New York ISO

2019 Annual Report of the Consumer Interest Liaison

A Report by the
New York Independent
System Operator

May 2020

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

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Message from the President and CEO

As you are well aware, the NYISO is facing an extraordinary challenge as we to transition from a grid that relies heavily on fossil-fuel generation to a grid with zero carbon emissions, based primarily on intermittent renewable resources and distributed generation. Over the last two years, we worked on market designs for Distributed Energy Resources (DER) and energy storage integration that laid the foundation for accommodating these new resources in our wholesale markets. In 2020, our focus will shift to projects like Comprehensive Mitigation Review (CMR), Ancillary Services Shortage Pricing, Hybrid Storage Model, and Reserves for Resource Flexibility, which will further prepare us for this transition.

As we work on these and other projects over the course of the year, we will continue to provide you with consumer impact analyses, as we have in the past. Conducting analyses of major market design changes is an integral part of our project completion, and we will continue to devote time and resources to this task.

I expect 2020 to be another busy and eventful year. I am confident that, along with the end-use sector and our other stakeholders, we are up to the challenge facing us. I look forward to working with you as together we serve in interests of New York consumers.

Richard Dewey

President and CEO

Message from the Consumer Interest Liaison

The Consumer Interest Liaison Annual Report updates stakeholders on the past year's activities, most importantly how major market design changes impact energy consumers. During 2019, we performed consumer impact analysis on three major projects: the Distributed Energy Resources (DER) Participation Model, External Capacity Performance & Obligations, and Enhanced Fast Start Pricing.

The first analysis for 2019 was the Distributed Energy Resources (DER) Participation Model. We presented the methodology to conduct the analysis on Jan. 24, and presented the analysis on Feb. 4. The main objective was to develop a dispatchable participation model that would integrate existing and emerging DER technologies. The analysis analyzed the impact of this dispatchable participation model on energy and capacity prices.

The next analysis was External Capacity Performance & Obligations. The methodology was presented on May 22, followed by the consumer impact analysis on Aug. 8. The objective was to ensure that external capacity resources are providing the reliability values comparable to internal capacity resources. To achieve this, the NYISO proposed external capacity call requirements and accompanying penalties and deliverability and eligibility requirements. The consumer impact analyzed the impact of these changes.

The methodology for the third analysis, Enhanced Fast Start Pricing, was presented on Sept. 26, followed by the analysis on October 18. The objective was to modify the pricing logic to allow the commitment cost of fast-start resources to be reflected in prices. The analysis studied the impact of the modified pricing logic on consumer costs.

In addition to consumer impact analyses, we also support the end-use sector in other important ways. A weekly summary of all stakeholder committee and working group meetings is sent to the end-use sector and posted on the NYISO website. We conference monthly with sector representatives and New York State Department of Public Service staff, respond to consumer inquiries and questions, and provide training and information sessions as required. All these services are briefly discussed in the beginning of this report.

Given the challenges of a grid in transition, we are expecting another very busy year and look forward to continue supporting the End-Use sector during 2020.

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

All changes to the NYISO markets begin as a design concept with further details developed and presented to stakeholders during the governance process. Projects are categorized by market product and brought to the appropriate working groups before seeking approval at the committee level. The working groups provide stakeholders the opportunity to understand the projects and help shape how a market design will function following implementation.

Due primarily to a lack of resources, it was determined that it was very difficult for end-use consumer representatives to stay current and informed of all the working group activities and project details. The liaison's office attends all stakeholder committee and working group meetings to observe and keep pace with the discussions taking place at these meetings and other relevant issues that are brought up by stakeholders or NYISO personnel. The liaison sends a summary of the committees and working group meetings out each week to keep consumer representatives current on the progress of issues through the governance process. The summaries also include other information, such as filings made to the Federal Energy Regulatory Commission (FERC), and Orders to the NYISO from FERC. In addition, the weekly summaries highlight relevant notices such as meeting reminders, deadlines for input, NYISO manual revisions, and other topics relevant to effective participation. The appendix to this report provides an example of a typical weekly summary covering stakeholder meetings during a week in the summer of 2019.

Monthly End-Use Consumer Conference Calls

An additional method the Consumer Interest Liaison employs to keep end-use consumer representation informed and up to date is the monthly conference call. Each month, the Consumer Interest Liaison invites end-use consumer representatives and the staff of the New York State Department of Public Service (DPS) to participate in a conference call. On this call, the Consumer Interest Liaison leads a review of upcoming working group and committee meeting agendas to allow consumer representatives to effectively use their limited resources for the issues that are most relevant to their interests. These monthly meetings also serve as an opportunity for the end-use sector representatives to voice concerns regarding topics being discussed in the stakeholder process. Because the Consumer Interest Liaison is part of the NYISO Market Structures group, there is direct access to the project and product subject matter experts to address end-use consumer feedback. These monthly meetings help promote an open line of

communication between the NYISO and the end-use consumer representatives.

Email Reminders

NYISO sends out several email notifications throughout the course of the year. Some are relevant to the entire market and some are relevant to a particular issue or market segment. The Consumer Interest Liaison maintains a database specifically for the end-use consumer customers and the issues that affect them. The liaison receives emails from all of these mailing lists and then summarizes and resends relevant and pertinent emails to the end-use consumer email list. This effort serves many purposes:

- Prevents the missing of important, relevant email
- Increases end-use consumer awareness as the sender is different from the standard NYISO address
- Provides notification on issues that some end-use consumer representatives may not normally receive

Although this could act as a duplicate mailing, it helps end-users avoid missing important information.

Training and Information Sessions

As stated earlier, today's electric markets are constantly changing to keep up with new technologies and maintain system reliability. Many of the issues facing the grid require knowledge of grid operations and technological expertise. Due to the lack of resources that would be required to keep the end-use consumer representatives fully informed on new developments and specifications, consumer representatives occasionally request more information on a particular issue. When this is required, the Consumer Interest Liaison becomes a resource for the end-use consumer representatives. With the expertise available in the NYISO Market Structures organization, the Consumer Interest Liaison is in an excellent position to provide the consumer representatives a more detailed explanation of specific areas of the NYISO markets. In these instances, the liaison offers an opportunity to the end-use sector for additional information and clarification to better prepare them for stakeholder discussions. While the Consumer Interest Liaison does not advocate a position for the end-use sector, it is a way for the end-use consumer representatives to better prepare to address complex issues in an informed manner.

In 2019, the NYISO made some modeling changes to the representation of some 115kV transmission lines in the bidding and scheduling software. By addressing these changes, the NYISO eliminated redundant scheduling decisions in the software and represented sections of the transmission system with one key point to better represent the pricing solution. This was a very complicated solution to an issue that the end-use sector needed to understand to properly explain it to their clients. Following a request from an end-use consumer representative, the NYISO Manager of Operations Performance and Analysis

met with the end-use sector to discuss the project in detail. At the end of the meeting, end-use consumer representatives had a thorough understanding of the issue and the solution to make an informed report back to their clients.

This is just one example of the many services that the Consumer Interest Liaison performs to assist the end-use consumer sector in making informed, sound determinations on issues.

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.

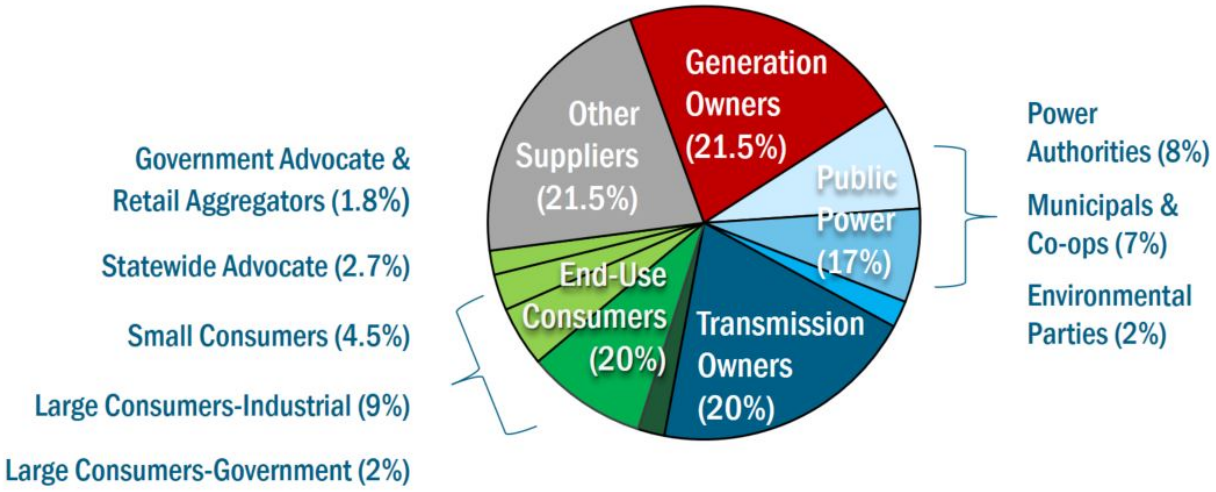
The NYISO's three standing stakeholder committees perform their responsibilities in accordance with their bylaws and in coordination with work performed by NYISO management and staff. The NYISO's governing agreements establish their specific responsibilities. Stakeholders are responsible for a range 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/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 Impact Presentations During 2019

- 2020 Consumer Impact Analysis Project List (BPWG – August 28, 2019).
- Distributed Energy Resources Participation Model (ICAP – February 4, 2019).
- Methodology for Consumer Impact Analysis: Distributed Energy Resources Participation Model (ICAP – January 24, 2019).
- External Capacity Performance and Obligations (ICAP – August 8, 2019).
- Methodology for External Capacity Performance and Obligations (ICAP – May 22, 2019).
- Enhanced Fast-start Pricing (ICAP/MIWG – October 18, 2019).
- Methodology for Enhanced Fast-start Pricing (ICAP/MIWG – September 26, 2019).

Distributed Energy Resources (DER) Participation Model

Background

The objective of this project was to develop a dispatchable DER Participation Model for the NYISO-administered wholesale markets.[3] The aim was to create a model that supports the NYISO Market Design vision that would attract and retain the most efficient resources to meet New York's reliability needs. As part of developing a DER participation model, the NYISO evaluated the capacity value of resources with varying duration limitations. GE Energy Consulting was retained to evaluate the capacity value of various resources in the NYISO market with the objective of aligning payments with the capacity value provided by each resource. This new approach would shift away from the one-size-fits-all approach used currently. Payment to resources would be based on the value they provide to the capacity market.

Project Description

Although DER could participate in the NYISO-administered wholesale markets in limited ways, market enhancements to further integrate DER would benefit the system as a whole. The main goal of the DER Roadmap and resulting market design was to integrate existing and emerging DER technologies.[4]

Overview

To compute consumer impacts, a spreadsheet analysis was conducted to test the impact of DER penetration on energy market locational based marginal pricing (LBMPs). Due to a lack of experience with actual DERs in operation, sensitivities were run on the amount of DER penetration, the impact of DERs on LBMPs and the availability of DERs in the real-time market. With regards to duration, we computed the impact of 4-, 6- and 8-hour duration DERs separately.

[3] DER Market Design Updates and Energy Market Bid to Bill Examples, Presentation of Michael Lavillotti to the July 26 MIWG https://www.nyiso.com/documents/20142/2180936/DER%20Market%20Design%20%20Updates%20and%20Energy%20Market%20Bid%20to%20Bill_V9.pdf/34bed692-5e91-7d50-762f-95a348b73f89

[4] Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets, A Report by the New York Independent System Operator, January 2017 https://www.nyiso.com/documents/20142/3067339/Distributed_Energy_Resources_Roadmap.pdf/a890c599-d7c3-6ba5-d10e-0001775bf061

For the capacity market, in addition to the sensitivities discussed above, we also provide a sensitivity analysis for the assumed comparability of DER with traditional resources to account for the impact of DER on Installed Reserve Margin (IRM) and Locational Capacity Requirements (LCRs). (50% and 100% impact on capacity requirements).

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

Summary of Consumer Impacts

RELIABILITY

From an operational perspective, additional supply could be a reliability benefit, however, properly determining the capacity value of DERs and their impact on IRM/LCRs is important to avoid unintended adverse impacts to reliability

COST IMPACT/ MARKET EFFICIENCIES

The wholesale energy market consumer impact varied widely from an estimated savings of roughly $15 million to $180 million based on DER penetration, duration and availability.

The short-term analysis showed significant capacity market savings, however, these savings may not be sustainable as retirements and other changes would result from the influx of large amounts of DER penetration.

The long-term analysis shows no capacity market savings as the market moves towards equilibrium

ENVIRONMENT/ NEW TECHNOLOGY

The increase in use of DER , especially during system peak times may reduce emissions

MARKET TRANSPARENCY

No impact expected

Energy Market Impact

Energy Market Impact Assumptions

The impact to representative upstate and downstate historical energy prices for all intervals in 2017 was calculated using the assumptions outlined below. The short run energy market impact of DERs was approximated using:

- Hourly Day-Ahead load
- Real-time 5-minute level prices (DERs dispatchable on a 5-minute basis)

To analyze consumer impacts, an analysis was conducted to test the impact that energy supplied by DERs could have on energy market LBMPs. Pricing data from two generator buses with high price volatility were selected:

- Upstate node: 9-Mile 2
- Downstate node: Ravenswood 3

The consumer impact of DER resources for both upstate (Zones A-F) and downstate (Zones G-K) was estimated for multiple scenarios as shown in the Figure below.

Figure 1: Consumer Impact

MW	LBMP Impact	Incremental Percent per 100 MW
600	-6%	-1% (-1% x 600) = -6%
1200	-9%	-0.5% (-0.5% x 600)+ -6% = -9%
2000	-11%	-0.25% (-0.25% x 800)+ -9% = -11%

Energy Market Impact Methodology

The study considered 4-, 6-, or 8-hour duration for DERs. DER injections were assumed to take place during two sets of seasonal hours:

- Summer (May through October) from HB12:00 to HB19:00
- Winter (November through April) from HB14:00 to HB21:00

The consecutive hours of production with the highest revenue were used in the analysis for the 4- and 6-hour duration calculations.

The hourly average price impact was multiplied by its respective hourly average load for both upstate and downstate. A constant resource availability factor of 20%, 50%, or 80% was then applied to provide the estimated consumer impact range.

Energy Market Analysis

The first step in the analysis was to compute the hours expected to be impacted by DER MW for each day. For example, if the highest revenue 4-hour range on one summer day was 13, 14, 15, 16, then this set of hours for the given day was included when calculating the impact from a 4- hour duration DER.

Next the prices of the impacted 5-minute intervals were adjusted based on the amount of DER MW (600 MW, 1200 MW or 2000 MW) and then averaged into hourly values:

- See Figure 1, above.
- This step calculated a price delta (for example, -6% times a $30 price equals a savings of $1.80).

The price delta was then multiplied with its respective hourly average load value to compute the consumer impact for both upstate and downstate locations.

Lastly, an availability factor (20%, 50%, or 80%) was applied to the above calculation.

The tables and graphs that follow show the energy market impact for various levels of DER MW additions (600 MW, 1200 MW, or 2000 MW). Existing resources were assumed to remain in the energy market at these DER MW addition levels. The statewide, upstate, and downstate impacts are shown separately for different levels of assumed availability (20%, 50% and 80%).

Figure 2: Energy Market Results – Statewide estimate with Availability: 20%, 50%, or 80%

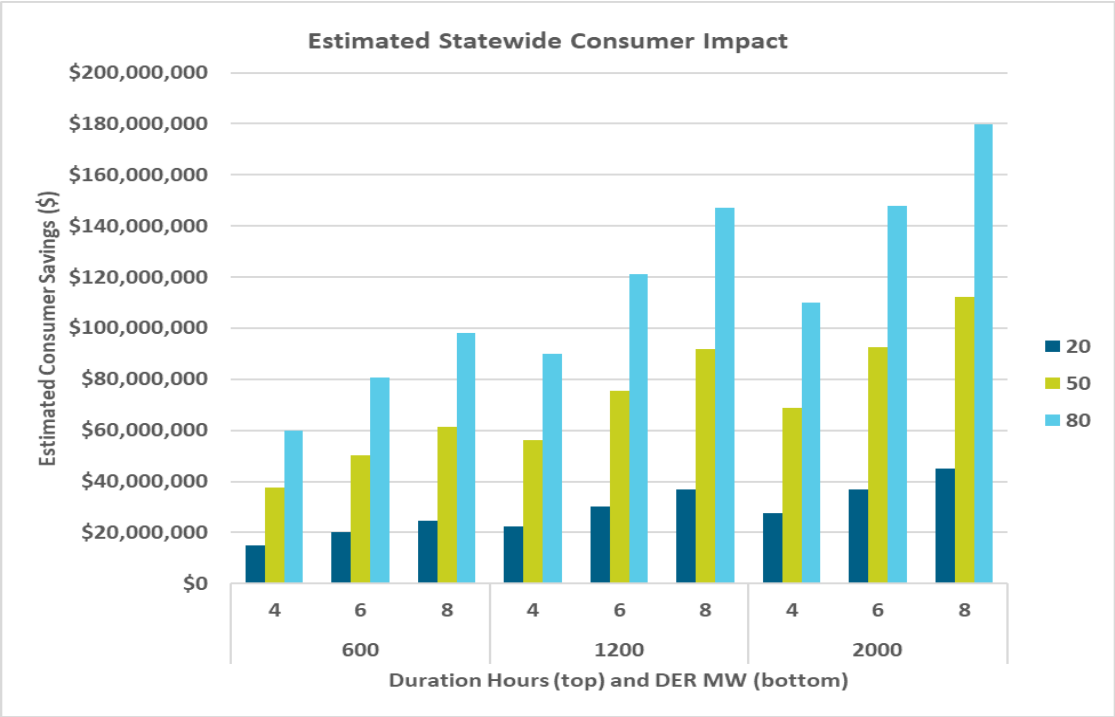
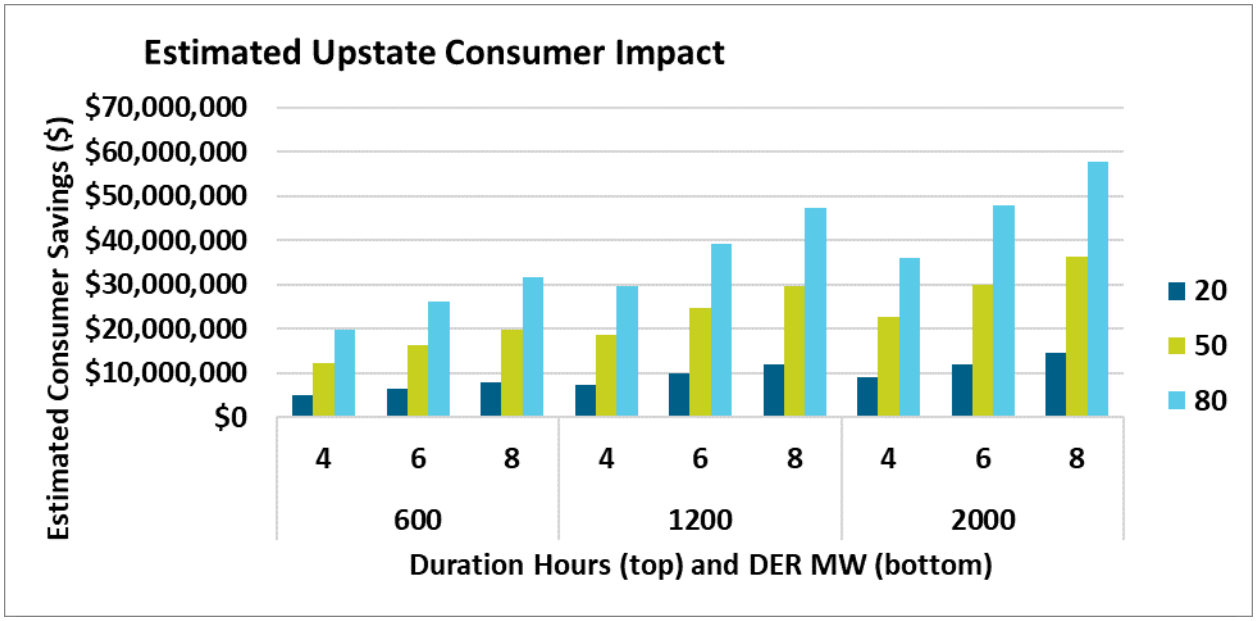


Figure 3: Estimated Statewide (A-K) Consumer Impact

Availability	% Shaved	Capacity [MW]	Duration Hours	Est. Annual Savings ($)
20%	6	600	4, 6, 8	15 million to 25 million
	9	1200	4, 6, 8	23 million to 37 million
	11	2000	4, 6, 8	28 million to 45 million
50%	6	600	4, 6, 8	38 million to 61 million
	9	1200	4, 6, 8	56 million to 92 million
	11	2000	4, 6, 8	69 million to 112 million
80%	6	600	4, 6, 8	60 million to 98 million
	9	1200	4, 6, 8	90 million to 147 million
	11	2000	4, 6, 8	110 million to 180 million

Based on Pricing Data from 9-Mile 2 (Zones A-F) and Ravenswood 3 (Zones G-K); Assumed prices drop by 6% (600 MW), 9% (1200 MW) and 11% (2000 MW); DER Injections: Summer HB12:00 to HB19:00, Winter HB14:00 to HB21:00

Figure 4: Energy Market Results – Upstate Estimate With Availability: 20%, 50% or 80%



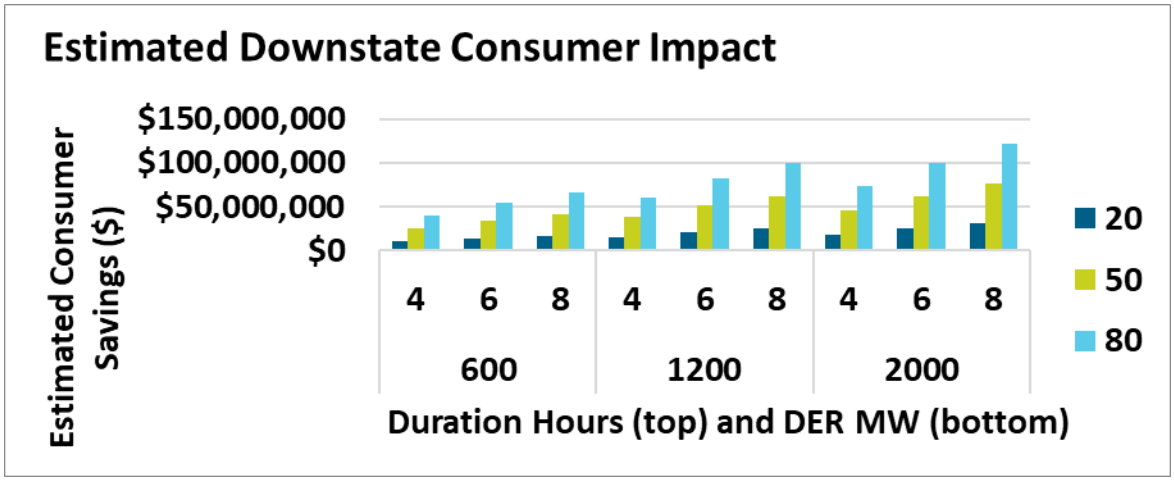
Based on Pricing Data from 9-Mile 2 (Zones A-F) and Ravenswood 3 (Zones G-K); Assumed prices drop by 6% (600 MW), 9% (1200 MW) and 11% (2000 MW); DER Injections: Summer HB12:00 to HB19:00, Winter HB14:00 to HB21:00

Figure 5: Estimated upstate (A-F) Consumer Impact
(Upstate Estimate With Availability: 20%, 50% or 80%)

Availability	% Shaved	Capacity [MW]	Duration Hours	Est. Annual Savings ($)
20%	6	600	4, 6, 8	5 million to 8 million
	9	1200	4, 6, 8	7 million to 12 million
	11	2000	4, 6, 8	9 million to 14 million
50%	6	600	4, 6, 8	12 million to 20 million
	9	1200	4, 6, 8	18 million to 30 million
	11	2000	4, 6, 8	23 million to 36 million
80%	6	600	4, 6, 8	20 million to 32 million
	9	1200	4, 6, 8	30 million to 47 million
	11	2000	4, 6, 8	36 million to 58 million

Based on Pricing Data from 9-Mile 2 (Zones A-F) and Ravenswood 3 (Zones G-K); Assumed prices drop by 6% (600 MW), 9% (1200 MW) and 11% (2000 MW); DER Injections: Summer HB12:00 to HB19:00, Winter HB14:00 to HB21:00

Figure 6: Energy Market Rules – Downstate
(Downstate Estimate with Availability: 20%, 50% or 80%)



Based on Pricing Data from 9-Mile 2 (Zones A-F) and Ravenswood 3 (Zones G-K); Assumed prices drop by 6% (600 MW), 9% (1200 MW) and 11% (2000 MW); DER Injections: Summer HB12:00 to HB19:00, Winter HB14:00 to HB21:00

Figure 7: Estimated Downstate (G-K) Consumer Impact

Availability	% Shaved	Capacity [MW]	Duration Hours	Est. Annual Savings ($)
20%	6	600	4, 6, 8	10 million to 17 million
	9	1200	4, 6, 8	15 million to 25 million
	11	2000	4, 6, 8	18 million to 30 million
50%	6	600	4, 6, 8	25 million to 42 million
	9	1200	4, 6, 8	38 million to 62 million
	11	2000	4, 6, 8	46 million to 76 million
80%	6	600	4, 6, 8	40 million to 66 million
	9	1200	4, 6, 8	61 million to 100 million
	11	2000	4, 6, 8	74 million to 122 million

Based on Pricing Data from 9-Mile 2 (Zones A-F) and Ravenswood 3 (Zones G-K); Assumed prices drop by 6% (600 MW), 9% (1200 MW) and 11% (2000 MW); DER Injections: Summer HB12:00 to HB19:00, Winter HB14:00 to HB21:00

Energy Market Results - Conclusion

Considering availability, total DER MW, and duration, the estimated statewide consumer impact varied widely from an estimated savings of roughly $15 million to $180 million. Higher availability will lead to higher consumer impact for DERs.

Capacity Market Impact

Since it is not known how much DER will be available, the NYISO provided estimates over a range of expected values:

- Assumed a range of DER 600 MW, 1200 MW and 2000 MW added to the fleet.
- The penetration of DERs were not modelled with an offer floor.

It was assumed that 70% of DER would be located in Zone J and 30% in (Rest of State) ROS:

- 20% of the original Special Case Resources (SCR) capacity was assumed to be resources moving from the SCR program to the DER program.
- 15% of original SCRs was assumed to have left the market.
- This was represented in the analysis by simultaneously removing 35% of SCR MW from the Capacity Market while adding DER MW to the Change Cases.[5]

DERs were modeled with a 10% derating factor. Sensitivities were run with DER having a 50% and 100% impact on capacity requirements to account for the impact of DER on IRM/LCRs. The IRM/LCR values from as found system were assumed.

DERs were modeled consistent with the capacity supplier payment structure proposed in the DER project as part of the stakeholder process. It was assumed that all of the DER will participate in the wholesale market as capacity providers.

Short-Term Capacity Cost Impact Methodology

Using the 2018 as found system as a base case, for both short- term and long-term consumer impact analysis:

- 2018 as-found system with additions of 600 MW, 1200 MW and 2000 MW of DER penetration

The short-term impact analysis assumed no additional changes to generation. The impacts shown in the short-term may not be sustainable, as retirements and other changes will result from the influx of large amounts of capacity additions. We address this in the long-term analysis that assumes a supply level based on the historic level of excess.

[5] Appendix II shows the short-term Capacity Costs Case with 35% SCR MW removed prior to DER MW penetration as requested by the New York Department of Public Service staff (NYDPS)

Short-term Capacity Cost Impact

The tables and graphs that follow show the short-run capacity cost impact of various levels of DER MW additions (600 MW, 12000 MW and 2000 MW). Both the state-wide impact and the impact on individual Localities, LI, NYC, GHI and ROS are shown separately. We also provide a sensitivity analysis for the assumed comparability of DER with traditional Resources to account for the impact of DER on IRM and LCRs for all the different levels of DER discussed above (50% and 100% impact on capacity requirements).

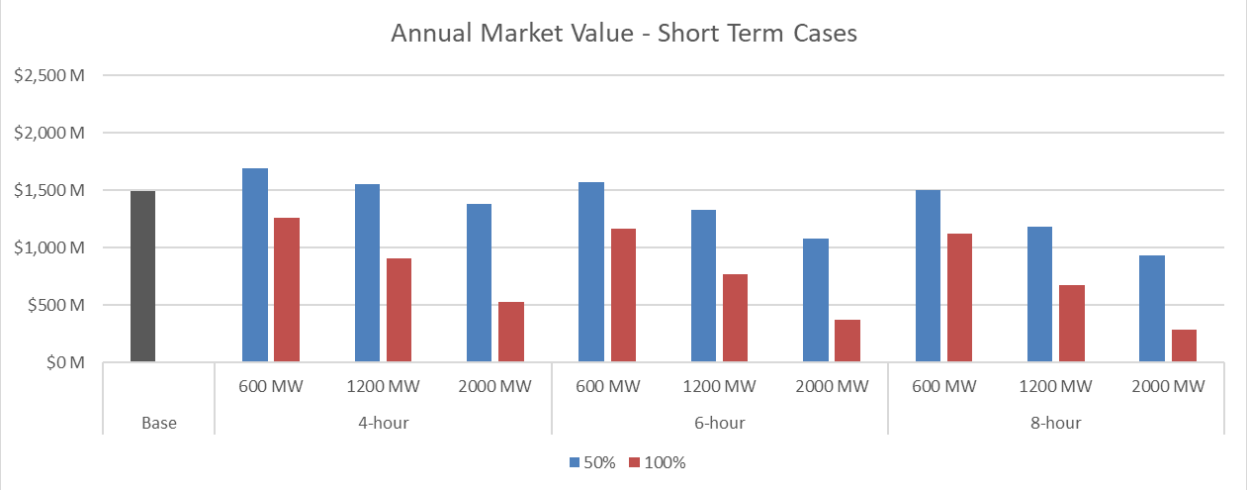
The last three columns of Figures 9 and 10 show the MW impact of 4-, 6- and 8-hour duration DERs for different levels of DER penetration. The MW impacts determine the change in capacity market impacts relative to the base case. For example, in Figure 9 the second row shows an increase of 300 MW in capacity requirement reflecting the 50% comparability case (600 MW*.5).

Supply on the other hand, increases by only 22 MW, which is the net of removing 35% of SCRs from the capacity market (428 MW)[6] and accounting for 4-hour duration DERs that have a 75% capacity value (600 MW*.75 – 428 MW). The increase in capacity requirements exceeds the increase in supply (22 MW – 300 MW) resulting in an increase in cost of $203 million relative to the base case.

Another example looks at a 6-hour duration DER with 2000 MW penetration on slide 24. Capacity requirement increases by 1000 MW reflecting the 50% comparability case (2000 MW*.5). Supply on the other hand, increases by 1372 MW, which is the net of removing 35% of SCRs from the capacity market (428 MW) and accounting for the 6 hour duration DERs that have a 90% capacity value (2000 MW*.9 – 428 MW). The increase in capacity requirements is less than the increase in supply (1372 MW – 1000 MW) resulting in a decrease in cost of $412 million relative to the base case.

[6] 35% of SCRs currently in the NYISO wholesale market

Figure 8: Short-Term Capacity Cost Impact



The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4-hour duration (75%), 6-hour duration (90%), 8-hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR.

Short-term impacts not sustainable as retirements and other changes will result from the large influx of DER additions.

Figure 9: Short-Term 50% Comparability Cases

Short Term Cases ($M)									MW Impacts		
Comp	Duration	Penetration	ROS	GHI	NYC	LI	Total	Δ to Base	Requirement	Supply	Total
Base Case			$203	$372	$649	$266	**$1,490**	-	-	-	-
50%	4	600	$280	$404	$728	$280	**$1,693**	**$203**	300	22	**278**
50%	4	1200	$250	$362	$661	$280	**$1,553**	**$63**	600	472	**128**
50%	4	2000	$211	$307	$579	$280	**$1,377**	**($113)**	1000	1072	**-72**
50%	6	600	$258	$372	$664	$280	**$1,574**	**$85**	300	112	**188**
50%	6	1200	$206	$298	$548	$280	**$1,332**	**($158)**	600	652	**-52**
50%	6	2000	$135	$228	$434	$280	**$1,077**	**($412)**	1000	1372	**-372**
50%	8	600	$242	$350	$627	$280	**$1,500**	**$10**	300	172	**128**
50%	8	1200	$175	$256	$472	$280	**$1,183**	**($306)**	600	772	**-172**
50%	8	2000	$85	$193	$373	$280	**$931**	**($558)**	1000	1572	**-572**

The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4 hour duration (75%), 6 hour duration (90%), 8 hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR.

Short-term impacts not sustainable as retirements and other changes will result from the large influx of DER additions.

Figure 10: Short-Term 100% Comparability Cases

Short Term Cases ($M)									MW Impacts		
Comp	Duration	Penetration	ROS	GHI	NYC	LI	Total	Δ to Base	Requirement	Supply	Total
Base Case			$203	$372	$649	$266	**$1,490**	-	-	-	-
100%	4	600	$196	$285	$501	$280	**$1,262**	**($228)**	0	22	**-22**
100%	4	1200	$80	$193	$349	$280	**$903**	**($587)**	0	472	**-472**
100%	4	2000	$2	$85	$159	$280	**$526**	**($963)**	0	1072	**-1072**
100%	6	600	$173	$258	$455	$280	**$1,166**	**($324)**	0	112	**-112**
100%	6	1200	$34	$160	$293	$280	**$768**	**($722)**	0	652	**-652**
100%	6	2000	$2	$30	$58	$280	**$371**	**($1,118)**	0	1372	**-1372**
100%	8	600	$158	$247	$438	$280	**$1,123**	**($367)**	0	172	**-172**
100%	8	1200	$2	$139	$255	$280	**$677**	**($813)**	0	772	**-772**
100%	8	2000	$2	$1	$1	$280	**$285**	**($1,205)**	0	1572	**-1572**

The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4-hour duration (75%), 6-hour duration (90%), 8-hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR. **Short-term impacts not sustainable as retirements and other changes will result from the large influx of DER additions.**

Long-Term Cost Capacity Impact Methodology

As mentioned above, the long-term capacity cost impact methodology utilized the 2018 as found system, as a base case. It also used the same MW additions and capacity requirement percentages developed in the short-term impact analysis. Lastly, the long-term methodology used the 2018 Demand Curve values.

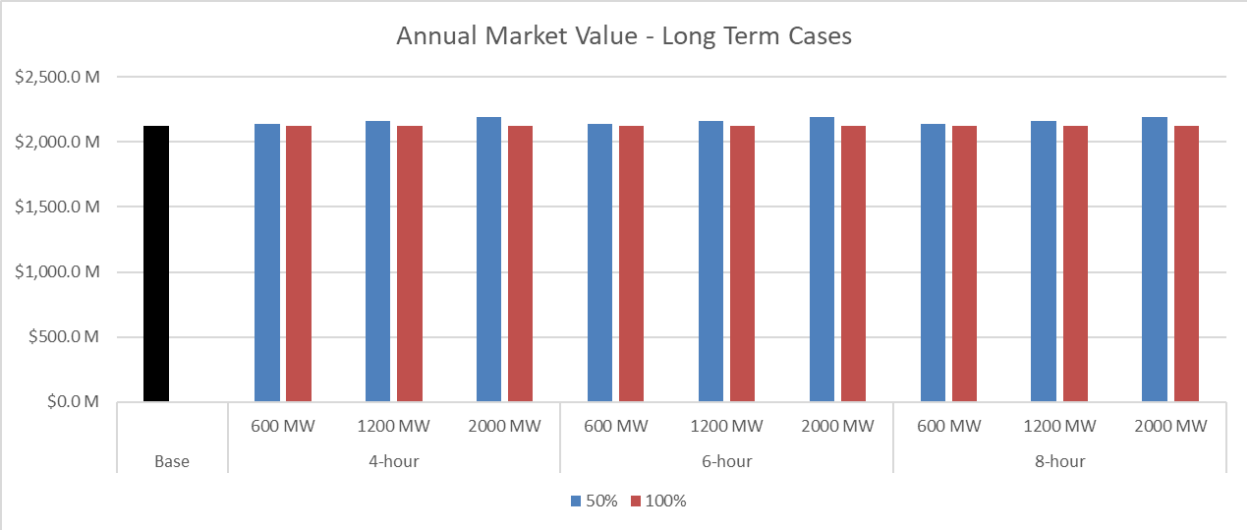
For the supply level, the long-term analysis used the historic excess defined as a percentage of excess above the requirement observed within the last three Capability Years in each of the different Localities.

Long-Term Capacity Cost Impact

For the supply level, the long-term analysis 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 tables and graphs for the long-run analysis follow the same format as the short-run analysis. We provided the cost impact for different levels of DER MWs and show the impacts both on a state-wide and individual Locality basis. We also provided a sensitivity analysis based on different levels of assumed impact of DER on capacity requirements.

Figure 11: Long-Term Capacity Cost Impact



The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4-hour duration (75%), 6-hour duration (90%), - hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR.

Figure 12: Long-Term 50% Comparability Cases

Long Term Cases ($M)								
Comp	**Duration**	**Penetration**	**ROS**	**GHI**	**NYC**	**LI**	**Total**	**Δ to Base**
Long-Term Base Case			$439	$500	$886	$296	**$2,121**	-
50%	4	600	$441	$499	$906	$296	**$2,143**	**$21**
50%	4	1200	$443	$499	$926	$296	**$2,164**	**$43**
50%	4	2000	$446	$499	$952	$296	**$2,194**	**$73**
50%	6	600	$441	$499	$906	$296	**$2,142**	**$21**
50%	6	1200	$443	$499	$926	$296	**$2,165**	**$44**
50%	6	2000	$447	$499	$952	$296	**$2,195**	**$74**
50%	8	600	$441	$499	$906	$296	**$2,142**	**$21**
50%	8	1200	$443	$499	$926	$296	**$2,165**	**$44**
50%	8	2000	$448	$499	$952	$296	**$2,195**	**$74**

The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4-hour duration (75%), 6-hour duration (90%), 8-hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR.

Figure 13: Long-Term 100% Comparability Cases

Long Term Cases ($M)								
Comp	Duration	Penetration	ROS	GHI	NYC	LI	Total	Δ to Base
Long-Term Base Case			$439	$500	$886	$296	**$2,121**	-
100%	4	600	$439	$500	$886	$296	**$2,121**	**($0)**
100%	4	1200	$439	$500	$886	$296	**$2,121**	**($0)**
100%	4	2000	$439	$500	$886	$296	**$2,121**	**$0**
100%	6	600	$439	$500	$886	$296	**$2,121**	**($1)**
100%	6	1200	$439	$500	$886	$296	**$2,121**	**$0**
100%	6	2000	$440	$500	$886	$296	**$2,122**	**$1**
100%	8	600	$439	$500	$886	$296	**$2,121**	**($1)**
100%	8	1200	$439	$500	$886	$296	**$2,121**	**$0**
100%	8	2000	$440	$500	$885	$296	**$2,122**	**$1**

The Change Cases simultaneously removed 35% of SCR MW from the capacity market while adding DER MW; Assumed 70% DER located in Zone J and 30% in ROS; Capacity supplier payment based on: 4-hour duration (75%), 6-hour duration (90%), 8-hour duration (100%); Assumed 50% and 100% impact of DER on capacity requirements to account for impact on IRM/LCR. **Short-term impacts not sustainable as retirements and other changes will result from the large influx of DER additions.**

Additional Analysis

At the October 9, 2018 joint ICAP/MIWG/PRLWG meeting, several stakeholders requested that the NYISO compute the consumer impact of SCRs leaving the wholesale market as a results of potential changes from the current compensation regime. Specifically, stakeholders requested the impact of all SCRs leaving the market.

The NYISO provided the analysis as requested by stakeholders. We provided the impact of SCRs leaving the market as a standalone analysis, separate from the consumer impact of DERs discussed earlier in the report.

Figure 14: SCR Case Cost Impact

Short Term Cases ($M)						
Case	ROS	GHI	NYC	LI	Total	Δ to Base
Base Case	$203	$372	$649	$266	**$1,490**	
No SCRs & No EDRPs	$240	$441	$750	$275	**$1,706**	**$217**
No SCRs & No EDRPs - back to Base Prices	$175	$342	$584	$236	**$1,336**	**-$153**
No SCRs & No EDRPs - back to Base LOE	$195	$376	$628	$264	**$1,463**	**-$27**

Historic LOE Cases ($M)						
Case	ROS	GHI	NYC	LI	Total	Δ to Base
Historic LOE Base Case	$439	$500	$886	$296	**$2,121**	
No SCRs & No EDRPs - back to Historic LOE	$428	$505	$857	$295	**$2,083**	**-$38**

No SCRs & No EDRP Cases based on IRM/LCRs developed by the New York State Reliability Council.

Other Impacts

Environmental Impacts

The increase in use of DERs, especially during system peak times may reduce emissions. It is anticipated that DERs will provide energy to the grid at times of high load volumes that could displace higher cost, likely higher emitting units.

DERs should enable greater adoption of renewables and that should further increase decarbonization. Pairing DERs with renewables should also reduce renewable curtailment and have a positive environmental impact. Lastly, the increased use of DERs to provide ancillary services may add to further carbon reduction.

Reliability Impacts

From an operational perspective, additional supply could be a reliability benefit, however, properly determining the capacity value of DERs and their impact on IRM/LCRs is important to avoid unintended adverse impacts to reliability.

Depending on location within the system, DERs may be in a position to provide local reliability services. The flexibility of DERs could be an additional reliability benefit.

Impact on Transparency

No impact on transparency is expected from this market design change.

Enhanced Fast-Start Pricing

Background

FERC's April 18, 2019 Order on fast-start pricing required the NYISO to do the following:

1. Modify the pricing logic to allow fast-start resources' commitment costs (i.e., start-up costs and minimum generation (no-load costs) to be reflected in prices; and
2. Allow the relaxation of all dispatchable fast-start resources' economic minimum operating limits by up to 100% for the purpose of setting prices.

Based on the FERC Order, the NYISO had to submit its compliance filing by December 31, 2019 and implementation must be completed by December 31, 2020.

Benefits of the Proposal

The market design changes should result in the following:

- "More accurately reflect the marginal cost of serving load in periods when dispatching a fast-start resource is the next action taken to meet load;
- Provide price signals that better inform investment decisions; and
- Provide more accurate and transparent price signals that better reflect the cost of serving load, minimize production costs, and reduce uplift."[7]

The Market Monitoring Unit (MMU) expressed support for the changes ordered by FERC, stating that they would improve:

- "The performance of the day-ahead market and commitment of resources;
- The incentives to import and export efficiently, and
- The incentives to offer competitively and perform reliably."[8]

Fast-Start Pricing - Today

The current fast-start pricing logic used today relaxes minimum generation constraints of these resource types in the ideal (pricing) dispatch:

- Fixed Block Units that can start up and synchronize to the grid in 30-minutes or less, that have a minimum run-time or 1-hour or less, and that submit economic offers for evaluation

[7] See FERC, *Order Instituting Section 206 Proceeding*, December 21, 2017 (p. 15), in Docket No. EL18-33-000

[8] See Potomac Economics, *Reply Comments of the New York ISO's Market Monitoring Unit*, March 2018, in FERC Docket No. EL18-33-000

In the ideal dispatch, RTD adds the start-up costs of eligible offline 10-minute Fixed Block Units to their incremental offers, which impacts the LBMP calculation.

- 10-minute Fixed Block Units cannot offer minimum generation costs

NYISO's Proposal

Under the NYISO's proposal fast-start pricing will apply to:

- All resources that can start-up and synchronize to the grid in 30-minutes or less, that have a minimum run-time of 1-hour or less, and that submit economic offers for evaluation.

The revised fast-start pricing logic will include the start-up and minimum generation costs of all fast-start resources in the LBMP calculation in the ideal dispatch. Revised fast-start pricing logic will also apply in the withdrawal state, for fast-start resources that are eligible to submit commitment costs.

Summary of Consumer Impacts

RELIABILITY Fast-Start Pricing will improve incentives for offering competitively and performing reliably (Potomac Economics)	**COST IMPACT/ MARKET EFFICIENCIES** Estimated cost increase ranging from $2.5 million to $4.5 million (Energy market increase of approximately $5 million to $7 million offset by capacity market savings of approximately $2.5 million)
ENVIRONMENT/ NEW TECHNOLOGY No impact expected	**MARKET TRANSPARENCY** The identified modifications will also provide more accurate and transparent price signals that better reflect the cost of serving load, minimize production costs and reduce uplift (FERC)

Estimated Energy Market Impact

Cost Impact Estimate

The NYISO estimated that the cost impact from this proposal was approximately $2.5 to $4.5 million:

- The annual energy market impact was estimated at ~$5-7 million.
- The annual capacity market impact was estimated as a savings of approximately $ 2.5 million.

Cost Impact Analysis

The cost impact analysis was based on selected intervals between September 2018 and August 2019 where GTs were started. Real-Time Dispatch (RTD) intervals for hours within this timeframe were rerun using the NYISO market software:

- The rerun amortized the startup cost over the resource's minimum run time.[9]
- Resource minimum generation costs were amortized over all intervals that the resource had offers.
- These costs were presented to the market software's pricing pass.

Cost Impact Analysis – Assumptions

The data used for the cost impact analysis ranged from September 2018 to August 2019:

- Series of 5-minute RTD intervals were rerun using the market software.
- Day-ahead (DA) LBMPs and real-time actual integrated hourly load were used to estimate the consumer impact.
    - The majority of load is purchased in the Day-Ahead Market (DAM).

Cost Impact Analysis – Energy Impact

The DA LBMPs and real-time (RT) actual hourly integrated load data from September 2018 to August 2019 were used to calculate the energy impact. Only those hours in the year where at least one gas turbine (GT) was identified as marginal were selected:

- The average percent LBMP delta was multiplied by the DA LBMP to provide an adjusted DA LBMP accounting for the fast-start pricing rules.[10]
    - Average percent LBMP delta = (Rerun Price - Original Price)/ Original Price
- These adjusted DA LBMPs were then multiplied by the actual real-time integrated hourly load.[11]
    - These values were summed across the impacted hours to determine an estimated LBMP impact of ~$15 million.

Cost Impact Analysis – Offset to DA and RT BPCG

It is expected that including the start-up and minimum generation costs in the LBMP formation would generally reduce Bid Production Cost Guarantee (BPCG) payments to resources.

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[9] For a discussion of the proposed startup cost methodologies, please see the 9/26/2019 MIWG meeting materials located at the following link: https://www.nyiso.com/documents/20142/8414685/Enhanced%20Fast%20Start%20Pricing_MIWG_09262019_final.pdf/1a29ab7a-6e8b-493c-a8b1-32881b95fbc4

10 DA LBMP data is available from the NYISO website at the following link: https://www.nyiso.com/energy-market-operational-data

11 Actual integrated real-time load data is available from the NYISO website at the following link: https://www.nyiso.com/load-data

DA and RT BPCG payments to fast-start resources between September 2018 and August 2019 were approximately $13 million.

- The NYISO estimated a reduction in BPCG payments of 60% - 80%.

Cost Impact Analysis – Energy Market Impact

- Energy LBMP Impact of ~$15 million annually
- Reduced by lower BPCG payments of ~$8 - $10 million annually
- Total Energy Market Impact of ~$5 – $7 million annually

Estimated Capacity Market Impact

Capacity Market Reference Point - Impact Methodology

Using the preliminary 2020-2021 ICAP Demand Curve inputs and other parameters, revised net EAS revenue offset values and resulting reference price values were calculated to estimate the impact Enhanced Fast- Start Pricing could potentially have on the ICAP Demand Curves:

- New DAM and RT LBMPs were generated for each hour of year 3 of the study period (September 1, 2018 – August 31, 2019), using the results of the energy market analysis
    - Data for study year 1 & 2 (September 1, 2016 – August 31, 2018) was retained and unadjusted
- All other inputs and parameters of the annual update for 2020-2021 were held constant
- These new prices were fed through the net EAS model to estimate revised net EAS revenue offset values, which were used to determine revised Reference Price values for the 2020-2021 ICAP Demand Curves
    - The current peaking plant technology for all Localities is a simple cycle F-Class frame unit

Capacity Market Reference Point - Impact Analysis

The analysis used preliminary inputs and parameters used in the 2020-2021 ICAP Demand Curve annual update:

- The NYISO was in the process of finalizing the results from the 2020-2021 annual update
- As the preliminary annual update numbers were expected to change, only the delta between the base case and change case was included in this presentation

Due to the characteristics of the peaking plant and the dispatch algorithm used to generate net EAS revenues, the change in the net EAS revenue offset used in calculating the reference price was relatively small:

- The changes to the reset process implemented in 2016 were intended to allow for the ICAP Demand Curves to capture changes in market conditions over time, including the impacts of changes to market rules
- **As contemplated by the revised procedures, the resulting impacts of implementing the proposed Fast-Start Pricing market design should be rolled into net EAS revenue estimates through the existing annual update process over time**

Capacity Market Cost Impact

The NYISO estimated the short-term and long-term market impacts from this proposed market rule change using the new reference prices calculated:

- The 2019 as-found system and reference prices is the base case

The short-term impact uses the new reference prices calculated in the earlier analysis with no additional changes to generation or demand. The impacts shown in the short-term may not be sustainable, as retirements and other changes could result from the reference price change. The NYISO addresses this in the long-term analysis that assumes a supply level based on the historical level of excess.

The long-term impact used the same base case as the short-term analysis (2019 as-found system):

- However, the supply stack in the base case was adjusted to assume a historical level of excess.
    - This is 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 change case incorporated the new reference prices calculated in the earlier analysis.
    - In addition, the supply stack was adjusted to assume a historic level of excess.

Figure 15: Impacts to the Net EAS and Reference Price

	Net EAS Δ	Ref. Price Δ
NYCA	$0.05	($0.01)
GHI	$0.09	($0.01)
NYC	$0.13	($0.01)
LI	$0.52	($0.07)

	Annual Market Value Δ ($M)
Short-term	($2.5)
Long-term	($2.6)

Impacts to the net EAS offset and the reference price were relatively small. This drove the short-term annual market value savings of $2.5M, and long-term savings of $2.6M.

Other Impacts

Reliability Impacts

Potomac Economics in its Reply Comments in FERC Docket No. EL18-33-000 stated that the changes ordered by FERC would improve:

- "The incentives to offer competitively and perform reliably."

Impact on Transparency

FERC in its Order instituting this proceeding (Docket No. EL18-33-000) said the following:

- "The identified modifications will also provide more accurate and transparent price signals that better reflect the cost of serving load, minimize production costs and reduce uplift."

Environmental Impacts

No impacts expected.

External Capacity Performance & Obligations

Background

In October 2017, the Analysis Group (AG) issued a report (AG Report) commissioned by the NYISO that made several recommendations about external resource performance, particularly during critical operating conditions. In particular, the AG Report suggested that the better alignment of external resource performance with internal resource performance merited further evaluation. The AG Report pointed out that the deliverability of external capacity to the New York Control Area (NYCA) border has not been tested during periods when the New York's neighbors are facing critical operating conditions. In response to the AG findings, the NYISO proposed looking at two aspects of external capacity performance and obligations:

- External Supplemental Resource Evaluation (SRE) Penalty
  (Proposal Completed and Approved by Stakeholders)
- External Capacity Deliverability and Eligibility (On Going Effort)

Project Objectives

The objective of this project is to ensure that external capacity resources are providing reliability value that is comparable to that provided by internal capacity resources. To achieve this objective it was necessary to enhance the deliverability of energy needed for reliability from external capacity resources, corresponding to the capacity these external resources sold into the NYISO markets. An additional consideration of this effort was to minimize the impact of proposed changes to software systems, operations and market rules to facilitate a faster implementation of the project objectives.

NYISO's Proposal

There were two components to the NYISO's proposal:

SRE Penalty Proposal

To the extent an external capacity resource fails to meet any or all the external capacity call requirements, it shall be subject to a penalty. The External Capacity Call Requirements and the Penalty Formula were fully described in an April 17, 2019 presentation to the Business Issues Committee.

Deliverability and Eligibility Segment

The objective is to understand any obstacles that prevent external capacity resources from delivering capacity-backed energy to the NYCA border. The proposal will strive for comparability between internal and external capacity resources with regards to assurance of energy deliverability. The guiding principles

that summarize the requirements for capacity market eligibility were presented to a joint Installed Capacity and Market Issues Working Group meeting on May 6, 2019.

Summary of Consumer Impacts

RELIABILITY Successfully aligning external resource performance with internal resource performance should help in maintaining system reliability, especially during critical operating periods	**COST IMPACT/ MARKET EFFICIENCIES** The NYISO does not expect a reduction in imports offered into NYISO capacity auctions as a result of better aligning external resource performance with internal resource performance
ENVIRONMENT/ NEW TECHNOLOGY No Impact Expected	**MARKET TRANSPARENCY** No Impact Expected

Expected Impacts

The NYISO does not expect a reduction in imports offered into NYISO capacity auctions as a result of better aligning external resource performance with internal resource performance. If some external resources cannot meet the new requirements, it is likely that they will be replaced by other external resources that can. Additionally, some internal MW that previously went unsold may now clear to offset any reductions in imports. If there is a reduction in imports, it is only expected to occur in the Rest of State (ROS), as downstate clearing prices are anticipated to continue to incentivize imports into Localities.

Cost Impacts

The cost impacts are based on a hypothetical reduction of some level of imports to the ROS. As discussed earlier, we do not anticipate any loss of imports to the Localities. The capacity cost impacts were computed for both the short and long-term based on the possibility of losing some external capacity resources. The NYISO does not anticipate any reduction in Energy Imports due to reductions in Capacity (if any) from external capacity resources.

Capacity Market Impact

Listed below are the assumptions used for the capacity cost impact analysis:

- Studied the short- and long-term impact of losing 100 MW, 200 MW and 300 MW of capacity from external resources.

- Assumed that the loss of capacity was in the ROS.
- Zones J, K and GHI are not expected to lose capacity due to the new SRE penalty rules or the external capacity deliverability proposal because of the relatively higher price in those zones.
- The IRM/LCR values from the as found system were used.

Short-Term Cost Impact Methodology

The 2019, as found system, was used as a base case, for both the short- and long-term consumer impact analysis.

- 2019 as-found system, with capacity reductions of 100 MW, 200 MW and 300 MW.

The short-term analysis assumed no additional changes to generation

Long-Term Cost Impact Methodology

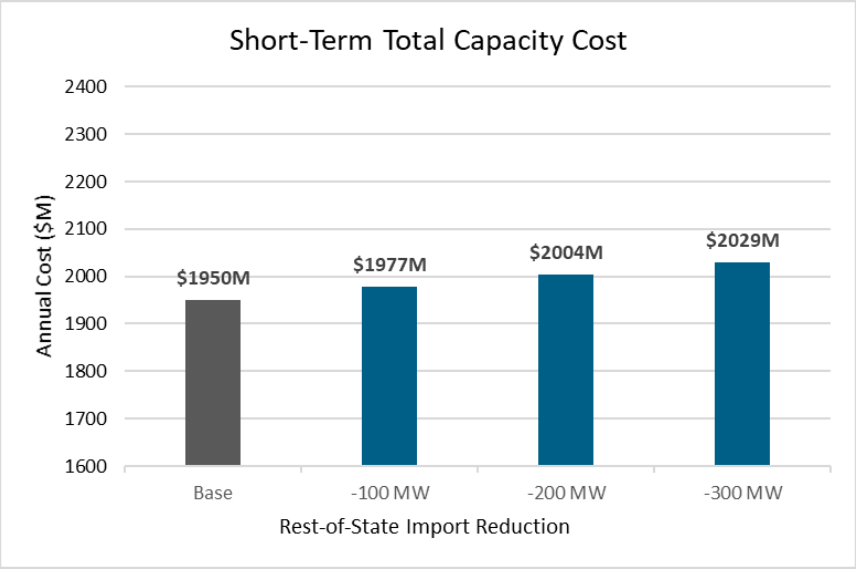
As mentioned above, the 2019, as found system, was used as the base case for both the short- and long- term analysis:

- The same 100 MW to 300 MW reduction in capacity as assumed in the short-term analysis was assumed for the long-term analysis
- Used the 2019 Demand Curve Values

For the supply level, we used the historic excess defined as a percentage of excess above the requirements observed over the last three Capability Years in each of the different Localities.

Short-Term Results

Figure 16: Short-Term Total Capacity Cost



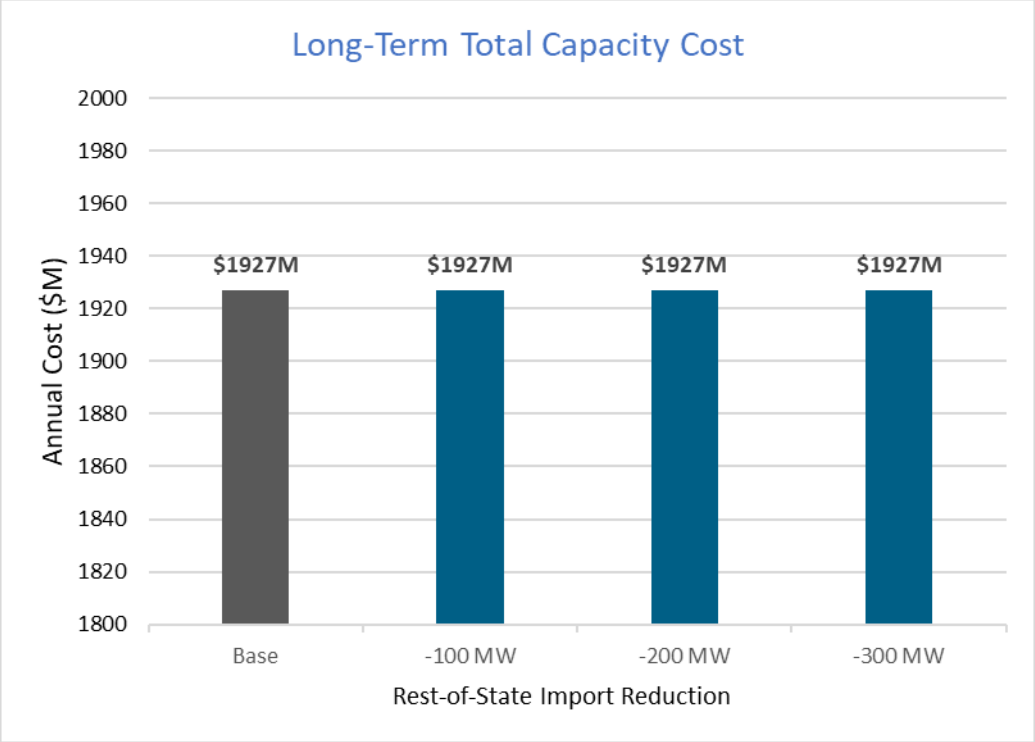
For the short-term cases, we removed Capacity Imports from ROS and decreased the unsold MW, since more unsold MW would be expected to clear in the auctions due to the reduction in imports.

Short-Term Capacity Cost Impact

Scenario	Total Annual Cost ($M)	Delta from Base Case ($M)
Base Case	1950	0
-100 MW	1977	27
-200 MW	2004	54
-300 MW	2029	79

Long-Term Results

Figure 17: Long-Term Total Capacity Cost



In the long-term scenarios, we removed Capacity imports from ROS and adjusted back to the average 3-year historic level of excess.

Long-Term Capacity Cost Impact

Scenario	Total Annual Cost ($M)
Base Case	1927
-100 MW	1927
-200 MW	1927
-300 MW	1927

Other Impacts

Reliability Impacts

As noted in the AG Report, the deliverability of external capacity to the NYCA border has not been tested during periods when New York's neighbors are facing critical operating conditions. Successfully aligning external resource performance with internal resource performance should help in maintaining system reliability, especially during critical operating periods.

Environmental Impacts

No impacts are expected as a result of this market design change.

Impacts on Transparency

No impacts are expected as a result of this market design change.

Consumer Impact Analyses: 2020 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.

2020 Proposed Projects for Consumer Impact Analysis

- 5-Minute Transaction Scheduling
- Relocating the IESO Proxy Bus
- Reserving Capacity for TCC Balance-of-Payment Auctions
- Tailored Availability Metric
- Enhancing Fuel and Energy Security
- Enhanced BSM Mitigation Study Period
- Hybrid Storage Model

5-Minute Transaction Scheduling

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

Benefit: A market design to accommodate 5-minute interchange scheduling across controllable interties with HQ would be expected to improve price convergence between RTC and RTD, improve market efficiency by increasing the amount of available resources for dealing with real-time system changes and/or events, and increase the flexibility of the NYISO's market operations to respond to fluctuations in intermittent output. More frequent interchange scheduling that aligns with internal generation scheduling will also alleviate top of hour and quarter-hour interchange discrepancies. This is particularly important with the growing objectives in New York State for renewable generation and for the replacement of fossil fuel generation. HQ's large, flexible and low carbon hydropower generation represents a solution to support grid flexibility in a 70% by 2030 world.

Screen: Emergent stakeholder issue.

Relocating the IESO Proxy Bus

Description: Currently, the determining factor in how the commitment software distributes power flow for scheduled energy between IESO and NYISO is the use of Bruce station as the location of the IESO proxy bus. However, analysis of the actual historical delivered energy between IESO and NYISO

indicate a potential improvement that can be made. This project would explore the options for a more optimal IESO proxy bus that more closely aligns power flow shift factors for energy schedules between IESO and NYISO with actual, observed power flows.

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

Screen: Emergent stakeholder issue.

Reserving Capacity for TCC Balance-of-Payment (BoP) Auctions

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

Today the TCC Automated Market System and other supporting systems do not support the reservation of transmission Capacity for sale in BoP Auctions. As a result, the opportunity for market participants to acquire shorter-term TCCs in BoP Auctions may be limited.

This proposal seeks to modify the NYISO's current software and procedures to permit the NYISO to reserve a portion of available system transfer capability, which it would then release into the BoP Auctions. This will permit auction participants to purchase additional shorter-term TCCs in the BoP Auctions.

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

Screen: Emergent stakeholder issue.

Tailored Availability Metric

Description: One of the issues identified in the Performance Assurance initiative in 2017 was ensuring the availability and performance of capacity suppliers during peak operating hours. Currently, all hours of operation are weighted equally in computing derating factors, based on the assumption that outages occur randomly. The objective of the Tailored Availability Metric project is to evaluate a market design that reflects higher value to resources that are available and can perform

during peak operating hours based on the assumption that these stressed conditions occur during peak hours. Weighting these peak hours higher reflects the concept that availability and performance during these hours has greater significance to the reliability of the system. Through a series of analysis, different weighting factors could be applied to peak hours and months, incenting resources to better perform during these critical time periods.

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

Screen: Emergent stakeholder issue.

External Capacity Performance and Obligations

Description: This effort will build upon the performance assurance project developed with stakeholders in 2018. In particular, Analysis Group recommended, in its report, that the NYISO review the rules by which external resources participate in the NYISO capacity market, including eligibility requirements and offer obligations and terms. In 2018, the NYISO worked with stakeholders on the "Deliverability Requirements for Capacity Imports" effort. This effort enhanced the notice required for transmission service from external capacity resources in PJM to the NYISO. The 2019 effort continued to evaluate what, if any, additional performance requirements and obligations are needed, including an evaluation of documentation requirements to demonstrate deliverability to the NYCA border at other interfaces. This project will evaluate the potential enhancement of requirements for external capacity resources to improve their comparability to internal resources.

Expected Benefit: Providing resources incentives to be available during critical times should improve performance.

Screen: Emergent stakeholder issue.

Enhancing Fuel and Energy Security

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

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

Expected Benefit: This work would be necessary to complete a market design that encompasses any recommendations from the 2019 Fuel and Energy Security Assessment to maintain grid reliability into the future. This project seeks to bolster New York's preparedness for an altered resource portfolio by elevating the markets to embrace future challenges that could arise with respect to fuel supply security.

Screen: Emergent stakeholder issue.

Enhanced BSM Mitigation Study Period

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

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

Screen: Emergent stakeholder issue.

Hybrid Storage Model

Description: The NYISO's market rules do not currently allow two generators of different types to be co-located at a single point of interconnection and share the same point identifier (PTID) and meter. This project seeks to develop market participation rules for front-of-the-meter renewable generators collocated with Energy Storage Resources (ESRs). The effort builds on the work completed as part of the Energy Storage Resource and DER Integration initiatives by developing market rules to better

integrate large-scale weather dependent and energy storage resources co-located behind a single interconnection point. The deliverable for this project includes a consumer impact analysis and a 2020 milestone for Market Design Complete.

Benefit: State and federal initiatives such as REC procurements provide incentives for developers to couple storage and intermittent renewable assets. Such programs aim to reduce the output volatility and improve the availability of intermittent resources. Developing a market participation model for front-of-the-meter generators plus storage will better align the NYISO's market procurement with state and federal efforts to integrate more clean energy into the grid. The new market participation model is also expected to improve grid flexibility and resilience by enabling new resource types to provide their full capabilities.

Screen: Emergent stakeholder issue.

Key 2020 Electrical Industry Initiatives

Strategic Initiatives

To meet evolving regulatory requirements, and expected technical, financial and market challenges, the NYISO has identified key strategic initiatives in addition to its core responsibilities and ongoing project plans. These initiatives provide guidance for projects and resource allocations in 2020 and in the future.

Grid Reliability and Resilience

Maintaining power system reliability is the NYISO's primary responsibility, and the role of wholesales markets is critical in carrying out this responsibility. The changing portfolio of resources serving the electric needs of New York will require 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 needed to take a deeper dive into 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, where 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 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

New York ISO
Independent System Operator

NYISO Consumer Interest Liaison Weekly Summary

September 2 – September 6, 2019

Notices:

- The following generators have been **retired effective September 1, 2019** and are no longer participating in the NYISO markets:
  - Monroe Livingston LFGE PTID 24207
  - Steuben County LFGE PTID 323667
  - Lyonsdale Biomass PTID 23803

- The version of **NYISO Generator Fuel and Emissions Reporting User's Guide (UG-17)**, has been posted to the Manuals, Technical Bulletins & Guides webpage under Guides.

- Due to today's (9/06/2019) ESPWG-TPAS meeting running longer than anticipated, **an additional meeting has been scheduled** for next week for the CARIS presentations. This meeting will be held on **September 11, 2019** at the NYISO, beginning at 12:30, following the BIC teleconference.

Meeting Summaries:

Tuesday, September 3, 2019

Metering Task Force

MSE & November 2019 SCR & EDRP Enrollments

Jeremiah Brockway of the NYISO updated factors affecting the 2019 Special Case Resource/Emergency Demand Resource Program (SCR/EDRP) enrollment. The metering service complaint proceeding (Docket No. EL18-188) remains under review by FERC. The NYISO's DER and Aggregation tariff filing (Docket No. ER19-2276) sought FERC acceptance of the tariff revisions by August 26, 2019. In order to proceed with the planned MSE implementation date of November 1, 2019, the NYISO needs FERC acceptance of the filed tariff revisions by mid-September. Mr. Brockway proceeded with the presentation under the assumption that FERC accepts the tariff revisions as filed by mid-September.

Mr. Brockway noted that Technical Bulletin 250 – Meter Services Entity (TB250) will be published prior to the opening of the enrollment period. TB250 contains the requirements for MSE authorization and operation to provide physical metering and meter data services for a Market Participant (MP).

A timeline was provided reflecting the deadlines for Meter Service Entity (MSE) enrollment and transition period. The transition period allows MPs to enroll SCR/EDRP resources, while the entity it intends to use as the provider of meter data works through the MSE application and NYISO approval process. Mr. Brockway noted that MPs will be liable for any penalties that may be incurred due to lack of qualified meter data.

The NYISO is considering options for a plan in the event that FERC does not accept the current filing. To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/8130823/MSE%20November%202019%20Enrollments.pdf/b7eaa8b2-210f-abe4-678e-cbf6a0914b0f

Technical Bulletin #250 – "Meter Services Entity" Update

Michelle McLaughlin of the NYISO presented proposed updates to Technical Bulletin 250, "Meter Services Entity" (TB250). TB250 addresses the requirements for an entity participating in the NYISO markets as a Meter Services Entity.

Ms. McLaughlin noted several changes to existing language to add clarification and additional detail. There is also a new section to TB250 detailing meter installation requirements.

To see the redline and clean versions of the proposed changes to TB250, please go to:
https://www.nyiso.com/mtf

Thursday, September 5, 2019

System Operation Advisory Subcommittee

NYISO Operations Report – August 2019

Peak Load

The peak load for the month was 28,488 MW which occurred on Monday, August 19, 2019, HB15. Reserve requirements were as follows:

Reserve	10 Sync	Non-Sync	30 Min
Requirement	655	1,310	1,965
For Hour	1,576	2,549	4,981
DSASP Cont.	56	0	56

Major Emergencies – None

Alert States - Alert State was declared on 3 occasions:
3 – Emergency Transfer Declared

Alert state was declared 9 times during August of 2018

Thunder Storm Alerts
6 TSA were declared in August 2019 for a total of 29.3 hours

Reserve Activations - 5
There were 17 Reserve Activations during August of 2018

Emergency Actions

SCR Test	Zone A	8/22/2019 13:00 – 14:00
SCR Test	Zones B,C,D,E	8/22/2019 14:00 – 15:00
SCR Test	Zone J	8/22/2019 15:00 – 16:00
SCR Test	Zones F,G,H,I,K	8/22/2019 16:00 – 17:00

TLR3 Declared – 0 for a total of 0 hours

Thursday, September 5, 2019

Joint Transmission Planning Advisory Subcommittee / Installed Capacity Working Group

Demand Curve Reset: Notice of Request for Potential Process Enhancements Ryan Patterson of the NYISO presented the response to an August 23, 2019 stakeholder request. It was requested that a step be developed early in the Demand Curve Reset (DCR) process for identifying and assessing any proposed revisions to the DCR process that may require tariff changes. Tariff changes late in the process could nullify completed analyses and cause delays to the DCR filing. By addressing required tariff changes early in the process, timeline certainty is enhanced.

At this time, the NYISO has not identified proposed tariff revisions related to the DCR that it seeks to further explore with stakeholders. However, the NYISO is soliciting written feedback from stakeholders regarding potential proposed tariff revisions related to the DCR and/or annual update process for further review and consideration. Some stakeholders requested that the NYISO establish a deadline for any tariff change proposals for additional certainty. The NYISO responded that it is difficult to determine a hard deadline due to the number of potential variables involved, but would consider the suggestion. Comments can be sent to deckels@nyiso.com, rpatterson@nyiso.com, or scarkner@nyiso.com.
Mr. Patterson also noted that the Issue Tracker is active and can be seen at https://www.nyiso.com/installed-capacity-market. The Issue Tracker will be updated monthly throughout the DCR process. To see the complete presentation, please go to: https://www.nyiso.com/documents/20142/8143989/03_Potential%20DCR%20Tariff%20Changes%20090519%20ICAPWG%20Draft.pdf/0b5ff8d9-72ac-16da-6007-ee433bdc1017

Study Scopes under Consideration for Recommendation for OC Approval

Queue #680
Long Island Offshore Wind SRIS Scope
Offshore Wind Generation
Uprate 738 MW W/S
Total 1200 MW W/S
Melville, NY
Recommended to the OC for approval

Queue #811
Cider Solar SRIS Scope
Solar Generation
500 MW W/S
Genesee County, NY
Recommended to the OC for approval

Queue #815
Bayonne Energy Center III SRIS Scope
Battery Storage
49.8 MW W/S
Bayonne, NJ
Recommended to the OC for approval

Queue #816
NNC-TTC Increase SIS Scope
Transmission Upgrade
200 MW > 436 MW
Connecticut to LIPA Northport Station
Northport, NY
Recommended to the OC for approval

Queue #822
Narrows Battery Energy Storage SRIS Scope
Battery Storage
58.2 MW W/S
Brooklyn, NY
Recommended to the OC for approval

Queue #840
Swiftsure Energy Storage SRIS Scope
Battery Storage
650 MW W/S
Richmond County, NY
Recommended to the OC for approval

Queue #849
Somerset Load SIS Scope
Load Interconnection
250 MW
Niagara County, NY
Recommended to the OC for approval

Queue #850
Cayuga Load SIS Scope
Load Interconnection
50 MW
Cayuga County, NY
Recommended to the OC for approval

Queue #883
Garnet Energy Center SRIS Scope
Solar Generation
200 MW W/S
Cayuga County, NY
Recommended to the OC for approval

Status of Class Year 2019

Ed Cano of the NYISO updated the status of the Class Year 2019 (CY19) process. The NYISO has sent study agreements to 119 potential CY19 entrants as of August 30, 2019.

Review of Material Modification Determinations and Modifications Requiring a New Interconnection Request/SIS Request

Thinh Nguyen of the NYISO led a review of the Material Modification Determinations and modifications requiring a new interconnection request. The following projects were addressed:

- Q#276: Crown City Wind Farm
  - Changed from wind power facility to solar power facility
    - Determined to be a non-material change
- Q#522: NYC Energy
  - Changed from gas turbine to energy storage facility
    - Determined to be a non-material change
- Q#678: Calverton Solar
  - Changed Point of Interconnection within substation
    - Determined to be a non-material change
- Q#698: Ravenswood Energy Storage 2
  - Changed Point of Interconnection to alternative substation
    - Determined to be a non-material change

Class Year/Interconnection Queue Redesign

Thinh Nguyen of the NYISO led a discussion with stakeholders on the Class Year and Interconnection Queue redesign and provided tariff revisions for stakeholder feedback. The objectives of the redesign are to expedite the interconnection study process overall and to limit the possibility for unique issues related to a single or few projects to cause delays to numerous other projects.

Mr. Nguyen led a discussion on updates to the proposal for both the Deliverability and Class Year clarifications and efficiency aspects. Each of the incremental changes from previous presentations were discussed in detail to fully vet the proposal with stakeholders. It was noted that none of the updates in this presentation would affect the interconnection process timeline provided by the NYISO in a prior presentation.

Specific OATT tariff sections with incremental revisions were provided for stakeholder review and comments.

Mr. Nguyen noted the anticipated schedule for approval of the proposed changes with additional refinement through October 2019. The NYISO will seek stakeholder and Board approvals in the November/December 2019 time frame. FERC acceptance is anticipated in Q1 2020, prior to the Class Year 2019 Notice of Additional SDU Studies. To see the complete presentation, please go to: https://www.nyiso.com/documents/20142/8143989/00_TPAS_Agenda_draft_09052019_final.pdf/845c9080-cd59-97c4-66d8-80cd40e0f5b7

Friday, September 6, 2019

Joint Transmission Planning Advisory Subcommittee / Electric System Planning Working Group

Proposed Expansion of Definition of Class Year Transmission Project to Include Radial AC

David Schwarz of Anbaric presented a proposal to revise Attachment X of the OATT to allow radial AC Transmission Platform Projects to interconnect to the New York State transmission system. Currently, changes have been proposed to the definition of Class Year Transmission Projects in Attachment X for

controllable transmission but have excluded radial AC transmission facilities that would function as Transmission Platform Projects (TPPs). This means that a radial AC TPP would not be able to plan for and invest in upgrades to obtain injection rights for the benefit of a future Large Generating Facility, which makes it impossible to commit significant capital for such upgrades. Radial AC TPPs planned ahead of remotely located Large Generating Facilities in order to enable their later interconnection to the New York State Transmission System is technically feasible and presents no adverse impacts to the New York State Transmission System.

Mr. Schwarz provided examples of ISO/RTOs that currently allow radial AC TPPs and discussed some of the challenges encountered.

Suggested tariff language for Attachment X was provided for stakeholder clarity.

The NYISO encourages stakeholder comments for consideration. To see the complete Anbaric presentation, please go to:
https://www.nyiso.com/documents/20142/8193286/02%20NYISO%20TPAS%20SLIDES%20AC%20Radials.pdf/479d079b-bda9-1460-5ae2-9e6377ae86a9

Updates on Comprehensive System Planning Process (CSPP) review

Yachi Lin of the NYISO updated the CSPP review for 2019. A corporate goal for a comprehensive review of the CSPP was established in 2018 for 2019. A straw proposal was presented to stakeholders in December 2018 and stakeholder comments were provided for the NYISO's consideration at that time.

Stakeholders provided several comments throughout the process including comments on the AC Transmission Public Policy Transmission Planning Process (PPTPP), requesting the NYISO to prioritize issues such as cost containment measures and the treatment of upgrades.

To achieve the 2019 Corporate Goal for "CSPP Review", the updated work plan and deliverables are as follows:

- Continue the process improvement efforts to the existing CSPP
- Develop proposals to address the lessons learned and stakeholder concerns, specifically:
  - Cost containment measures for Public Policy Transmission Planning Needs
  - Short-term assessment and planning for reliability
  - Treatment of upgrades
- Work through the stakeholder process to develop revised tariff language to support changes to the CSPP.

As the final deliverable, the NYISO will propose tariff revisions for a stakeholder vote prior to the end of 2019, and then seek Board approval to file proposed tariff revisions with FERC.

To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/8193286/03%20CSPPupdates.pdf/a7cab279-b483-b59a-dd64-b82acd324ffc

Proposed Tariff Language for Cost Containment

Carl Patka of the NYISO updated the status of the proposed language to incorporate cost containment in the Public Policy Transmission Planning Process.

Several comments have been received from stakeholders. Mr. Patka led a review of the comments and indicated which comments are proposed for integration into the tariff.

Comments on the September 6, 2019 presentation are encouraged and should be submitted to the NYISO by September 11, 2019 for consideration in the September 23, 2019 presentation. Incremental changes will be posted prior to the meeting.

To see the redline tariff revisions as presented, please go to: https://www.nyiso.com/espwg

Short-Term Reliability Planning Process

Keith Burrell of the NYISO presented the development of a NYISO Short-Term Reliability Process (STRP). In prior CSPP review (see above) stakeholder discussions, the concept of an STRP was envisioned to improve the management of NYISO and Transmission Owner (TO) planning workload and provide an opportunity to address Short-Term Reliability Needs beyond those that arise from generator deactivations.

The STRP will provide the NYISO and stakeholders the means to conduct scheduled and orderly reliability assessments that evaluate changes impactful to the reliability of the Bulk Power Transmission Facilities (BPTF) in the short-term, including BPTF and non-BPTF impacts from Initiating Generators that have completed their Generator Deactivation Notice (GDN), all under one process. The STRP will provide the NYISO with the ability to respond to changes on the system in a timely fashion while providing a better structure than the ad-hoc Generator Deactivation Process to address observed Short-Term Reliability Needs. Minor changes would be required in OATT Attachments FF and Y to implement this process.

The STRP would incorporate a quarterly Short-Term Assessment of Reliability (STAR). The study period for the STAR is the five years following each quarterly start date.

The STAR evaluations will include an evaluation of all Initiating Generators and will include other model updates in accordance with ISO procedures. In this process, the NYISO will assess the BPTF and, to address generator deactivations, the Responsible Transmission Owner(s) will assess the impact on their non-BPTF transmission facilities. To address the Short-Term Reliability Needs observed in each STAR, a single solicitation for solutions will be issued by the NYISO.

A proposed timetable was provided illustrating the start and completion dates for the quarterly STAR processes. The key study assumptions for each STAR will be reviewed with ESPWG and TPAS.

Mr. Burrell detailed the STRP Solution Solicitation process including provisions for subsequent changes to the scope of the Short-Term Reliability Need.

A stakeholder raised the issue of timing in consideration of procedures that are triggered by specific dates in the generator deactivation procedure. The NYISO noted the comment and took the issue back for consideration.

The NYISO encourages stakeholder input which can be sent to lbullock@nyiso.com and/or kburrell@nyiso.com by September 11, 2019 for consideration in the next presentation scheduled for the

September 23, 2019 ESPWG/TPAS meeting.

To see the complete presentation, please go to:
https://www.nyiso.com/documents/20142/8193286/05%20ShortTermReliabilityPlanningProcess.pdf/3f0233cc-583a-87e5-fc7b-c861ca2fd2be

NOTE: The two CARIS 1 presentations scheduled for today's ESPWG/ICAPWG meeting were postponed due to time constraints:

- CARIS 1 – Base Case Preliminary Results
- CARIS 1 – 70X30 Scenario Development

Both presentations have been rescheduled for the September 11, 2019 ESPWG meeting

FERC Filings

September 4, 2019

Report – Major Emergency State in the New York Control Area on September 3, 2019

September 4, 2019

NYISO letter regarding the effective date of revisions to the Meter Services Entity requirements in its tariff that were submitted with the June 27 DER filing.

September 5, 2019

Section 205 filing of an LGIA (Service Agreement No. 2433) between NYPA and RG&E for Rochester Area Reliability Project (RARP) interconnection.

FERC Orders

September 6, 2019

FERC letter order accepting NYISO's filing of an executed Implementation Agreement governing AGC's recovery of costs to construct a new No. 2 ultra-low sulfur diesel fuel oil system.

Filings and Orders

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

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