Wind: 10% (summer), 30% (winter)
- Solar: 46% (summer), 2% (winter)

Finally, for the derating factors for storage units within CSRs/HSRs, the analysis used the five-year average NERC EFORd for pumped storage of 6.02%, which is consistent with the ESR consumer impact analysis.[11]

To account for the potential impacts of CSR/HSRs on IRM and LCRs, we modeled three different impact levels to provide a range of comparisons between CSR/HSRs and traditional resources. Sensitivities modeled CSRs/HSRs having a 25%, 50%, and 75% impact on capacity requirements for each CSR penetration level modeled. Additionally, CSRs/HSRs were modeled consistent with the capacity supplier payment structure proposed in the CSR/HSR project and ultimately adopted as part of the stakeholder process. Finally, it was assumed that most of the CSRs/HSRs will participate in the wholesale market as capacity providers[12].

Short-Term Capacity Cost Impact Approach

The capacity market impact analysis, used the 2020 as-found system as a base case, for both short term and long term consumer impact analyses with additions of 100 MW, 250 MW and 500 MW of HSR penetration (MWs additions consistent with earlier discussion). The short-run impact analysis assumed no additional changes to generation. The impacts shown in the short run may not be sustainable, as retirements and other changes will result from the influx of capacity additions. We address this in the long run analysis, which assumes a supply level based on the historic level of excess.

[11] Derates on CSR/HSR injection limits are expected to be infrequent and therefore were not included in the analysis

[12] Impacts of the Tailored Availability Metric project were not included in this analysis

Short-Term Capacity Cost Impact

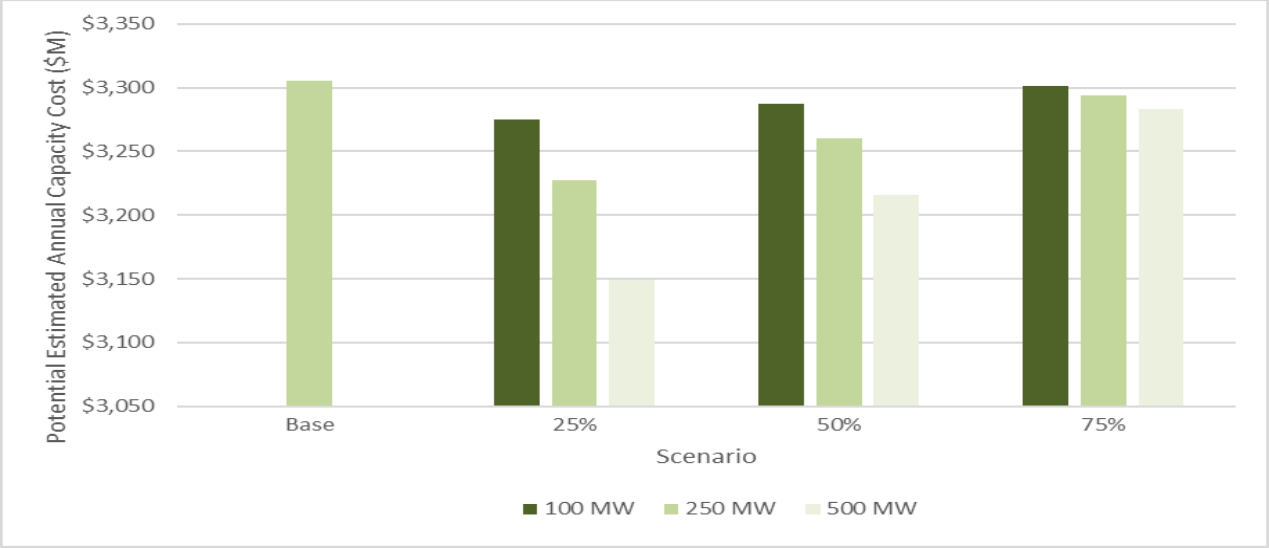
Figure 7 shows the MW impact of different levels of CSR/HSR penetration with varying impacts on capacity requirements. The MW impacts drive the change in capacity market impacts relative to the base case. For example, in Figure 7 the first row shows an increase of 25 MW in the ICAP requirement reflecting the 25% comparability case (100 MW * .25), which translates to a decrease in Summer UCAP requirement of 26 MW. Summer UCAP supply on the other hand, increases by 34 MW, which accounts for the 4-hour duration ESRs within the CSR/HSRs that have a 90% capacity value. The increase in summer UCAP supply combined with the decrease in summer UCAP requirement, along with a similar result in the winter, results in a decrease in annual capacity cost of $30 million relative to the base case.

Figure 8 below, shows the state-wide annual short-term capacity costs for 100 MW, 250 MW and 500 MW of CSR/HSR penetration with varying levels modeled for capacity requirement impacts (25%, 50%, and 75%).

Figure 7: Potential Estimated Short-Term Capacity Cost Impact

Short Term Results Summary													
		Annual Capacity Cost ($M)					MW Impacts						
% Impact on ICAP Requirements	CSR/HSR Penetration (ICAP MW)	ROS	GHI	NYC	Total	Total Minus Base	NYCA ICAP Requirement	NYCA Summer UCAP Requirement	NYCA Summer UCAP Supply	Net Summer UCAP Impact	NYCA Winter UCAP Requirement	NYCA Winter UCAP Supply	Net Winter UCAP Impact
25	100	469	146	2229	3275	-30	25	-26	34	60	-28	34	61
25	250	444	138	2214	3228	-78	63	-64	86	149	-69	84	153
25	500	402	125	2191	3149	-156	125	-126	171	298	-138	168	306
50	100	475	148	2233	3288	-18	50	-4	34	38	-5	34	39
50	250	461	143	2225	3260	-45	125	-9	86	95	-12	84	96
50	500	437	135	2212	3216	-89	250	-18	171	189	-24	168	192
75	100	482	150	2237	3301	4	75	18	34	16	18	34	16
75	250	478	149	2235	3294	11	188	46	86	40	45	84	39
75	500	472	146	2233	3283	22	375	91	171	80	90	168	78

Figure 8: Statewide Short-term Capacity Costs



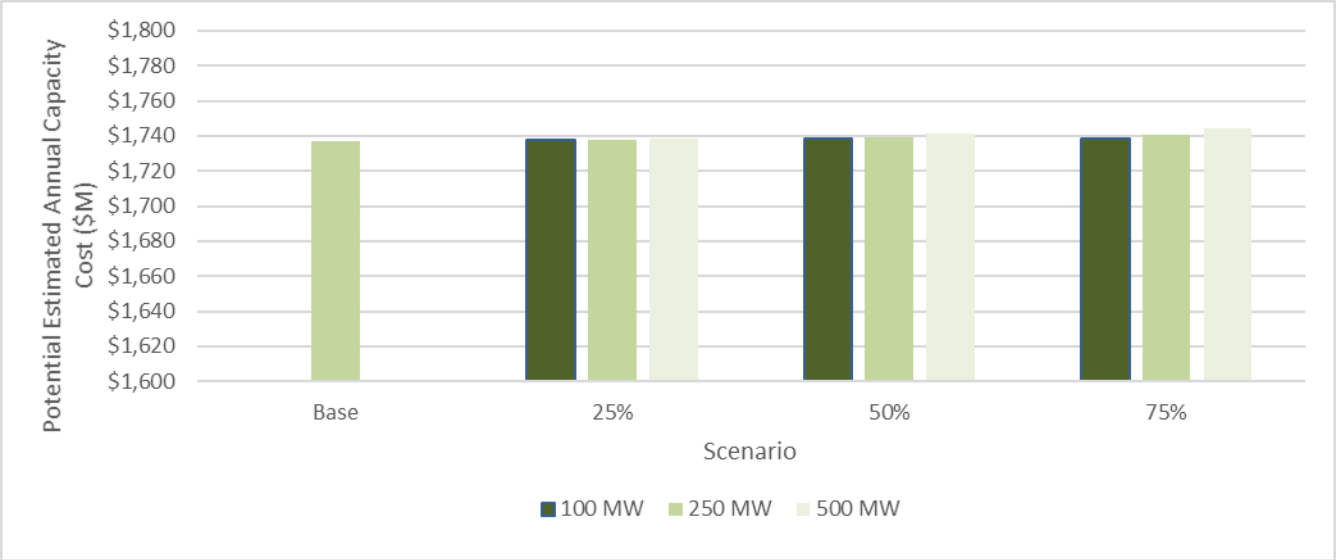
Long-Term Capacity Cost Impact Approach

As mentioned above, the long-term approach uses the same 2020 as-found system, as the short-term analysis, for the base case. The long-term analysis also uses the same MW additions and requirement impact percentages developed in the short-term impact analysis. For the Demand Curve values, the analysis used the 2020 Demand Curves. Finally, for the supply level, we used the historic excess defined as a percentage of excess above the requirement observed within the last three Capability Years in each of the different Localities. The long-term impacts are shown in Figures 9 and 10 below.

Figure 9: Potential Estimated Long-Term Capacity Cost Impact

Long Term Results Summary							
		Annual Capacity Cost ($M)					
% Impact on ICAP Requirements	CSR/HSR Penetration (ICAP MW)	ROS	GHI	NYC	LI	Total	Total Minus Base
25	100	313	235	893	297	1738	1
25	250	314	235	893	297	1738	1
25	500	313	235	894	297	1739	2
50	100	314	235	893	297	1738	1
50	250	314	235	893	297	1739	3
50	500	315	235	895	297	1742	5
75	100	314	234	894	297	1739	-2
75	250	315	235	894	297	1741	-4
75	500	317	235	896	297	1745	-8

Figure 10: Statewide Long-term Capacity Costs



Additional Impacts

Potential Environmental Impacts

CSR/HSR could enable greater adoption of renewables and that should further increase decarbonization. Pairing storage with renewables could also reduce renewable curtailment and have a positive environmental impact. Increased use of CSR/HSR to provide ancillary services may add to carbon reduction. Finally, co-locating and/or hybridizing an intermittent resource with energy storage could enable the CSR/HSR to provide low emission energy to the grid at times of high load volumes.

Reliability Impacts

From an operational perspective, additional supply could be a reliability benefit; however, properly determining the capacity value of CSR/HSR and their impact on IRM/LCRs is important to avoid unintended adverse impacts to reliability. Depending on location within the system, CSR/HSR may be in a position to provide local reliability services. The dispatch flexibility of CSR/HSR could be a reliability benefit.

Impacts on Transparency

No impact expected.

Additional Information: Upstate and Downstate Estimates

Figure 11: Potential Energy Market Impact Estimate Results – Upstate (Upstate estimate with availability: 20%, 50% or 80%)

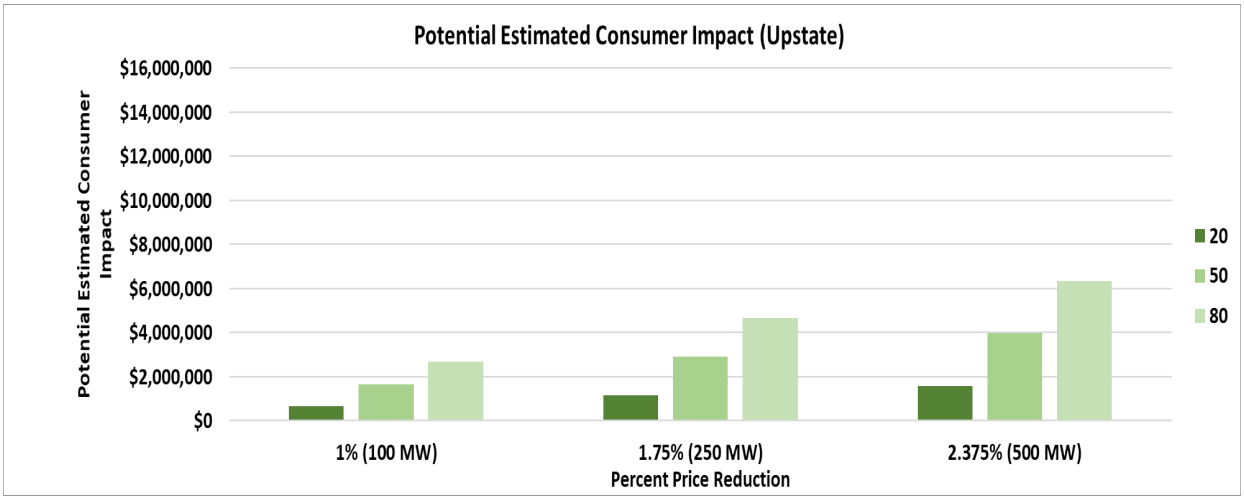
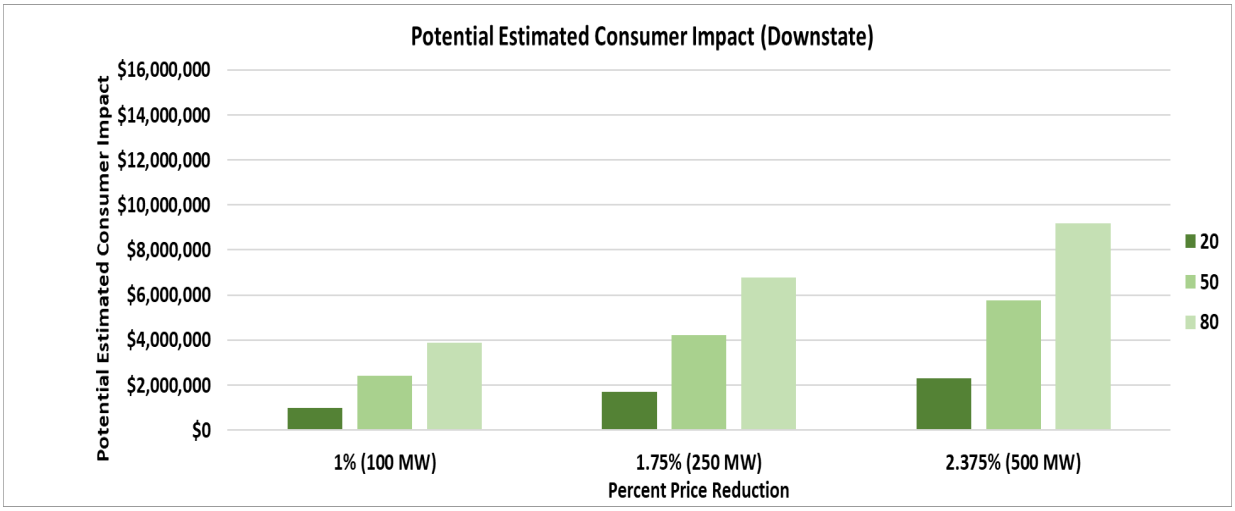


Figure 12: Potential Energy Market Impact Estimate Results – Downstate (Downstate estimate with availability: 20%, 50% or 80%)



Ancillary Services Shortage Pricing

Background

The Ancillary Services Shortage Pricing project consists of two main components:

- Revisions to the current reserve demand curves
  - Adjustments to shortage pricing values
  - Additional "steps" for a more graduated demand curve for NYCA 30-minute reserves
- Procuring additional reserves beyond the minimum reliability requirements ("supplemental reserves") as the amount of weather-dependent intermittent renewable generation on the grid increases.
  - This concept was previously discussed as part of the Reserves for Resource Flexibility project
  - Procuring supplemental reserves for system uncertainty is now part of the Ancillary Services Shortage Pricing project.

This consumer impact analysis focuses on the proposed revisions to the current demand curves. However, a separate analysis for the supplemental reserve procurement is included in the appendix below.

Proposed Enhancements to Current Reserve Demand Curves

The NYISO proposed to increase the current $25/MWh reserve demand curve step to $40/MWh for all Operating Reserve products in reserve regions other than NYC and LI. This includes applying the $40/MWh reserve demand curve value to the additional 30-minute SENY reserves that were recently approved. The NYISO also proposed additional pricing steps to smooth the relative magnitude of changes among the various pricing points for the NYCA 30-minute reserve demand curve.

Potential Benefits

Setting shortage prices that are more consistent with operator actions helps in maintaining reliability. Additionally, improved graduation of the NYCA 30-minute reserve demand curve could improve energy market price formation and reduce unnecessary price volatility.

Consumer Impact Analysis (IA) Evaluation Areas

The potential impact of NYISO's Ancillary Services Shortage Pricing project on all four evaluation areas is summarized below.

RELIABILITY	COST IMPACT/MARKET EFFICIENCIES
Setting shortage prices that are more consistent with operator actions helps in maintaining reliability	The potential short run energy market impact is estimated to be an increase of approximately $5.6 million annually The modest potential increase in energy prices results in a de minimus impact on capacity costs
ENVIRONMENT/NEW TECHNOLOGY	**TRANSPARENCY**
No impact expected	No impact expected

Potential Market Impacts

The total potential short run consumer impact is estimated as an annual increase of $5.6 million. This impact is primarily an energy market impact since the potential impact on capacity market prices is minimal. A discussion of the potential estimated capacity market impact is included later in this presentation. Higher shortage pricing should generally lead to a reduction in Bid Production Cost guarantee (BPCG) payments in a competitive market. The analysis performed did not simulate the re-run of an entire market day. This prevented accurate estimates of BPCG impacts, which is a daily settlement. However, we expect that BPCG payments will generally be lower as a result of this proposal.

A separate analysis was completed that considered the NYISO's proposal to establish a process to allow procurement of supplemental reserves when necessary in the future. This separate analysis is included below as Additional Analysis.

Energy Market Impact Assumptions

The energy market impact analysis used the NYISO's market software to re-run select market intervals from the past year. The following revisions were included in the market software re-runs:

- Incorporated additional pricing steps to NYCA 30-minute demand curve among the various pricing points
- Increased the current $25/MWh value to $40/MWh for all applicable products in reserve regions other than NYC and LI
- Increased the SENY 30-minute reserve requirement to 1,800 MW and assigned a $40/MWh shortage pricing value to the incremental SENY 30-minute reserves; a shortage price value of $500/MWh was retained for the current 1,300 MW requirement

Other considerations for the market software re-runs included using data from the prior year to capture incremental impacts on top of the implementation of the NYC reserve region in June 2019. In addition, the days selected for re-runs were chosen to be representative of shortage conditions that occur, recognizing that the frequency of such conditions occurring is relatively low based on current system conditions.

Energy Market Impact Intervals

The following RTC intervals were used for the analysis, as these intervals featured Operating Reserve shortages:

- July 26, 2019 18:45
- August 18, 2019 15:45
- October 2, 2019 14:45

Energy Market Impact Methodology

The energy market impact was computed by comparing prices from re-run cases to the original prices to determine the price delta value(s) for periods with shortages. These price delta value(s) were then applied to the actual, historical DAM prices for hours during 2019 where there was an Operating Reserve shortage in at least one corresponding 15-minute RTC interval to calculate adjusted DAM energy prices. The adjusted DAM energy prices were multiplied by the actual corresponding hourly demand in real-time during the historical one-year period when there was an Operating Reserve shortage in at least one 15-minute RTC interval during the applicable hour. The sum of these results estimated an annual consumer impact due to changes in energy prices.

Estimate of Energy Market Impact

The potential short-run annual energy market impact is estimated at $5.6 million. This value incorporates energy and ancillary services price impacts as described above.

Potential Capacity Market Impact

Capacity Market Impact Assumptions

Using the 2020-2021 ICAP Demand Curve inputs and parameters, the NYISO calculated revised net EAS revenue offset values and resulting reference price values to estimate the potential impact of the Ancillary Services Shortage Pricing proposal on the ICAP Demand Curves. Adjusted DAM and RTM LBMPs were developed for each hour of "year 3" of the historic three-year study period used for the most recent annual update (9/1/2018 – 8/31/2019), using the results from the energy market analysis. The data for years 1 & 2 (9/1/2016 - 8/31/2018) were retained and unadjusted. All other inputs and parameters of

the annual update for the 2020-2021 Capability Year were held constant.

Capacity Market – Potential Impact Estimate

Figure 13: Capacity Market – Potential Impact Estimate

Zone	Net EAS Revenue Delta	Reference Price Delta
F – Capital	0.06	-0.01
G – Hudson Valley (Dutchess)	0.06	-0.01
J – New York City	0.07	-0.01
K – Long Island	0.11	-0.01

Capacity Market Impact Estimate

The minimal change to the net EAS revenue offset values resulted in a minimal change in the resulting reference prices for the 2021-2020 ICAP Demand Curves as shown in Figure 13 above. As a result, no potential impact was calculated for the capacity market.

Additional Impacts

Reliability Impacts

Setting shortage prices that are more consistent with operator actions helps maintain reliability.

Environmental Impacts

No impact expected.

Impacts on Transparency

No impact expected.

Additional Analysis: Supplemental Reserve Requirements

Supplemental Reserve Requirement Estimate Assumptions

The impact of supplemental reserve requirement was estimated by using the NYISO's market software. The NYISO re-ran select SCUC days thought to reflect future system conditions of relatively low average prices with relatively high price volatility when these supplemental reserve may potentially be needed. These cases included all of the proposed revisions for the Ancillary Services Shortage Pricing project, modeled as described in this presentation. Two cases were analyzed:

- An increase in the NYCA 30-minute reserve requirement by 200 MW; an increase in the NYCA 10-minute total reserve requirement by 100 MW; and an increase in the NYCA 10-minute spinning reserve requirement by 50 MW
- An increase in the NYCA 30-minute reserve requirement by 500 MW; an increase in the NYCA 10-minute total reserve requirement by 250 MW; and an increase in the NYCA 10-minute spinning reserve requirement by 125 MW

The following Day-Ahead Market days were used for the analysis:

- June 15, 2019
- November 1, 2019

Supplemental Reserve Requirement Estimate Methodology

The potential impact of the supplemental reserve requirement was computed by comparing prices from re-run cases to the original prices to determine price delta value(s). The price delta value(s) were then used to estimate the consumer impact based on changes in future Day-Ahead Market (DAM) energy prices. The summer case prices were applied to the months of May through October, while the winter case prices were applied to the months of November through April to calculate the consumer impact due to changes in energy and ancillary services prices. This approach served to simulate potential future grid conditions with increased weather dependent renewable entry, featuring prices that are lower on average, and more volatile, relative to today. The adjusted energy prices were multiplied by the actual corresponding time-weighted integrated hourly demand in real-time during the historic one-year period for 2019. The result of this calculation was summed to determine an estimated annual consumer impact due to changes in energy prices.

Consumer Impact Analyses: 2021 Project List

Analysis Guidelines

In selecting projects for conducting Consumer Impact Analyses, the NYISO uses the following general guidelines:

- Anticipated net production cost impact of $5 million or more per year.
- Expected consumer impact from changes in energy or capacity market prices is greater than $50 million per year.
- Incorporates new technology into New York markets for first time.
- Allows or encourages a new type or category of market product.
- Creates a mechanism for out-of-market payments for reliability.

In addition to using the analysis guidelines listed above, the NYISO also considers the following:

- FERC directives (compliance filings) where the NYISO has implementation flexibility.
- Emerging stakeholder issues.

2021 Proposed Projects for Consumer Impact Analysis

- Reserve Enhancement for Constrained Areas
- Constraint Specific Transmission Shortage Pricing
- Large Scale Solar on Dispatch
- Grid Services from Renewable Generators
- Time Differentiated TCCs

Reserve Enhancement for Constrained Areas

Description: The New York State Reliability Council (NYSRC) rules require that the NYISO not load transmission facilities above their Long-Term Emergency (LTE) rating. 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. This offers opportunities to reduce production costs by relaxing the transmission limits of facilities that feed New York City load pockets. 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 do 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. 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. As the potential implementation of load pocket reserve requirements is considered, a dynamic reserve procurement methodology that does not exist today could 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.

Benefit: 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.

Screen: Emergent stakeholder issue.

Constraint Specific Transmission Shortage Pricing

Description: 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, the NYISO proposes 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 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 transmission demand curve mechanism that includes pricing values for shortages that exceed applicable CRM values.

Expected Benefit: 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.

Screen: Emergent stakeholder issue.

Large Scale Solar on Dispatch

Description: Large scale solar installations are just beginning to enter the New York Control Area (NYCA). While solar technology can offer many benefits, it can also pose challenges to reliable grid operation due to its variable nature. As higher levels of intermittent resources like solar connect to the grid, it is important to have appropriate market mechanisms to manage this variability with flexible resources that can follow a dispatch signal. Solar resources have a demonstrated ability to reduce their output in response to a dispatch signal, and the NYISO seeks to implement this capability within its energy markets.

Expected Benefit: Large scale solar resources are capable of contributing to system reliability due to their flexibility. The implementation of a market construct that allows the NYISO to send an economic market basepoint signaling a solar resource to reduce its output in response to system needs has the potential to increase system reliability while decreasing total production cost.

Screen: Allows or encourages a new type or category of market product.

Grid Services from Renewable Generators

Description: According to two recent studies by CAISO, NREL, GE, Avangrid Renewables, and First Solar, wind and solar resources equipped with inverter controls can provide grid services, including

regulation, voltage control, frequency response, and ramping. The required upgrades are minimal, if any, and result in the provision of services at the same or better levels of performance as compared to traditional generators, while simultaneously easing the integration of additional renewables onto the grid.

Expected Benefit: Renewable generators have the ability to provide grid services, thereby decreasing the cost of renewable integration while decarbonizing the provision of many essential reliability services. Given that significant quantities of renewable generation will be required to satisfy the CLCPA, removing barriers that prevent renewables from providing these services will decrease the costs of grid operation and overall emissions.

Screen: Allows or encourages a new type or category of market product.

Time Differentiated TCCs

Description: Currently, Transmission Congestion Contracts (TCCs) are only available as a 24-hour product, which limits effectiveness to serve as an efficient forward hedging mechanism against congestion for certain Market Participants' (MP) interests. The project seeks to include additional, more granular TCC products covering shorter timeframes. This enhancement is intended to improve the commercial function and forward congestion price transparency. More granular TCC products could potentially help some MPs to tailor portfolios to better hedge congestion costs during different periods of the day or week. This additional flexibility could be especially beneficial to MPs in an emerging grid 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.

Expected Benefit: 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 weekly and daily time periods where congestion patterns can vary; and (4) permit other market design improvements.

Screen: Significant market design concepts identified in the 2021 project prioritization process.

Key 2020 Electrical Industry Initiatives

Strategic Initiatives

To meet evolving regulatory requirements, and expected technical, financial and market challenges, the NYISO has identified six key strategic initiatives in addition to its core responsibilities and ongoing project plans. These initiatives provide guidance for projects and resource allocations in 2021 and in the future.

Grid Reliability and Resilience

Maintaining power system reliability is the NYISO's primary responsibility, and the role of wholesale markets is critical in carrying out this responsibility. The changing portfolio of resources serving the electric needs of New York requires a comprehensive review of the NYISO's existing market products and operational and planning practices to ensure the continued ability to efficiently and reliably serve New York's electricity requirements. Significant study work is underway to develop a deeper understanding of these evolving focus areas.

Efficient Markets for a Grid in Transition

The addition of renewable resources, energy storage, and DER will create a more dynamic grid. Supply is increasingly comprised of weather-dependent renewable resources and flexible resources will be needed to balance intermittent generation. Incenting resource flexibility, which includes the ability to respond rapidly to dynamic system conditions, providing controllable ramp with fast response rates, and providing frequent startup/shutdown capability, will be key to future market enhancements at the NYISO.

New Resource Integration

Technological advancements and public policies, particularly New York State's CLCPA and Reforming the Energy Vision (REV), are encouraging greater adoption of DER and energy storage to meet consumer energy needs. DER and energy storage offer the potential to make load and supply resources more dynamic and responsive to wholesale market price signals and system needs, potentially improving overall system efficiencies. The NYISO believes that opening its markets to DER and energy storage will improve the strength and efficiency of the electric grid.

Integration of Public Policy

The CLCPA sets the stage for aggressive state action to reduce greenhouse gas emissions and promote expansion of renewables, distributed energy, and storage resources. It is imperative that the NYISO

accelerate development of steps to harmonize wholesale electric power market design with state public policy goals.

Technology and Infrastructure Investment

The capabilities outlined in the NYISO IT Strategy and technology investments in various projects will position the NYISO with the flexibility and agility to comprehensively respond to emerging industry trends like the integration of renewables, energy storage and distributed resources, and at the same time, continue to maintain reliable operations of the grid and market systems while being responsive to increased security risks.

Efficient and Flexible Business Model

The NYISO strives to maximize the value that we deliver to our stakeholders through the execution of reliable, cost-effective service. In the current rapidly changing environment, continuous process improvement, product and service expansion, and business model refinement will shape the NYISO value proposition. The NYISO will improve organizational effectiveness; modernize systems for faster, more flexible response to market and regulatory changes; and continuously scrutinize cost of operations. In addition, the NYISO will continue to emphasize our brand value while delivering premium service to our customers.

Appendix

Sample Weekly Summary of NYISO Activity

NYISO Consumer Interest Liaison Weekly Summary

May 18 – May 22, 2020

Notices:

- The **2019 State of the Market Annual Report by Potomac Economics has been posted** to the NYISO Website. You may access the report by clicking on the link below; ***2019 State of the Market Annual Report***. It can also be found on the ***Market Monitoring*** section of our website and in the May 27, 2020 MC ***Meeting Materials***.

- A **special Management Committee meeting** has been scheduled on July 1, 2020, for discussion and action on the **2019 CARIS Report**

Meeting Summaries:

Monday, May 18, 2020

Joint Installed Capacity/Market Issues/Price Responsive Load Working Group

New York's Evolution to a Zero Emission Power System

Sam Newell, Jurgen Weiss and Roger Lueken of The Brattle Group (Brattle) presented their findings on New York's Evolution to a Zero Emission Power System. Mr. Newell started the presentation with introducing the purpose and scope of the study and reviewed NY State's clean energy policies. New York's goal is for renewables to supply 70% of electricity generation from renewables by 2030 and for the electric system to be 100% zero emissions by 2040.
Jurgen Weiss continued the presentation with identifying the key issues involved in decarbonizing the electric system. Mr. Weiss identified the challenge of meeting demand when

wind and solar are low, both hour-to-hour and seasonally. Electrification of the economy (space heating, electric vehicles, etc.) will drive peak loads higher and transition the NYISO from a summer peaking system to a winter peaking system. Mr. Weiss detailed the different challenges associated with hourly balancing and seasonal balancing. New technologies will be needed to provide seasonal storage or zero-emission, dispatchable supply. Several new technologies under development were noted that could potentially meet the zero-emission requirement, including:

- Hydrogen
- Renewable natural gas (RNG)
- Flow batteries
- Gravity storage
- Carbon capture and sequestration
- New nuclear technologies

Next, Roger Lueken explained how the GridSIM model used for the study works. The GridSIM model is a proprietary model developed by Brattle and it was used to simulate investment and operations through 2040, consistent with assumptions developed in conjunction with NYISO staff and stakeholders.

Based on simulations using GridSIM, Mr. Lueken provided insights into how the New York generation fleet and the grid will evolve through 2040. Solar, onshore wind and offshore wind will become the primary sources of electric power in the future grid. Curtailments of wind and solar will diminish, and the annual GWh total will rise, as the excess renewable power is used to produce Renewable Natural Gas (RNG) supplies.

As the grid transitions and solar power generation in southeast NY grows, there will be periods of south to north flow over transmission lines, contrary to the traditional north to southwest flows. Mr. Lueken also highlighted the anticipated timeline of the grid generation transition, using 2024 (Near-Term), 2030 (Mid-Term) and 2040 (Long-Term) as points of comparison. Charts and graphs were provided to illustrate the hourly and seasonal loads and generation mix for each period.

Mr. Weiss then led a review of the effects of electrification and provided a comparison of high electrification and reference load cases from the climate change phase 1 project. The high electrification case sees 43 GW more of capacity by 2040. The additional capacity is needed to support electrification and RNG production loads. The two cases are similar at first but begin to diverge starting in 2030.

Mr. Newell concluded the presentation by explaining the additional scenarios that will be studied, consisting of:

- **Existing Technologies Only**
- **Alternative Flexibility Options**
- **Increased Transmission**

Brattle will continue to accept stakeholder feedback, develop the additional scenarios, and present final study results at a June stakeholder meeting. To see the complete presentation, please go to:

https://www.nyiso.com/documents/20142/12610513/Brattle%20New%20York%20Electric%20Grid%20Evolution%20Study.pdf/6a93a215-9db3-d5a0-6543-27b664229d3e

Tuesday, May 19, 2020

Joint Installed Capacity/Market Issues/Price Responsive Load Working Group

2020 Master Plan

Ethan Avallone of the NYISO provided updates to the 2020 Master Plan. Mr. Avallone noted that the Master Plan provides a multi-year vision for future NYISO enhancements. It is intended to provide a comprehensive 5-year plan that will enable the NYISO to prepare for anticipated changes to the bulk power system.
Mr. Avallone highlighted the most recent (May 2020) updates to the Master Plan. Throughout the Master Plan, the terms "Operating Reserve" and "Ancillary Services" are capitalized indicating that these are tariff-defined terms. A change was made to the introduction to include the initiatives featured in this document. These initiatives will prepare the NYISO grid for increased weather dependent generation between now and 2030. Additionally, the Short Term Reliability Process ("STRP") was accepted by FERC in April and is noted in the Master Plan. Additionally, edits were made to remove reference to the phrase "front-of-the-meter generation," and instead use the phrase "wholesale market generation."
Mr. Avallone detailed the changes made to potential grid benefits, NYISO effort, and project dependencies for projects currently in development.
The updated timeline for the 2020 Master Plan was provided and discussed as below:

- May 19, 2020 (MIWG)
  - Release and discuss updated draft
- May 28, 2020 (BPWG)
  - Release updated draft (no discussion)
- August 27, 2020 (BPWG)
  - Release and discuss near final draft of the Master Plan
- December 2020
  - Release final Master Plan

Mr. Avallone noted that all updates to the Master Plan will be coordinated with the overall project prioritization process. A project prioritization process timeline was included for stakeholder reference.
To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12633186/2020_Master_Plan_5.19.2020_FINAL.pdf/ec666a0c-014b-912e-4314-dc2dbb0fcb4a

NYISO 2019/2020 ICAP Demand Curve Reset

Todd Schatzki and Paul Hibbard of The Analysis Group (AG) presented an update on the Demand Curve Reset (DCR) process.
Mr. Schatzki started the presentation with updates to the financial parameters for discussion with stakeholders. The Return on Equity (ROE) was increased from 12.75% to 13.4%. The updated recommendation reflects a re-consideration of AG's initial recommendation, with an adjustment to account for the impact of COVID-19 on financial markets.
The Cost of Debt (COD) was increased from 6.1% in April to 7.7% in May reflecting expectations over the 4-year DCR cycle, which extends beyond the immediate COVID-19 crisis. The updated recommendation reflects an expectation of a partial return to pre-COVID-19 economic conditions.

The Weighted Average Cost of Capital was raised from 9.1% to 10.1% reflecting updates to COD and ROE.
AG is also proposing to revise its initial, recommended amortization period for battery storage after further evaluation of technology-specific considerations. The updated recommendation is a 15 year amortization period for battery storage while confirming the 17 year amortization period for fossil units.
Next, Mr. Hibbard led a review of the process for determining the Level of Excess – Adjustment Factor (LOEAF) for the DCR period. For each zone, the 2020 recommended values for average preliminary LOEAFs are higher than the analogous 2016 DCR values. The current "as found" base case surplus capacity estimates for 2020 are also higher than the 2016 DCR surplus capacity levels. The final LOEAF values will reflect the actual MW of recommended peaking plants. A stakeholder requested that the GE MAPS results used for the analysis be made available for review and further discussion.
Finally, Mr. Schatzki led a discussion on stakeholder comments from earlier presentations on:

- Model Dispatch
- Forced Outage Rate (EFORd)
- Dual Fuel

Mr. Schatzki provided preliminary reference prices for the 2021-2022 DCR for discussion with stakeholders. The preliminary values are reflective of the preliminary recommendations for various inputs/assumptions as of the date of this presentation. The analysis to date indicates that the H-class frame turbine (GE 7HA.02) is the lowest cost technology option in all locations; preliminary values are based on the H-class frame. AG also provided preliminary gross CONE and Net EAS offset values.
To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12633186/AG%20DCR%20ICAPWG%2005192020%20Final.pdf/dc23583b-4e25-7829-5ab7-dcb7957b4887

NYISO ICAP Demand Curve Reset: Gross CONE Inputs

Kieran McInerney of Burns-McDonnell led a review of the Gross Cost of New Entry (CONE) inputs for the 2021-2022 Demand Curve Reset (DCR). Mr. McInerney noted a decrease in cost due to the deletion of the requirement for Supplemental Catalytic Reduction (SCR) in Zones C, F and Zone G (Dutchess County), and a revision to the electrical interconnection costs for Zone J (NYC). Run time limitations applying to units without SCR were discussed with stakeholders.
Mr. McInerney reviewed the Zone J specifications and costs for switch yard, gas interconnection and electrical interconnection. The switch yard and gas interconnection costs remain unchanged from prior recommendations whereas the electrical interconnection cost has increased. The cost increase is due to the overhead line assumption being adjusted to buried lines.
To see the complete presentation, please go to:

https://www.nyiso.com/documents/20142/12633186/BMcD%20DCR%20ICAPWG%2005192020.pdf/929847f5-8e90-6820-7a3c-6941f07e93ad

CPV Valley Comments on the Gas Hub Mapping for the Lower Hudson Valley Reference Plant

Dan Jerke of CPV Valley presented comments on the natural gas hub mapping for the Lower Hudson Valley reference plant. Analysis Group has recommended TETCO M3 as the gas hub reference price for Rockland County (Zone G).
Mr. Jerke explained that it is not possible for a facility to get delivered gas at the TETCO M3 price in Rockland County. Factors contributing to additional costs for the procurement of gas were identified as:

- CPV Valley interconnects to the Millennium Pipeline and pays for gas transportation east to the plant's lateral and pays again for transportation along the lateral to the plant.
- CPV Valley's cost of gas in 2019 was $3.03/MMBtu whereas TETCO M3 averaged $2.36/MMBtu and $2.39/MMBtu over the year when weighting daily gas prices by CPV Valley's daily volumes.
- The $0.64/MMBtu cost difference would have equated to $16 million for CPV Valley in 2019 alone.

Mr. Jerke led a review of the process and costs involved with the procurement of natural gas for Rockland County. Maps were provided to illustrate the paths of natural gas pipelines through Rockland County.
Mr. Jerke concluded the presentation with suggestions for the Demand Curve Reset consultants for a more appropriate hub selection noting additional costs for delivery. To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12633186/CPV%20Comments%20on%20DCR%20Gas%20Hub%20Mapping%2005-18-20%20for%20nyiso.pdf/8ed6f8ff-1944-c958-1452-f441adaa2abd

Wednesday, May 20, 2020

Business Issues Committee

Motion#1:
Motion to approve the April 8, 2020 BIC meeting minutes
Motion passed unanimously

Motion #2:
The Business Issues Committee (BIC) hereby approves the revisions to the Accounting & Billing Manual as described in the presentation to the BIC on May 20, 2020.
Motion approved unanimously with abstentions

Motion #3:
The Business Issues Committee (BIC) hereby approves the revisions to the Revenue Metering Requirements Manual as described in the presentation to the BIC on May 20, 2020.
Motion approved unanimously with abstentions

Motion #4:
The Business Issues Committee (BIC) hereby approves the revisions to the Public Policy Transmission Planning Process Manual, NYISO Manual No. 36, as presented and discussed at the BIC meeting held on May 20, 2020.

Motion approved unanimously with abstentions

Motion #5:
The Business Issues Committee (BIC) hereby approves revisions to the BIC By-Laws as presented and discussed at the May 20, 2020 BIC meeting.
Motion approved unanimously with abstentions

Motion #6:
The Business Issues Committee (BIC) hereby approves revisions to the Installed Capacity Manual regarding Energy Storage Resources as described in the presentation made to the BIC on May 20, 2020. The revisions will become effective on the effective date of the tariff revisions accepted by the Federal Energy Regulatory Commission in Docket No. ER19-467-000, et al.
Motion approved unanimously

Motion #7:
The Business Issues Committee (BIC) hereby recommends that the Management Committee approve changes to Section 4.4.3.1.1 of the Services Tariff, as presented and discussed at the May 20, 2020 BIC meeting
Motion approved unanimously

Motion #8:
The Business Issues Committee (BIC) hereby recommends that the Management Committee approves revisions to the NYISO Market Administration and Control Area Services Tariff (MST) sections 2, 5.10, and 5.11, as presented at the May 20, 2020 BIC.
Motion approved unanimously

Wednesday, May 20, 2020

Joint Installed Capacity/Market Issues/Price Responsive Load Working Group

Revised BSM Examination of New SCRs

Christina Duong of the NYISO presented updates to the BSM examination of new Special Case Resources (SCRs). On February 20, 2020, FERC granted rehearing on the February 3, 2017 Order and found that all new SCRs should be subject to NYISO's buyer-side market power mitigation rules. NYISO Submitted a Notice of Compliance plan on March 11, 2020. On May 12, 2020, FERC issued an Order directing the NYISO to file revised tariff language that removes "State Program Language" from Section 23.4.5.7.5 within 45 days to be effective as of May 12, 2020.
FERC's May 12, 2020 Order reaffirmed the ruling of the February 20, 2020 Order, including the exclusion of payments made pursuant to State Retail Level DR Programs that will be determined as part of the paper hearing process initiated with the February 20 Order. The Order rejected in part the NYISO's Notice of Compliance Plan, finding that the "State Program Language" previously included in 23.4.5.7.5 (that excludes payments under state programs from Offer Floor calculations) is not effective tariff language pursuant to FERC's recent orders. The Order directed the NYISO to remove the State Program Language, with a compliance filing, effective the date of the May 12 Order.

NYISO is currently discussing its proposed compliance revision to the Services Tariff. The NYISO presented revised material to describe its evaluation of new SCRs in Mitigated Capacity Zones (presently, NYC and the G-J Locality). The revised materials effective for new SCRs enrolled beginning of June 2020 are consistent with FERC's May 12 Order and the NYISO's revised tariff language.
NYISO intends to submit its Compliance Filing to FERC within one week of this discussion, May 27, 2020. The tariff modification will strike the following sentence from 23.4.5.7.5 and leave the remainder of the section intact; "The Offer Floor calculation shall include any payment or the value of other benefits that are awarded for offering or supplying Mitigated Capacity Zone Capacity except for payments or the value of other benefits provided under programs administered or approved by New York State or a government instrumentality of New York State."
Ms. Duong explained the various components used in the calculation of the Offer Floor and provided four examples for further clarity. To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12656396/May%2020%202020%20Revised%20BSM%20Examination%20of%20New%20SCRs.pdf/6afbf555-8908-86df-5388-11789cb53223

BSM for SCRs

Gregory Geller of Advanced Energy Management Service (AEMS) presented a response to the February 20, 2020 FERC Order that directs the NYISO to exclude distribution-level Demand Response (DR) revenues from the offer floor for SCRs. Neither the May 12, 2020 FERC Order nor the revised NYISO tariff compels NYISO to include such revenues in the offer floor for SCRs.
Mr. Geller explained that AEMS's position is that NYISO's Compliance Filing to FERC should remove the "State Program Language," and consistent with its tariff and the February 20 Order in EL16-92-001 and ER17-996-000, the NYISO should continue to exclude revenues from distribution-level DR programs toward the SCR offer floor. At a minimum, before submitting a Compliance Filing, the NYISO should seek clarification from FERC.
Mr. Geller cited relevant sections of the February 20 Order for stakeholder reference prior to explaining that FERC believes that payments from retail-level demand response programs, which are designed to address distribution-level reliability needs, are for providing a service that is distinct from providing ICAP. FERC has also ordered a Paper Hearing to decide whether it would be appropriate going forward to exclude said program revenues from the offer floor.
Mr. Geller reviewed language from the May 12 Order to suggest that nowhere in either Order has FERC suggested that distribution-level DR program revenues are "for providing Installed Capacity".
AEMS proposes that the NYISO's Compliance Filing to FERC should remove the State Program Language, but consistent with its tariff and the February 20 Order, propose to continue to exclude revenues from distribution-level DR programs toward the SCR offer floor.
To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12656396/May%2020%20AEMA%20ICAP%20Presentation_Final.pdf/92f707bc-91c0-c733-1787-ec1ff62be956

Thursday, May 21, 2020

Operating Committe

Joint Electric System Planning Working Group/Transmission Planning Advisory Subcommittee

Motion #1:

The Operating Committee hereby approves the meeting minutes from April 2020.
Motion approved unanimously

Motion #2:

The Operating Committee (OC) hereby approves revisions to the OC Bylaws as presented at the May 21, 2020 OC meeting.
Motion approved unanimously with abstentions

Motion #3:

The Operating Committee has reviewed Con Edison's procedures for compliance with Application No. 69 of the NYSRC Rule I-R3, and hereby approves such procedures as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #4:

The Operating Committee has reviewed PSEG Long Island's procedures for compliance with Application No. 70 of the NYSRC Rule G.3, and hereby approves such procedures as presented at the May 21, 2020 meeting.
Motion approved unanimously

Motion #5:

The Operating Committee (OC) hereby approves the Summer 2020 Fault Current Assessment as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #6:

The Operating Committee (OC) hereby approves the Class Year 2019 Facility Studies Preliminary Deliverability Analysis as presented and discussed at the May 21, 2020 OC meeting.
Motion approved unanimously with abstentions

Motion #7:

The Operating Committee (OC) hereby approves the revisions to the Public Policy Transmission Planning Process Manual, NYISO Manual No. 36, as presented and discussed at the OC meeting held on May 21, 2020.
Motion approved unanimously with abstentions

Motion #8:

The Operating Committee (OC) hereby approves the Q#710 Horseshoe Solar System Reliability Impact Study (SRIS) report as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously
Motion #9a:

The Operating Committee (OC) hereby approves the Q#800 Rich Road Solar System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #9b:

The Operating Committee (OC) hereby approves the Q#857 Columbia Solar System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #9c:

The Operating Committee (OC) hereby approves the Q#952 Catskill Grid System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #9d:

The Operating Committee (OC) hereby approves the Q#965 Yaphank Energy Storage System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #9e:

The Operating Committee (OC) hereby approves the Q#967 KCE NY 5 System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Motion #9f:

The Operating Committee (OC) hereby approves the Q#971 East Setauket Storage System Reliability Impact Study (SRIS) scope as presented and discussed at the May 21, 2020 meeting.
Motion approved unanimously

Friday, May 22, 2020

Joint Transmission Planning Advisory Subcommittee/ Transmission Planning Advisory Subcommittee

2020 RNA MARS Base Cases: Topology Updates

Kenneth Layman of the NYISO updated the topology used for the 2020 Reliability Needs Assessment (RNA) base case. Mr. Layman detailed the updates made since the April 6, 2020 ESPWG/TPAS meeting.
Mr. Layman explained that topologies for the years 2022 through 2030 are impacted by a 100 MW reduction in capability for Dysinger East and the Zone A group due to the retirement of the Somerset Generating Station. With Somerset currently retired, a stakeholder asked why the reduction occurs in 2022. Mr. Layman explained that with the Western NY Public Policy transmission in service, the 345kV line becomes the constraint due to PAR balancing in 2022. Also, due to the Cedar Rapids Transmission re-conductor project, the 115 kV ties from Quebec to Zone D increase the Chateauguay to D tie to 1770 MW in 2022, a change of 80 MW.

To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12654708/02%202020RNA_BCTopology.pdf/3d6c5e75-f67a-17ce-c34a-1162a9c0b1c9

2020 RNA MARS Base Cases: Further Simplification of the External Model

Michael Welch of the NYISO presented additional information on the further simplification of the external regional representation. This information adds to the prior presentations at the February 27, 2020 and the March 16, 2020 ESPWG/TPAS meetings.
A stakeholder questioned if this improvement for simplicity affects the accuracy of the model. Mr. Welch noted that the NYISO will be studying the outputs to see if inaccuracies are introduced and will report results back to the working groups.
Mr. Welch provided a bubble diagram representation of the new topology and added the following assumptions:

- This scenario removes the load and generation model used in the RNA Base Case analysis
- Instead, capacity resources are added to each external area, as described on subsequent slides
    - This capacity will be available as emergency assistance during hours where there is not enough New York Control Area generation to serve load

Mr. Welch explained the methodology for modeling external capacity transactions. Also, the following types of external capacity models will be evaluated:

- **Always Available Units**
- **Units with a forced outage rate**
- **Units subject to a probability distribution function**

The Pool to Pool limits were provided as guidelines for setting available capacity. Mr. Welch noted that the overall emergency assistance import limit of 3500 MW, excluding capacity purchases, will continue to be applied.

To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12654708/03%202020RNA_FurtherSimplifiedNeighboringAreasScenarioAssumptions.pdf/af2cb0ed-8bbc-47ee-5fac-f87150b1d8be

2019 CARIS Phase I Draft Report

Jason Frasier of the NYISO presented the draft 2019 CARIS Phase 1 report.
Prior to Mr. Frasier's presentation, Yachi Lin of the NYISO explained the process used to develop the 70 x 30 scenario. The process involved 16 stakeholder working group discussions. The scenario is an illustration of a potential resource mix but is not to be assumed as a plan to move forward to achieve 70 percent renewables by 2030.
Mr. Frasier led a high level overview of the report and noted that comments are encouraged and will be reviewed at the next ESPWG meeting. The June 4, 2020 ESPWG meeting will include a detailed review of the report. The NYISO will seek governance approval leading to a July 2020 Board of Director's meeting.
Benjamin Cohen of the NYISO led a review of the data used in the base case and scenarios and provided stakeholders with a brief tutorial on how to access detailed information from the tables in the report, included with the meeting materials.
To see the complete presentation, please go to:
https://www.nyiso.com/espwg?meetingDate=2020-05-22

2021 - 2022 IRM Proposed MARS Topology

Frank Ciani of the NYISO reviewed the proposed MARS topology changes from the 2020 IRM Study MARS topology to the 2021 Study MARS topology. The 2020 RNA study proposed various topology changes for the 2021 study year with many of these applicable to the 2021 IRM Study.
Mr. Ciani began with changes resulting from the deactivation of Indian Point. The UPNY-Con Ed (Zone G to Zone H) limit increased to 7,000 MW from 6,000 MW, the Dunwoodie South (Zone I to Zone J) limit was reduced to 4,350 MW.
Mr. Ciani highlighted the following updates to the model:
UPNY-SENY Model Simplification
PJM-SENY Group Interface Removal
Updates to Zone K Topology

- The NYISO received updates from PSEG-LI
    - The values are considered preliminary pending final application of the inclusion rules
- System Changes
    - Reduced load forecast for western Long Island
    - Additional East Garden City – Valley Stream 138 kV circuit
- Topology limit changes
    - Increased ability to export power from Long Island
    - The J_TO_K (Jamaica ties) limit is no longer dependent on Barrett availability

The topology will be presented to New York State Reliability Council – Installed Capacity Subcommittee on June 4, 2020 for approval. To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/12654708/05%20ICS_IRM2021_Topology_Updates.pdf/0b21c81f-11ef-4711-a67a-91e5ace2d80a

FERC Filings

May 18, 2020

NYISO 205 filing on behalf of New York State Electric & Gas Corporation (NYSEG) of an Engineering and Procurement Agreement (SA 2534) between NYSEG and New York Transco, LLC

FERC Orders

May 22, 2020

NYISO 205 filing on behalf of New York State Electric & Gas Corporation (NYSEG) of an Engineering and Procurement Agreement (SA 2534) between NYSEG and New York Transco, LLC

May 19, 2020

Order accepting in part the Central Hudson Formula Rate, suspending it for nominal period, to become effective May 20, 2020, as requested, subject to refund and establishing hearing and settlement procedures

May 19, 2020

Order accepting in part the Central Hudson Formula Rate, suspending it for nominal period, to become effective May 20, 2020, as requested, subject to refund and establishing hearing and settlement procedures

Filings and Orders

http://www.nyiso.com/public/markets_operations/documents/tariffviewer/index.jsp