

2015 Annual Report of the Consumer Interest Liaison



New York Independent System Operator



2015 ANNUAL REPORT OF THE
CONSUMER INTEREST LIAISON

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 policy makers, stakeholders and investors in the power system*

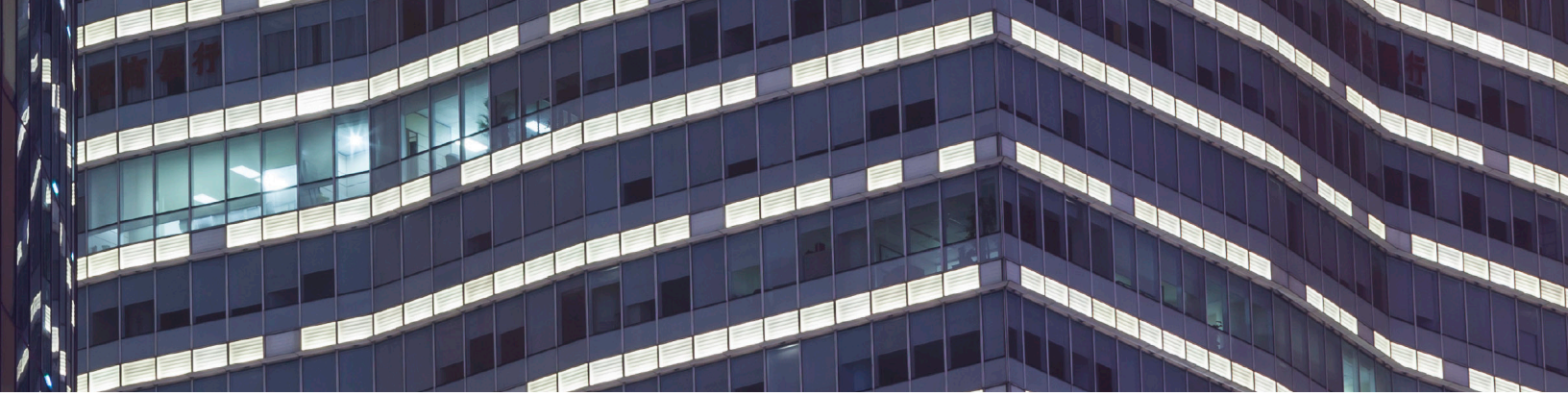


Table of Contents

- Message from the President & CEO 2
- Message from the Consumer Interest Liaison 3
- Role of the Consumer Interest Liaison 4
- The Consumer Impact Analysis Process 5
 - Process Improvements in the Communication of Consumer Impact Analyses* 7
- Consumer Impact Analyses Presented in 2015 10
 - Behind the Meter Net Generation (BTM:NG) Initiative* 10
 - Comprehensive Scarcity Pricing* 18
 - Mechanism to Eliminate Capacity Zones (Localities)* 26
- Consumer Impact Analyses: 2016 Project List 34
 - Analysis Guidelines* 34
 - 2016 Proposed Projects* 34
- Key 2016 Electrical Industry Initiatives 36
 - AC Transmission* 36
 - New York State Clean Energy Standard* 38
 - Demand Response* 42
 - Fuel Assurance* 43
 - EMS/BMS* 45
- NYISO Governance 46
- Endnotes 50
- Appendix 52



MESSAGE FROM THE PRESIDENT & CEO

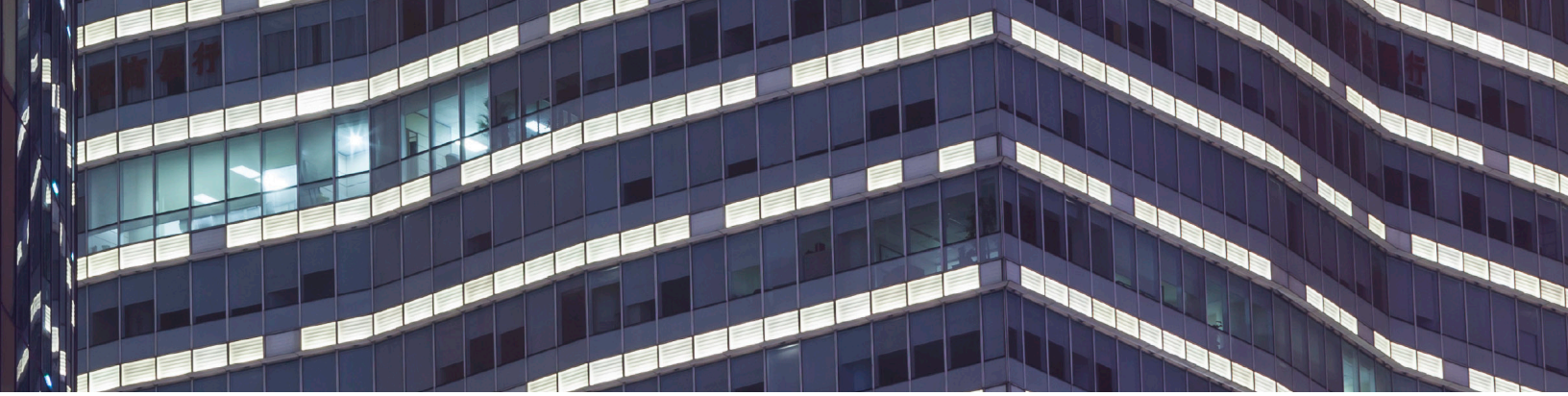
It has been four years since we added the consumer interest function to the services provided by the NYISO and during this time we have conducted over a dozen consumer impact analyses and presented them to stakeholders. These analyses have focused on all of our major initiatives and provided stakeholders important input in their decision making. The activities of the consumer interest liaison have helped to increase the effectiveness of end-use consumer participation by better preparing them with information, analyses, and identifying potential impacts. We are proud to be fulfilling the objective of the NYISO Board “to enhance the effectiveness of end-use consumer representation in the NYISO governance process.”

Sustaining strong consumer representation is in the vital interest of effective NYISO governance and we are committed to continually enhancing our support of this perspective. Last year we responded to stakeholder feedback to improve the conduct and communication of our impact analyses. This resulted in a number of changes: presenting impact analyses at least 30 days prior to committee voting; focusing more on the long-term; clearly listing the assumptions used in the analysis; and providing greater detail on how estimates are computed. Additionally, the entire process of conducting and presenting impact analyses will be incorporated into the NYISO project schedule and budget.

We also support the end-use sector in other important ways, with regular meetings to listen to concerns, information on upcoming stakeholder meeting topics, responses to inquiries, and with a weekly summary of working group and committee discussions.

I look forward to working with you and hope for a very productive year.

Brad Jones
President & CEO
New York Independent System Operator
March 2016



MESSAGE FROM THE CONSUMER INTEREST LIAISON

The purpose of the Annual Report of the Consumer Interest Liaison is to provide a summary of the major initiatives undertaken by the NYISO's Consumer Interest Liaison over the past year. As anticipated, 2015 turned out to be a very busy year. We prepared and presented consumer impact analyses of three major NYISO initiatives that are fully discussed in this report. The NYISO's behind the meter net generation initiative allows participation of generation whose primary purpose is to serve onsite load to sell its excess generation in wholesale energy, ancillary and capacity markets. The comprehensive scarcity pricing initiative improves the implementation of scarcity pricing including its application at external locations during reliability demand response calls; by modeling scarcity pricing into real-time scheduling and pricing optimization which will better align scheduling decisions with pricing outcomes. Finally, the NYISO's proposed mechanism to eliminate capacity zones (Localities) would provide for an avenue to eliminate Localities when no longer needed without creating the likelihood of oscillation between creating and eliminating localities. In addition, we also responded to stakeholder feedback on our Consumer Impact Analysis process. We presented to stakeholders how we would improve and expand both the conduct and communication of Consumer Impact Analyses. This also included the incorporation of the consumer impact analysis process in the Project Prioritization Process (PPP) and the NYISO budget.

During 2015 we continued with our support of the End Use Sector's participation in the activities of the NYISO. The objective of this support is to make this participation as effective as possible. Summaries of committee and working group meetings were provided on a weekly basis and we also posted them on the Consumer Interest Liaison webpage on the NYISO website. We also continued to meet with representatives of the End Use Sector on a monthly basis, mostly via conference call. The focus of these calls is to provide the topics that committees and working groups expect to discuss over the next six to eight weeks. The expectation is that this information will help the End Use Sector plan and allocate their limited resources more effectively. Additionally, we continued to respond to inquiries from the End-Use Sector and send out email reminders of events and activities at the NYISO.

We are expecting another busy and exciting year during 2016. This report briefly describes the projects that we have identified for consumer impact analysis for this year. Additionally, the report also lists areas of interest that the NYISO is currently addressing and the Consumer Interest Liaison office is closely monitoring for possible future analysis emerging from these areas of interest. We look forward to continuing our role of supporting the work of the End-Use Sector.

Tariq N. Niazi
Consumer Interest Liaison
New York Independent System Operator
March 2016



Role of the Consumer Interest Liaison

The Consumer Interest Liaison meets with each of the sectors engaged in the shared governance process to understand relevant issues from each sector’s point of view. This input helps the Consumer Interest Liaison facilitate communication that is current, relevant, and useful. These meetings aid in determining the areas in which the End Use Sector members may require more support. The services provided by the Consumer Interest Liaison include the following.

Weekly Summaries

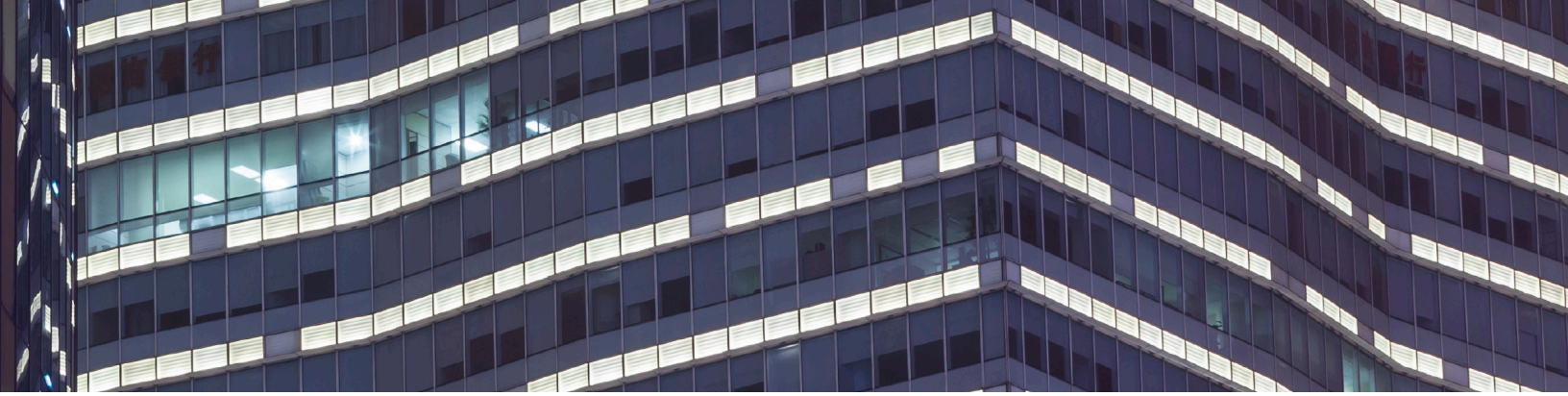
Each week the Consumer Interest Liaison produces a weekly summary of activity and sends it to the End Use Consumer mailing list. This includes summaries of committee meetings and working groups, as well as FERC filings and orders for the week. Also, the weekly summary highlights relevant notices such as meeting reminders, deadlines for input, and NYISO manual revisions, just to name a few. To read an example of the weekly summary, please see Appendix 1. These summaries also are posted on the [Consumer Interest Liaison](#) section of www.nyiso.com.

Monthly End Use Consumer Conference Calls

The Consumer Interest Liaison meets monthly with NYISO Product and Project Management to review committee and working group schedules. That information is then discussed in a monthly conference call with End Use Consumer stakeholders, who can use the information to track issue progress and milestones. Relevant projects, current issues and training topics also are discussed on the monthly call.

Consumer Inquiries

Frequently, End Use Consumers have questions and inquiries for the NYISO. The Consumer Interest Liaison is in a unique position to answer these inquiries directly or seek the assistance of a subject matter expert to clarify issues consumers may face.



Email Reminders

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

Consumer Interest Liaison Training

Through discussions with the End Use Sector, the Consumer Interest Liaison determines whether there is a need for training consumer representatives to better understand specific areas of the NYISO markets. By receiving training on NYISO markets, grid operations, and planning processes, End Use consumer representatives improve their understanding of current market issues and are better prepared to more effectively represent their interests.

The Consumer Impact Analysis Process

A primary responsibility of the Consumer Interest Liaison is to evaluate the impact of major market design changes on consumers. How a new market rule will impact reliability of the bulk power system, and how a new market rule will impact the competitiveness and efficiency of the market are systematically analyzed using specific criteria.

The consumer impact analysis is a formal process for assessing a new market rule,



designed to include qualitative and quantitative metrics for each of the areas analyzed. The analysis reviews impacts of new rules under four evaluation areas: Reliability, Cost Impact/Market Efficiencies, Environment/New Technology, and Transparency. Each study area is described below.

The impact on **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.

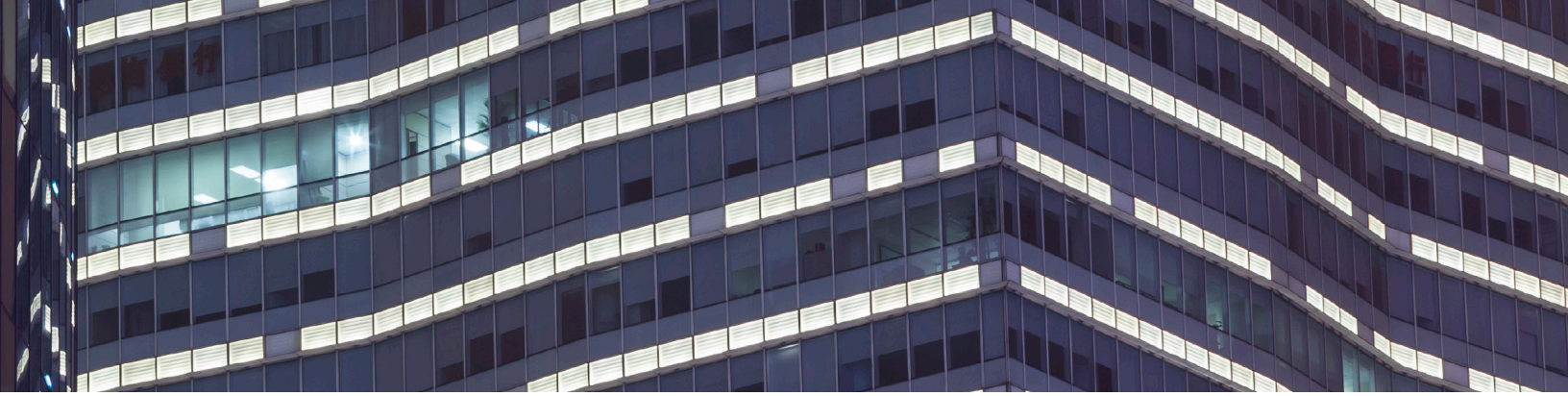
The impact on **Cost Savings/Market Efficiency** analyzes the overall costs and benefits of implementing a project. It also reviews whether the project improves market operations and produces proper price signals to help spur investment.

The impact on **Market Transparency** assesses the extent to which the project will impact the transparency and clarity of market rules.

The impact on the **Environment** reviews how the project may affect the environment, focusing primarily on emission levels.

Projects selected for Consumer Impact Analysis are a subset of all NYISO projects chosen during the annual Budget Project Prioritization Process. The Consumer Impact Analysis list is presented to the stakeholders annually for their input. This occurs during the annual Budget Project Prioritization Process. The annual Budget Project Prioritization Process typically begins in May and ends in the fourth quarter with the Board of Directors approving the annual budget. Prior to the Board's approval, NYISO staff and stakeholders discuss the proposed projects and budgetary costs for the year during Budget and Priority Working group meetings. The projects that are included on the Consumer Impact Analysis Project list 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.*



Process Improvements in the Communication of Consumer Impact Analyses

Background

During the last quarter of 2014 and continuing into the first quarter of 2015, the NYISO received extensive feedback on the manner in which it communicates and conducts its Consumer Impact Analyses. Some of this feedback came at the October 30, 2014, Market Issues Working Group (MIWG) meeting during the presentation of the Comprehensive Shortage Pricing Consumer Impact Analysis. Additional feedback was received at the December 17, 2014, Management Committee meeting during the presentation of the Comprehensive Shortage Pricing proposal.

To obtain additional feedback, the Consumer Interest Liaison met with representatives of all sectors in small group discussions. These meetings took place in January and February 2015:

- *January 14: Generator and Other Supplier*
- *January 28: TO and Public Power*
- *February 10: DR and Environmental Interests*
- *February 12: End-Use Sector*

The Consumer Interest Liaison also had a meeting on February 5, 2015, with the Department of Public Service (DPS) staff to get their feedback.

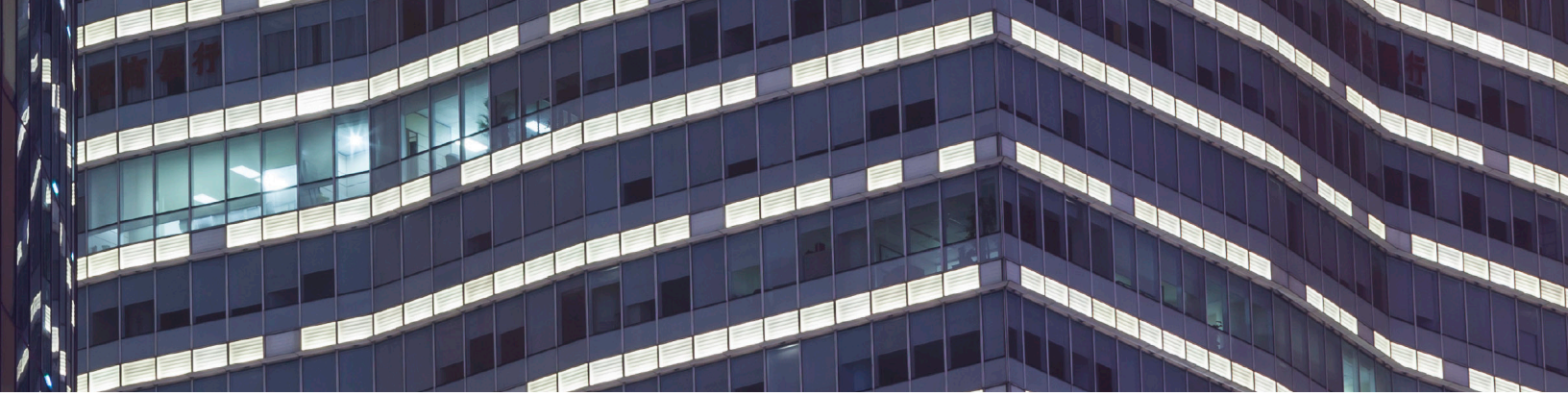
Response to Stakeholder Feedback

Based on feedback from stakeholders, the NYISO proposed a number of changes/additions to the manner in which Consumer Impact Analyses (CIA) are conducted and presented. The focus was on actionable suggestions while also taking note of other comments.

Proposed Changes

- *The Consumer Interest Liaison will continue to maintain its independence in conducting and presenting CIAs*
- *Provide stakeholders a preliminary indication at the outset of a market design initiative whether a project is expected to have a major consumer impact to exceed \$50 million per year*

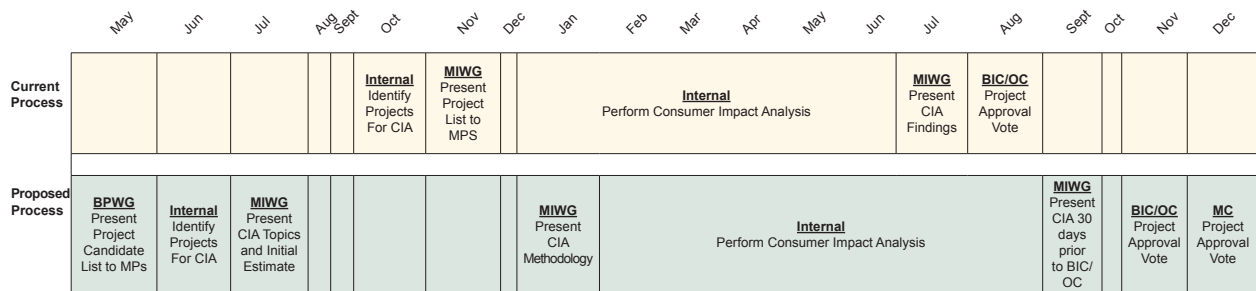
- *Present to stakeholders a description of the methodology to be used for CIAs before conducting the impact analysis*
 - ✓ CIA presentations will provide greater detail on how estimates are computed
 - ✓ With the exception of confidential information, MPs would have information required to reproduce (duplicate) results
- *Present to stakeholders the final CIA at least 30 days prior to submission of the market design initiative to BIC, OC and/or MC for approval*
- *Present CIAs as a total package rather than just a focus on numbers*
 - ✓ The analysis to include, in detail, the reasons why a project is being undertaken
 - ✓ List the benefits of the project
 - ✓ Attempt to estimate the impact of major market design changes over both the short-term and long-term, if warranted
 - ✓ The presentation will attempt to account for countervailing conditions and opinions from other parties and differing assumptions
- *CIAs to clearly state all the assumptions underlying the impact analysis*
 - ✓ Emphasize that the values presented are strictly estimates based on the assumptions used in the analysis
 - ✓ The time frame over which the estimates are computed to be clearly defined, e.g., estimates are based on an identified snapshot in time
 - ✓ The major driver(s) of the impact would be highlighted in the final analysis
 - ✓ Impact estimates to be presented as a range
- *The process of conducting and presenting CIAs to be incorporated into the 2016 project schedule from the outset*
- *Evaluate alternative implementation options for stakeholder consideration*
 - ✓ Present the alternative of not doing a project and the associated consequences
 - ✓ Utilize scenario analysis in reporting the results of CIAs when relevant



Impact of Suggested Changes on Project Schedule

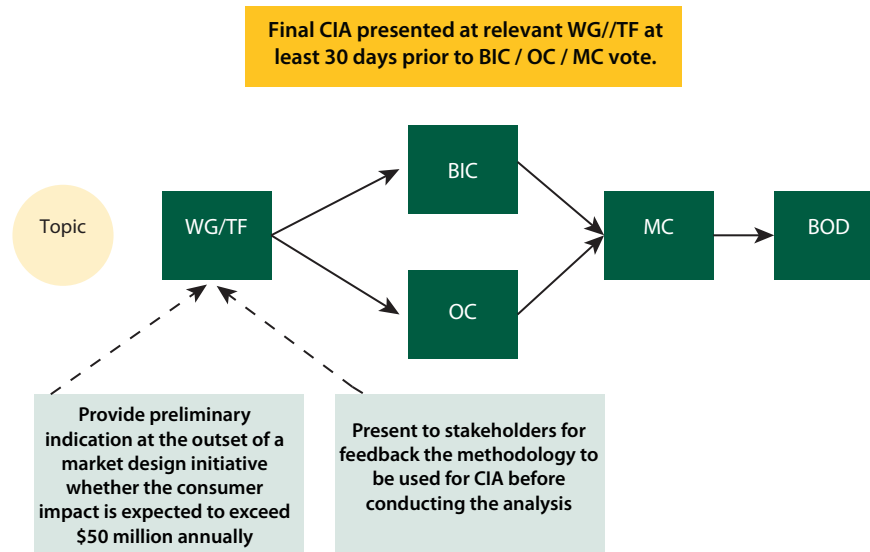
The suggested changes will have a significant impact on both the work load and the project schedule. The top bar on the graph below shows the current timeline for completing a typical consumer impact analysis and the deliverables. The bottom bar shows both the lengthening of the project schedule and the increase in the number of deliverable items.

IMPACT ON PROJECT SCHEDULE



Consumer Impact Analysis - Process Map

NYISO SHARED GOVERNANCE PROCESS



Consumer Impact Analyses Presented in 2015

1. Behind the Meter Net Generation (BTM:NG) Initiative
2. Comprehensive Scarcity Pricing
3. Mechanism to Eliminate Capacity Zones (Localities)

1. Behind the Meter Net Generation (BTM:NG) Initiative

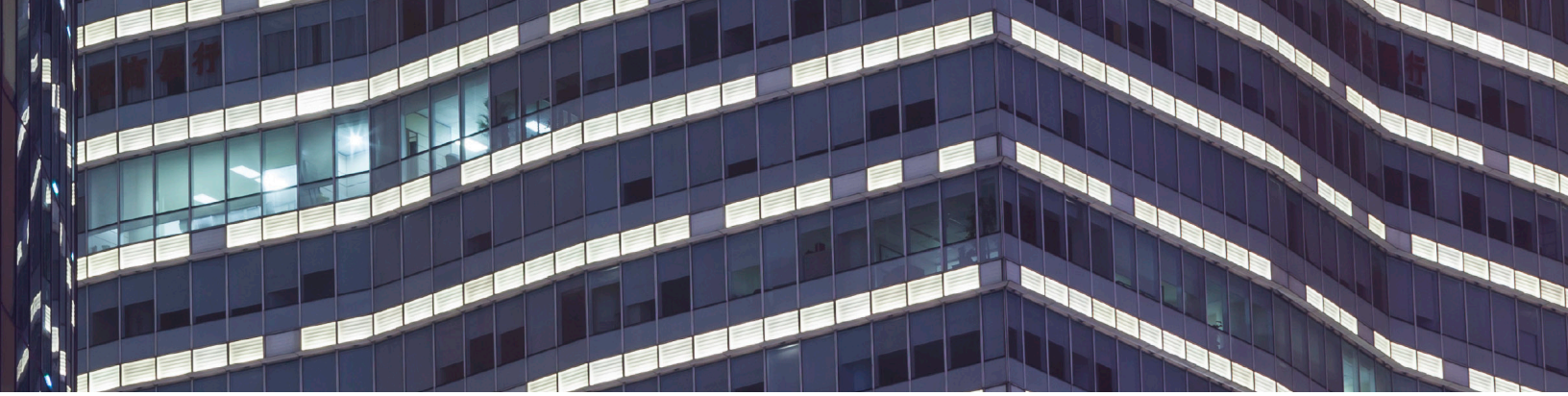
Background/Overview

The NYISO received several requests from generators that serve load behind-the-meter to allow them to participate in the NYISO wholesale markets as a generator. A behind-the-meter (BTM) generator has excess or ‘net’ generation (NG) capability after serving its retail load. In response to these stakeholder requests, the NYISO proposed a set of market rule changes that would allow these generators to participate in the NYISO energy and capacity markets with their net generation.

Benefits of BTM: NG

- *Access to this additional supply may improve grid reliability and operational flexibility*
- *Improve awareness of resources not currently participating in the NYISO wholesale markets*
- *Provide more clarity and certainty for future resource investment within New York State*

| | |
|---|---|
| <p>RELIABILITY Access to additional supply should improve grid reliability and operational flexibility</p> | <p>COST IMPACT/MARKET EFFICIENCIES As BTM:NG resource MW enter the NYISO markets capacity prices will decrease</p> |
| <p>ENVIRONMENT/NEW TECHNOLOGY No major environmental impact</p> | <p>TRANSPARENCY Improved awareness of resources not currently participating in the NYISO wholesale markets should enhance transparency</p> |



Summary of Cost Impacts

In the short-run, as BTM:NG resource megawatts enter the NYISO markets capacity prices will decrease. However, in the long-run, impacts of the addition of BTM:NG resource megawatts may lead to some retirements and/or mothball status requests which in turn may result in an increase in capacity prices. With regard to energy prices, it is expected that the addition of the BTM:NG resources will not have a significant impact due to the anticipated level of participation at this time.

Cost Impact Approach

The cost impact of NYISO's proposal will depend on the amount of BTM:NG resources available to the wholesale market. Since we don't know precisely how much capacity and energy will be available, we provided estimates over a range of expected values. We assumed that most BTM:NG resources will be available to participate in the wholesale market as capacity providers.

Analysis Assumptions

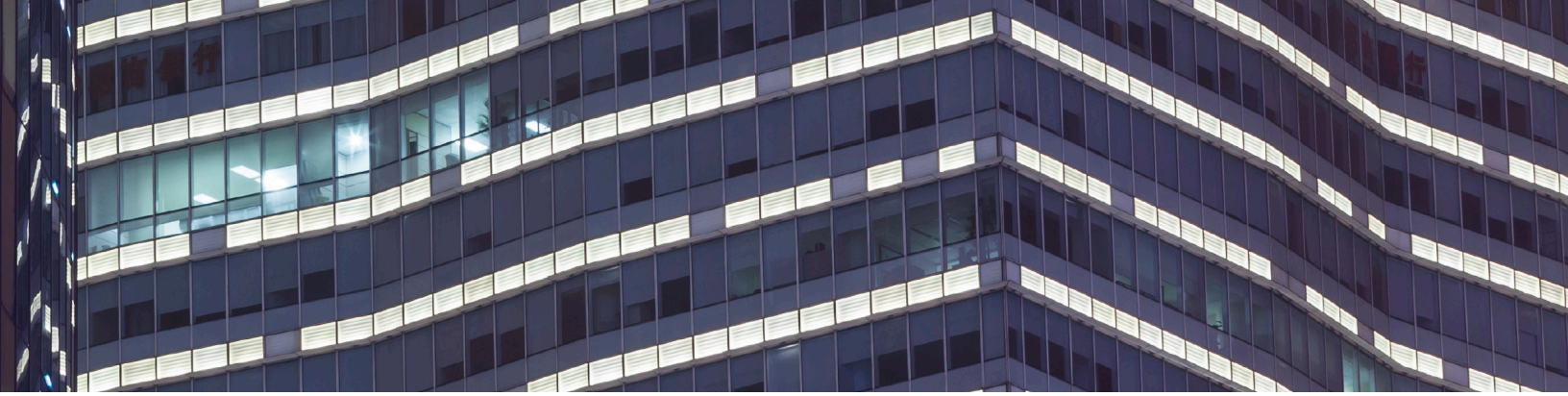
- *To illustrate the cost impact, we assumed a range of 50 megawatts to 300 megawatts of Unforced Capacity (UCAP) from BTM:NG resources entering the NYISO markets*
- *We assumed a Locational MW allocation of 55% to the ROS, 35% to NYC, and 5% each to G-I and LI*
- *For the short-run we looked at 2015/16 and for the long-run 2017/18*
- *For the 2015/16 base case, we used the most recent available auction data—the 2015 Gold Book forecasts and the current Demand Curves*
- *For the 2017/18 base case, the auction data was updated using the 2015 Gold Book data and Demand Curve escalation factors*
- *We assumed no additional BTM:NG resource MW for the 2017/18 case*
- *We assumed MW reduction levels of 15 MW, 30 MW, 60 MW and 90 MW due to retirement and or mothball status request for the 50 MW, 100 MW, 200 MW and 300 MW cases respectively for 2017/18*

Short-Run Capacity Price Impacts

Table 1 shows the impact on capacity prices for a range of assumed BTM:NG resource MW entering the capacity market (based on the current Demand Curves). We computed the price impacts for additions of 50 MW, 100 MW, 200 MW and 300 MW. Price impacts are shown for NYCA, G-J, NYC and LI. The price impacts for each Locality in the Summer 2015 and Winter 2015/16 capability periods were computed separately.

Table 1
Impact on Capacity Prices (2015/16)

| Capacity Price Change per MW Addition | | | | | | | | | | | |
|---------------------------------------|-------------------|---------|--------------------|-------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|
| | | | | 50 MW Total | | 100 MW Total | | 200 MW Total | | 300 MW Total | |
| | Capability Period | | Demand Curve Slope | MW Delta | Price Difference | MW Delta | Price Difference | MW Delta | Price Difference | MW Delta | Price Difference |
| NYCA | Summer | 2015 | -0.002290559 | 50 | -\$0.11 | 100 | -\$0.23 | 200 | -\$0.46 | 300 | -\$0.69 |
| NYCA | Winter | 2015/16 | -0.002230672 | 50 | -\$0.11 | 100 | -\$0.22 | 200 | -\$0.45 | 300 | -\$0.67 |
| G-J | Summer | 2015 | -0.006300907 | 20 | -\$0.13 | 40 | -\$0.25 | 80 | -\$0.50 | 120 | -\$0.76 |
| G-J | Winter | 2015/16 | -0.006233215 | 20 | -\$0.12 | 40 | -\$0.25 | 80 | -\$0.50 | 120 | -\$0.75 |
| NYC | Summer | 2015 | -0.012198908 | 17.5 | -\$0.21 | 35 | -\$0.43 | 70 | -\$0.85 | 105 | -\$1.28 |
| NYC | Winter | 2015/16 | -0.011725945 | 17.5 | -\$0.21 | 35 | -\$0.41 | 70 | -\$0.82 | 105 | -\$1.23 |
| Long Island | Summer | 2015 | -0.00926 | 2.5 | -\$0.02 | 5 | -\$0.05 | 10 | -\$0.09 | 15 | -\$0.14 |
| Long Island | Winter | 2015/16 | -0.00935 | 2.5 | -\$0.02 | 5 | -\$0.05 | 10 | -\$0.09 | 15 | -\$0.14 |



Short-Run Capacity Cost Impacts

Table 2 shows the total (State-wide) impact on capacity cost for four levels of MW additions; 50 MW, 100 MW, 200 MW and 300 MW, while *Table 3* shows the impact on capacity costs for each Locality: ROS, G-I, NYC and LI. *Table 3, Column 5* shows the total annual capacity costs for each Locality before any additional BTM:NG resource MW entered the wholesale market, while *Table 3, Column 6* shows the revised annual capacity costs for each Locality based on varying levels of additional BTM:NG resource MW. *Table 3, Column 7* shows the decrease in capacity cost in each Locality for different levels of BTM:NG resource MW. Finally, *Table 3, Column 8* shows the aggregate decrease in capacity cost across the state for the four levels of MW additions: 50 MW, 100 MW, 200 MW and 300 MW.

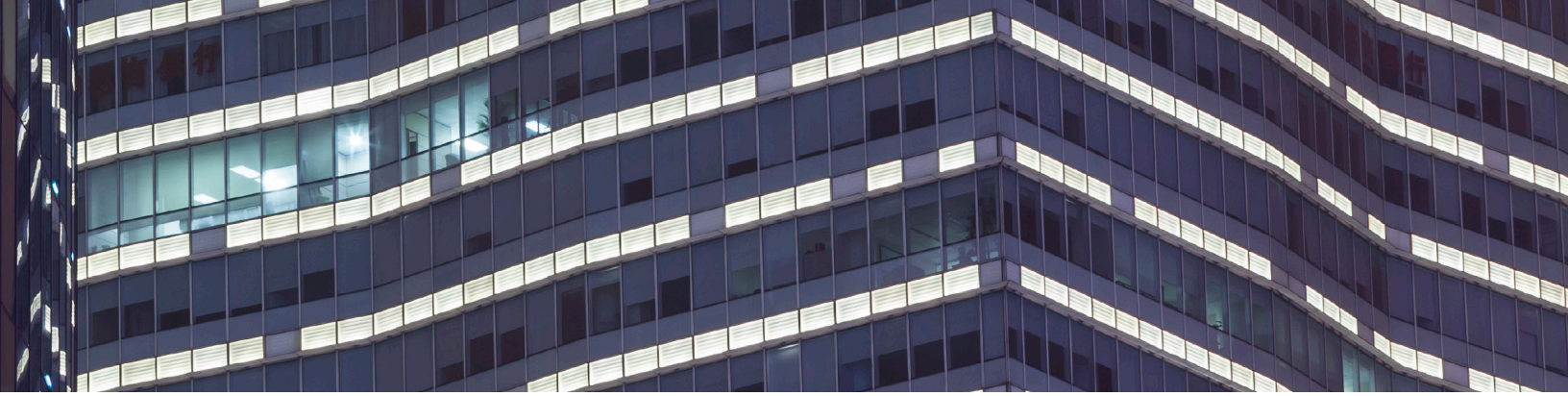
Table 2
Total Impact on Capacity Costs (2015/16)

| Cost in Millions | | | |
|----------------------|---------------|-------------------|------------------|
| Year | Additional MW | Total Annual Cost | Annual Variation |
| 2015/16 Base Auction | N/A | \$2,592.1 | N/A |
| 2015/16 | 50 | \$2,536.0 | \$56.1 |
| 2015/16 | 100 | \$2,479.7 | \$112.4 |
| 2015/16 | 200 | \$2,366.6 | \$225.5 |
| 2015/16 | 300 | \$2,252.9 | \$339.2 |



Table 3
Impact on Capacity Costs by Locality
(2015/16)

| Cost in Millions | | | | | | | | | | |
|-------------------|-----|------------------------------------|---------------|---------------------|--------------------|-----------|------------------------|-----------------|-----------------|-----------------|
| Year | | Total Number of Additional NYCA MW | Additional MW | Original Total Cost | Revised Total Cost | Variation | Annual Total Variation | | | |
| | | | | | | | 50MW | 100MW | 200MW | 300MW |
| 2015/16 | ROS | 50 | 27.5 | \$558.7 | \$534.0 | -\$24.7 | -\$24.7 | | | |
| 2015/16 | ROS | 100 | 55.0 | \$558.7 | \$509.2 | -\$49.5 | | -\$49.5 | | |
| 2015/16 | ROS | 200 | 110.0 | \$558.7 | \$459.3 | -\$99.4 | | | -\$99.4 | |
| 2015/16 | ROS | 300 | 165.0 | \$558.7 | \$409.2 | -\$149.5 | | | | -\$149.5 |
| 2015/16 | G-I | 50 | 2.5 | \$457.6 | \$450.8 | -\$6.7 | -\$6.7 | | | |
| 2015/16 | G-I | 100 | 5.0 | \$457.6 | \$444.1 | -\$13.5 | | -\$13.5 | | |
| 2015/16 | G-I | 200 | 10.0 | \$457.6 | \$430.6 | -\$26.9 | | | -\$26.9 | |
| 2015/16 | G-I | 300 | 15.0 | \$457.6 | \$417.1 | -\$40.4 | | | | -\$40.4 |
| 2015/16 | NYC | 50 | 17.5 | \$1,325.1 | \$1,302.0 | -\$23.1 | -\$23.1 | | | |
| 2015/16 | NYC | 100 | 35.0 | \$1,325.1 | \$1,278.8 | -\$46.4 | | -\$46.4 | | |
| 2015/16 | NYC | 200 | 70.0 | \$1,325.1 | \$1,232.0 | -\$93.1 | | | -\$93.1 | |
| 2015/16 | NYC | 300 | 105.0 | \$1,325.1 | \$1,185.0 | -\$140.1 | | | | -\$140.1 |
| 2015/16 | LI | 50 | 2.5 | \$250.7 | \$249.2 | -\$1.5 | -\$1.5 | | | |
| 2015/16 | LI | 100 | 5.0 | \$250.7 | \$247.7 | -\$3.0 | | -\$3.0 | | |
| 2015/16 | LI | 200 | 10.0 | \$250.7 | \$244.7 | -\$6.1 | | | -\$6.1 | |
| 2015/16 | LI | 300 | 15.0 | \$250.7 | \$241.6 | -\$9.1 | | | | -\$9.1 |
| Total Cost | | | | | | | -\$56.1 | -\$112.4 | -\$225.5 | -\$339.2 |



Long-Run Capacity Price Impacts

Table 1 shows that the short-run (2015/16) effect of adding BTM:NG resources will be lower capacity prices, however, markets are expected to respond to falling capacity prices through retirements and mothball. In the Long-Run (2017/18), the reduction in prices will begin to dissipate as shown in Table 4. We assumed that there will be a 15 MW, 30 MW, 60 MW and a 90 MW capacity reduction in the 50 MW, 100 MW, 200 MW and 300 MW cases, respectively. We also assumed that no additional BTM:NG entered the wholesale market in 2017/18.

Table 4
Total Impact on Capacity Prices
(2017/18)

| Capacity Price Change per MW of Reduction | | | | | | | | | | | |
|---|-------------------|---------|--------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|
| | Capability Period | | Demand Curve Slope | 15 MW Total | | 30 MW Total | | 60 MW Total | | 90 MW Total | |
| | | | | MW Delta | Price Difference | MW Delta | Price Difference | MW Delta | Price Difference | MW Delta | Price Difference |
| NYCA | Summer | 2017 | -0.002377 | 15 | \$0.04 | 30 | \$0.07 | 60 | \$0.14 | 90 | \$0.21 |
| NYCA | Winter | 2017/18 | -0.002315 | 15 | \$0.03 | 30 | \$0.07 | 60 | \$0.14 | 90 | \$0.21 |
| G-J | Summer | 2017 | -0.006483 | 6 | \$0.04 | 12 | \$0.08 | 24 | \$0.16 | 36 | \$0.23 |
| G-J | Winter | 2017/18 | -0.006414 | 6 | \$0.04 | 12 | \$0.08 | 24 | \$0.15 | 36 | \$0.23 |
| NYC | Summer | 2017 | -0.012529 | 5.25 | \$0.07 | 11 | \$0.13 | 21 | \$0.26 | 32 | \$0.39 |
| NYC | Winter | 2017/18 | -0.012043 | 5.25 | \$0.06 | 11 | \$0.13 | 21 | \$0.25 | 32 | \$0.38 |
| Long Island | Summer | 2017 | -0.009768 | 0.75 | \$0.01 | 1.5 | \$0.01 | 3 | \$0.03 | 4.5 | \$0.04 |
| Long Island | Winter | 2017/18 | -0.009257 | 0.75 | \$0.01 | 1.5 | \$0.01 | 3 | \$0.03 | 4.5 | \$0.04 |

Long-Run Capacity Cost Impacts

Table 5 shows the impact on total State-wide capacity cost in the long-run (2017/18) for four levels of MW reductions; 15 MW, 30 MW, 60 MW and 90 MW, while *Table 6* shows the long-term impact on Locality capacity cost for ROS, G-I, NYC and LI. *Table 6, Column 5* shows the total annual capacity costs for each Locality before any MW leaves the wholesale market, while *Table 6, Column 6* shows the revised annual capacity costs for Locality based on varying levels of MW exiting the market. *Table 6, Column 7* shows the increase in capacity cost in each Locality for different levels of MWs exiting the market. Finally, *Table 6, Column 8* shows the aggregate increase in capacity cost across the state.

Table 5
Total Impact on Capacity Costs
(2017/18)

| Cost in Millions | | | | |
|----------------------|-------------|-----------------------------|---------------------------------|----------------------------------|
| Year | Reduced MWs | Total Annual Cost Base Case | Total Annual Cost w/ Reductions | Total Cost Increase per Scenario |
| 2017/18 Base Auction | N/A | N/A | N/A | N/A |
| 2017/18 - 50 | 15 | \$3,217.4 | \$3,234.6 | \$17.2 |
| 2017/18 - 100 | 30 | \$3,160.1 | \$3,194.5 | \$34.4 |
| 2017/18 - 200 | 60 | \$3,045.0 | \$3,114.2 | \$69.2 |
| 2017/18 - 300 | 90 | \$2,929.2 | \$3,033.5 | \$104.3 |

Table 6
Impact on Capacity Costs by Locality
(2017/18)

| Cost in Millions | | | | | | | | | | |
|-------------------|------|------------------------------------|--------------|---------------------|--------------------|-----------|------------------------|---------------|---------------|----------------|
| Year | Zone | Total Number of Additional NYCA MW | MW Reduction | Original Total Cost | Revised Total Cost | Variation | Annual Total Variation | | | |
| | | | | | | | 15 MW | 30 MW | 60 MW | 90 MW |
| 2017/18 | ROS | 50 | 8.25 | \$689.7 | \$697.3 | \$7.6 | \$7.6 | | | |
| 2017/18 | ROS | 100 | 16.50 | \$664.1 | \$679.5 | \$15.3 | | \$15.3 | | |
| 2017/18 | ROS | 200 | 33.00 | \$612.8 | \$643.7 | \$30.8 | | | \$30.8 | |
| 2017/18 | ROS | 300 | 49.50 | \$561.2 | \$607.7 | \$46.5 | | | | \$46.5 |
| | | | | | | | | | | |
| 2017/18 | G-I | 50 | 0.75 | \$549.9 | \$552.0 | \$2.1 | \$2.1 | | | |
| 2017/18 | G-I | 100 | 1.50 | \$543.0 | \$547.2 | \$4.1 | | \$4.1 | | |
| 2017/18 | G-I | 200 | 3.00 | \$529.2 | \$537.5 | \$8.3 | | | \$8.3 | |
| 2017/18 | G-I | 300 | 4.50 | \$515.4 | \$527.9 | \$12.4 | | | | \$12.4 |
| | | | | | | | | | | |
| 2017/18 | NYC | 50 | 5.25 | \$1,623.6 | \$1,630.6 | \$7.0 | \$7.0 | | | |
| 2017/18 | NYC | 100 | 10.50 | \$1,600.3 | \$1,614.3 | \$14.0 | | \$14.0 | | |
| 2017/18 | NYC | 200 | 21.00 | \$1,553.3 | \$1,581.5 | \$28.2 | | | \$28.2 | |
| 2017/18 | NYC | 300 | 31.50 | \$1,505.9 | \$1,548.5 | \$42.6 | | | | \$42.6 |
| | | | | | | | | | | |
| 2017/18 | LI | 50 | 0.75 | \$354.2 | \$354.7 | \$0.5 | \$0.5 | | | |
| 2017/18 | LI | 100 | 1.50 | \$352.7 | \$353.6 | \$0.9 | | \$0.9 | | |
| 2017/18 | LI | 200 | 3.00 | \$349.7 | \$351.5 | \$1.8 | | | \$1.8 | |
| 2017/18 | LI | 300 | 4.50 | \$346.7 | \$349.4 | \$2.7 | | | | \$2.7 |
| Total Cost | | | | | | | \$17.2 | \$34.4 | \$69.2 | \$104.3 |

Environmental Impact

A general prerequisite for BTM:NG resources to participate in the NYISO markets is to meet NYSDEC requirements to operate under non-emergency conditions. Based on the assumption that these resources will operate under those requirements, we expect no major environmental impact as BTM:NG resources are already operating to serve their native load. The addition of their excess capacity and energy to the wholesale market should have a negligible impact.

Reliability Impact

Access to additional supply may improve grid reliability and operational flexibility. Planning studies, such as the Installed Reserve Margin/Locational Capacity Requirement (IRM/LCR), will account for load growth and load forecast uncertainty for the load served by a BTM:NG resource.

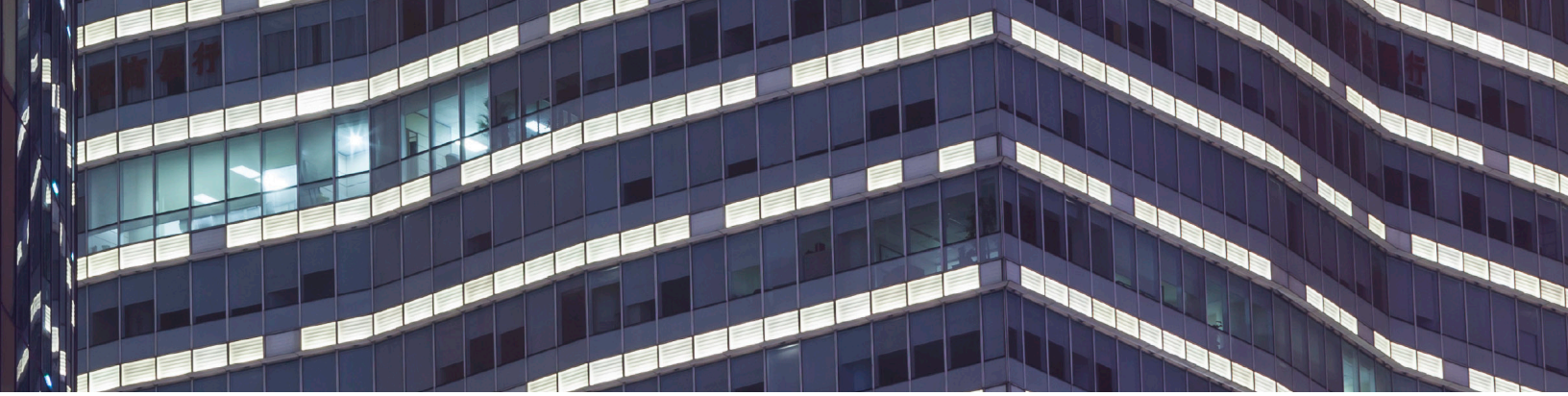
Impact on Transparency

The participation of BTM:NG resources will provide greater transparency, as it will improve awareness of resources not currently participating in the NYISO wholesale markets. It will also provide more clarity and certainty for future resource investment within New York state.

2. Comprehensive Scarcity Pricing

Background/Overview

Currently, scarcity pricing¹ applies when the amount of Available Reserves are less than the activated Emergency Demand Response Program/Special Case Resource, or EDRP/SCR, MW (the “but for” test). Under today’s rules, when EDRP/SCR resources are activated and scarcity pricing applies, RTD Energy and Operating Reserves clearing prices may be adjusted after the fact. *Energy prices* are adjusted to reflect the cost of activating EDRP/SCR (\$500) if the amount of EDRP/SCR MW activated are greater than the megawatts of Available Reserves in the called Load Zone(s), unless the original RTD LBMP already exceeds the cost of activating EDRP/SCR. Similarly, for *Operating Reserves* if scarcity pricing for Energy has been triggered, the Lost Opportunity Cost utilized in setting clearing prices for Operating Reserves considers the Energy clearing prices resulting from the application of scarcity pricing if the amount of EDRP/SCR MW are greater than the MW of Available Reserves in a reserve region(s) that includes the



activated Load Zone(s).

Additionally, existing scarcity pricing rules do not apply to External Proxy Buses and that leads to inconsistencies between payments made by internal loads and exports, as well as between payments received by internal generators and imports. During intervals that pass the “but for” test, internal loads may pay LBMPs incorporating the \$500 price, while exports from the NYISO could pay significantly less. Similarly, internal generators may receive LBMPs incorporating the \$500 price, while imports to the NYISO could receive significantly less.

NYISO Proposal

The NYISO proposed to model EDRP/SCR activations as an additional 30-minute reserve requirement in the optimization, thereby incorporating the value of EDRP/SCR resources into the pricing software where prices and schedules are established. This requires creating a scarcity reserve region during EDRP/SCR events to reflect activation for the Load Zone(s) that are part of the same activation reason. It would also necessitate the creation of a 30-minute scarcity reserve requirement for each scarcity reserve region. The scarcity reserve requirement for the scarcity reserve region will be based on the expected load reduction of EDRP/SCR resources (“Expected EDRP/SCR MW”), less the Available Operating Capacity (i.e., ramp capability greater than 30-minute and less than or equal to 60-minutes) in the scarcity reserve region. Incorporating the value of EDRP/SCR resources in the optimization will ensure that the market model more accurately reflects system conditions during EDRP/SCR activations.

The NYISO also proposed to set NYCA 30-minute reserve demand curve values priced at less than \$500 to \$500 in real-time during EDRP/SCR activations. This will align pricing outcomes with Operator actions and avoid the potential for going short of lower priced NYCA 30-minute reserves to meet the scarcity reserve requirement.

Further, the NYISO proposed to revise the South-East New York (SENY) 30-minute reserve demand curve value from \$25 to \$500 at all times. This proposal will value reserves in SENY consistent with the value of EDRP/SCR resources used to protect those reserves and is consistent with past recommendations from Potomac Economics.

Additionally, the NYISO proposed to revise the middle point of the Regulation Service Demand Curve from \$400 to \$525, effective at all times. This will avoid going short of Regulation Service to provide



SENY 30-minute reserves.

Finally, the NYISO proposed to reduce the 1,300 MW SENY 30-minute reserve requirement to zero during TSA events. This will allow for a more accurate modeling of system conditions during a TSA, since 30-minute reserves are effectively carried on the transmission system during a TSA event.

Benefits of Moving Scarcity Pricing into the Optimization

Incorporating the value of EDRP/SCR resources into the optimization process where prices and schedules are established will appropriately reflect resource lost opportunity costs in energy, reserve and regulation prices. It will better align scheduling decisions with pricing outcomes. It will also reduce the potential for uplift from units when directed to buy out of scarcity-priced reserve product to provide non-scarcity priced energy or vice versa.

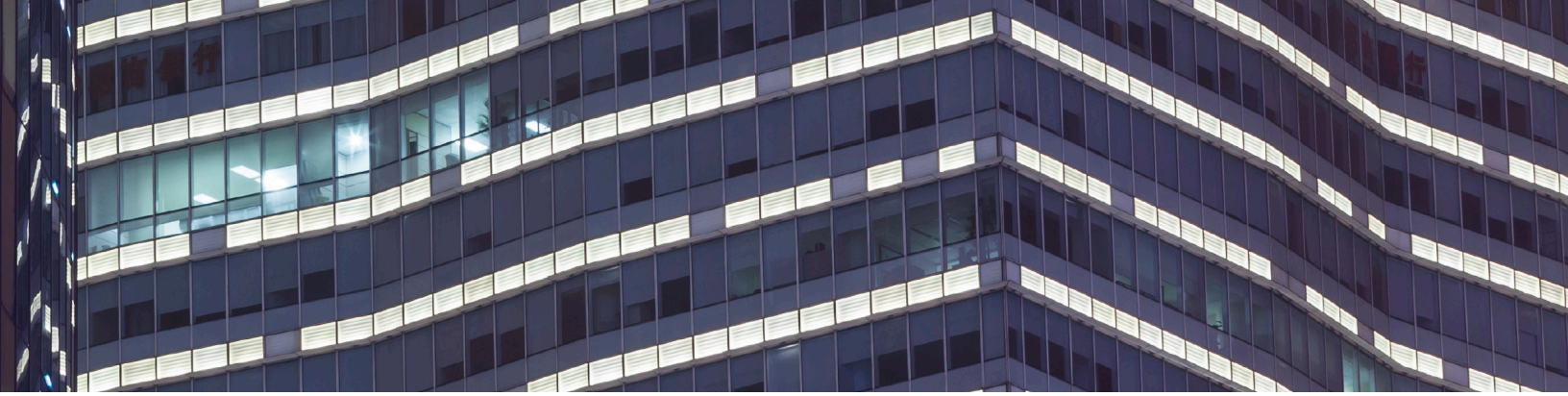
Moving Scarcity Pricing into optimization will also align prices paid by exports with prices paid by internal NYCA loads, and prices paid to imports with prices paid to internal generators during a scarcity event.

Consumer Impact Analysis

Based on the assumptions² utilized in the analysis and historical costs of energy, the long run view of the net annual consumer impact is expected to range from a cost increase to consumers of \$14.6 million to a savings to consumers of \$46.7 million. Consumer impact depends on a number of factors, including:

- *The amount of Available Operating Capacity (i.e., the offset to the Expected EDRP/SCR MW in establishing the applicable scarcity reserve requirement) during EDRP/SCR activations, and*
- *The number of EDRP/SCR activations that take place*

| | |
|--|---|
| RELIABILITY Enhanced Operational Flexibility | COST IMPACT/MARKET EFFICIENCIES Ranging from \$14.6 million Cost Increase to \$46.7 million Cost Savings to Consumers |
| ENVIRONMENT/NEW TECHNOLOGY No Major Impact | TRANSPARENCY Improved Price Transparency |



Based on the estimates above and all else being equal, a *capacity cost* increase would be expected when the demand curves are reset in the future if lower energy costs are netted from the cost of new entry for the applicable proxy unit technologies; conversely, a capacity cost decrease would be expected if energy costs prove to be higher. Given the magnitude of the estimated impact on energy costs, the impact on capacity prices is expected to be modest.

Summary of Quantitative Analysis

The consumer impact summarized above was based on estimating the impact of each component of NYISO's proposal:

- *Include the value of EDRP/SCR resources into the optimization as an additional 30-minute reserve requirement;*
- *Increase in the 30-minute reserve demand curve value from \$25 to \$500 at all times; and*
- *Revise the middle point of the Regulation Service Demand Curve from \$400 to \$525, effective at all times.*

Estimation of Annual Energy Cost Impact

The annual energy cost impact to consumers was estimated by changing inputs and rerunning the NYISO's market software. Simulation of July 19, 2013, EDRP/SCR activations were performed to compare market outcomes based on the current after-the-fact logic with potential outcomes of including the value of EDRP/SCR resources into the optimization as an additional 30-minute reserve requirement. Three simulation scenarios were considered based on the July 19, 2013, results:

- *A base case founded on the after-the-fact scarcity pricing logic that is currently used to establish energy and reserve prices during EDRP/SCR activations*
- *A low amount of Available Operating Capacity: the total applicable value of enrolled EDRP/SCR MW were procured as additional 30-minute reserves in G through K and A through K (i.e., Available Operating Capacity was assumed to be zero)*
- *A high amount of Available Operating Capacity: the total applicable value of enrolled EDRP/SCR MW for resources located in Load Zones G-K were procured as additional 30-minute reserves (i.e., Available Operating Capacity assumed to be zero for SENY and equal to enrolled EDRP/SCR MW in Load Zones A through F)*

The estimated annual impact of incorporating scarcity pricing into the optimization considered three possibilities: 1) zero EDRP/SCR activations; 2) five EDRP/SCR events for the low Available Operating Capacity; and, 3) five EDRP/SCR events for the high Available Operating Capacity

- *If there were no EDRP/SCR events, there were no savings recognized*
- *Considering a low amount of Available Operating Capacity and 5 activations (i.e., the number of EDRP/SCR activations in 2013), the consumer impact is estimated at a \$10.6 million energy cost savings to consumers (see Table 1 below)*

Table 1

| | Number of Events | Estimated Cost Impact (Single Event) | Annual Estimated Cost Impact |
|---|-------------------------|---|-------------------------------------|
| Load Zones G through K activated for one hour, then Load Zones A through K activated for five hours | 2 | \$12,734,559 | \$25,469,119 |
| Load Zones G through K activated for five hours | 3 | \$(4,940,526) | \$(14,821,579) |
| | | Estimate Annual Cost Impact | \$10,647,540 |

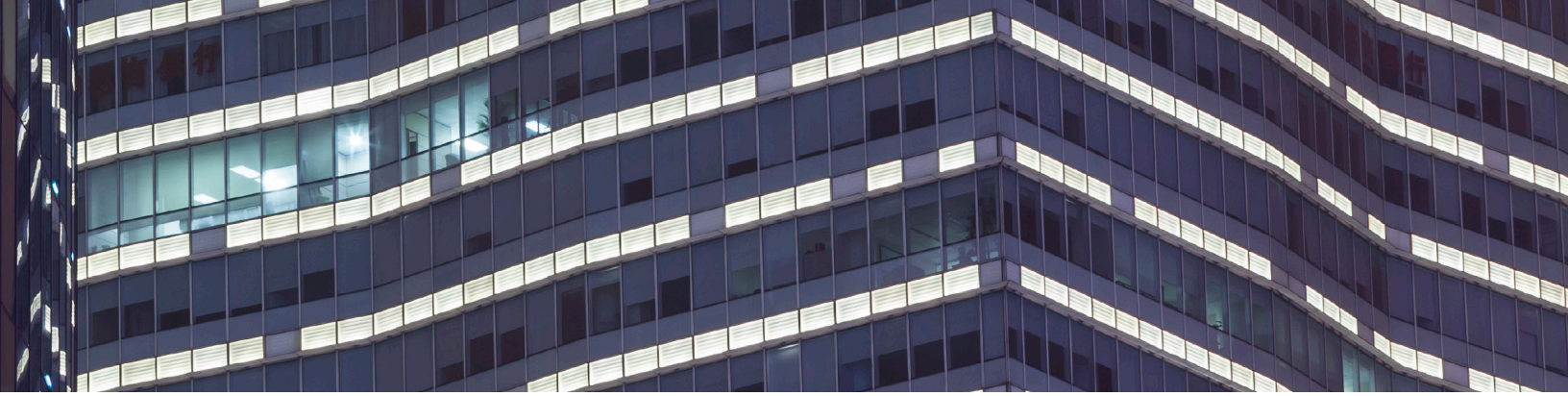


Table 2

| | Number of Events | Estimated Cost Impact (Single Event) | Annual Estimated Cost Impact |
|---|-------------------------|---|-------------------------------------|
| Load Zones G through K activated for one hour, then Load Zones A through K activated for five hours | 2 | \$31,419,136 | \$62,838,271 |
| Load Zones G through K activated for five hours | 3 | \$10,083,810 | \$30,251,429 |
| Estimated Annual Cost Impact | | | \$93,089,700 |

- *Considering a high amount of Available Operating Capacity and 5 activations (i.e., the number of EDRP/SCR activations in 2013), the consumer impact is estimated at a \$93.1 million energy cost savings to consumers (see Table2)*

The average of the estimated impact from the low and high Available Operating Capacity scenarios (assuming five EDRP/SCR events) is a savings of \$51.9 million.

SENY Reserve Demand Curve

The NYISO also proposed to increase the SENY 30-minute reserve demand curve value from \$25 to \$500 at all times. Since there is no history for the number of potential reserve shortages for SENY, the cost impact of this proposed change was estimated under two different assumptions as shown in Table 3 below:

- *Shortages of SENY 30-minute reserves based on 2013 frequency of EAST 30-minute shortages – resulting in a potential cost increase of approximately \$1.3 million*
- *Shortages of SENY 30-minute reserves based on 2013 frequency of NYCA 30-minute shortages – resulting in a potential cost increase of approximately \$10.7 million*

Table 3

| Row Labels | Total LBMP Cost for 2013 | Total LBMP Cost for 2013 with the added cost of moving SENY from \$25 to \$500, Based on EAST 30 | Delta |
|-------------|--------------------------|--|-------------|
| NYCA | \$2,872,519,659 | \$2,872,519,659 | \$0 |
| GHI | \$1,037,014,183 | \$1,037,273,853 | \$259,670 |
| NYC | \$2,998,925,838 | \$2,999,648,592 | \$722,754 |
| Long Island | \$1,667,659,755 | \$1,667,959,533 | \$299,777 |
| Grand Total | \$8,576,119,436 | \$8,577,401,636 | \$1,282,201 |

| Row Labels | Total LBMP Cost for 2013 | Total LBMP Cost for 2013 with the added cost of moving SENY from \$25 to \$500, Based on NYCA 30 | Delta |
|-------------|--------------------------|--|--------------|
| NYCA | \$2,872,519,659 | \$2,872,519,659 | \$0 |
| GHI | \$1,037,014,183 | \$1,039,178,096 | \$2,163,913 |
| NYC | \$2,998,925,838 | \$3,004,948,784 | \$6,022,946 |
| Long Island | \$1,667,659,755 | \$1,670,157,901 | \$2,498,146 |
| Grand Total | \$8,576,119,436 | \$8,586,804,441 | \$10,685,005 |

Regulation Service Demand Curve

The NYISO also proposed to increase the middle point of the Regulation Service Demand Curve from \$400 to \$525 at all times. *In 2013, there were 20 intervals of Regulation Service shortages that featured a shadow price greater than \$400 and less than or equal to \$525.* Table 4 below shows that the proposed increase to the middle point of the Regulation Service Demand Curve could result in a cost increase of approximately \$3.9 million based on this historical data.

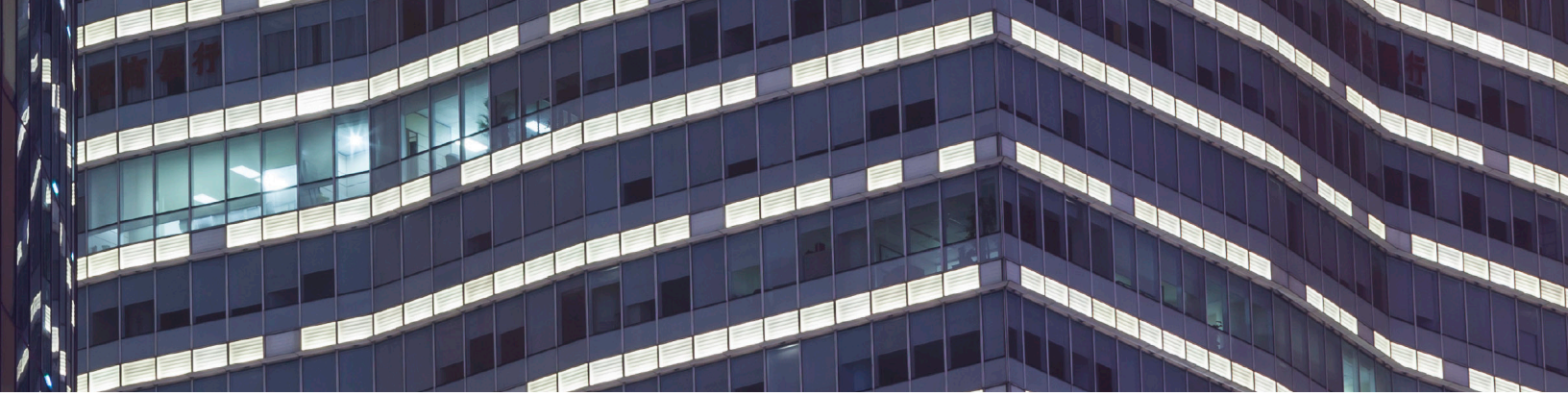


Table 4

| Ancillary Service Shortages | Proposed | Current | Proposed | Delta between Estimated \$25 SENY Shortage Price Impact and \$500 SENY Shortage Price Impact | | | | | |
|-----------------------------|--|-------------------------|-------------------------|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | Estimated Shortage Frequency (# of Intervals >\$400 and <=\$525) | Nov 2015 Shortage Price | Proposed Shortage Price | Change in Average LBMP: A through F | Change in Average LBMP: HUD VL | Change in Average LBMP: MILLWD | Change in Average LBMP: DUNWOD | Change in Average LBMP: N.Y.C. | Change in Average LBMP: LONGIL |
| Regulation | 20 | 400 | 525 | \$0.02 | \$0.02 | \$0.02 | \$0.02 | \$0.02 | \$0.02 |

| Row Labels | Total LBMP Cost for 2013 | Total LBMP Cost for 2013 with the added cost of moving the \$400 Regulation demand curve point to \$525, Based on past shortages of Regulation | Delta |
|-------------|--------------------------|--|-------------|
| GHI | \$1,037,014,183 | \$1,037,469,744 | \$455,561 |
| Long Island | \$1,667,659,755 | \$1,668,185,681 | \$525,925 |
| NYC | \$2,998,925,838 | \$3,000,193,827 | \$1,267,989 |
| NYCA | \$2,872,519,659 | \$2,874,158,951 | \$1,639,292 |
| Grand Total | \$ 8,576,119,436 | \$8,580,008,203 | \$3,888,767 |

Estimate of Net Annual Energy Cost Impact

The potential net annual consumer impact is estimated to range between a cost increase of \$14.6 million and a cost savings of \$46.7 million:

Actual net annual impact is dependent on a number of variables, including the number of EDRP/SCR activations and the amount of Available Operating Capacity during such activations

The potential \$14.6 million net cost increase considers zero EDRP/SCR events, along with the high-end range of the estimate of the potential impact from increasing the value of the SENY 30-minute demand curve (\$10.7 million), as well as the estimate of the potential impact from increasing the value of the middle point of the Regulation Service Demand Curve (\$3.9 million)

The potential \$46.7 million net savings considers the average savings estimate for 5 EDRP/SCR events from the low and high Available Operating Capacity scenarios (\$51.9 million), less (1) the low-end range of the estimate of the potential impact from increasing the value of the SENY 30-minute demand curve (\$1.3 million); and, (2) the estimate of the potential impact from increasing the value of the middle point of the Regulation Service Demand Curve (\$3.9 million)

Reliability Impact

Under the NYISO's proposal, prices paid to imports will be aligned with prices paid to internal generators during EDRP/SCR events. Although imports from neighboring regions may be limited during EDRP/SCR activations, this change has the potential to result in increased imports when additional imports are available from neighboring regions. Moreover, the scarcity reserve requirement will be scheduled on units; and to the extent capability is available, providing increased operational flexibility.

Environmental Impact

No major environmental impact is anticipated from moving scarcity pricing into the optimization.

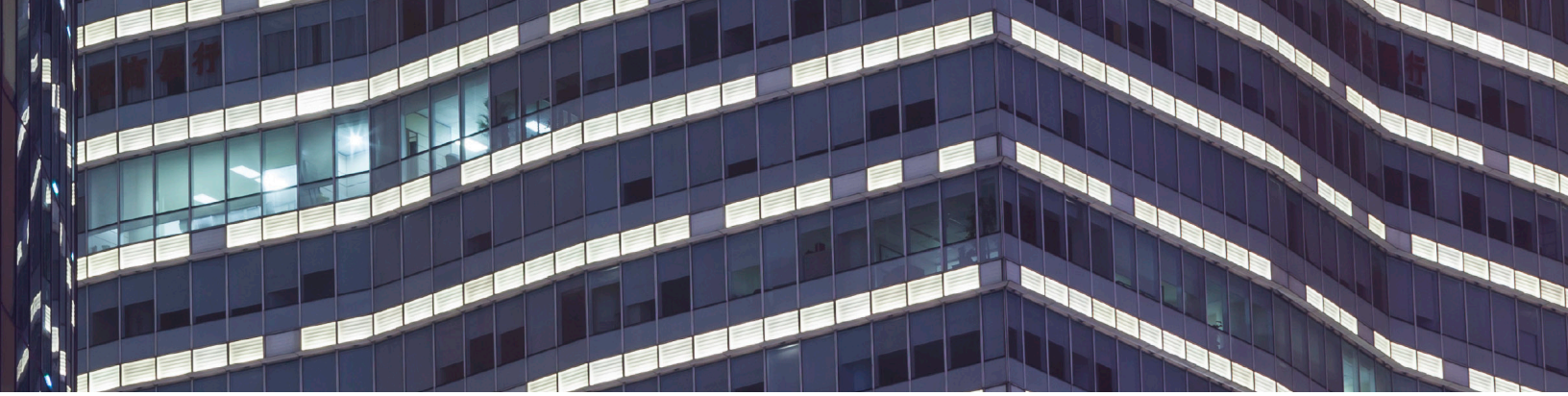
Impact on Transparency

Better alignment of pricing outcomes with supplier schedules will improve price transparency. Additionally, aligning proxy generator bus prices with internal prices will better reflect the value of energy to the NYCA.

3. Mechanism to Eliminate Capacity Zones (Localities)

Background/Overview

In an order issued on August 13, 2013, the Federal Energy Regulatory Commission (FERC) accepted NYISO's proposal to establish a new capacity zone (NCZ) encompassing NYISO Load Zones G, H, I



and J (the G-J Locality). The NYISO's proposal to establish a new capacity zone was based on the results of a NCZ Study that identified a Highway deliverability constraint which triggered the requirements to create a new capacity zone. In examining the economic consequences, the NYISO determined that a new capacity zone is necessary to send efficient price signals that would enhance reliability and mitigate potential transmission security issues, and serve the long-term interest of consumers.

Several stakeholders including the New York Public Service Commission (PSC) asserted that the NYISO should also have included rules to eliminate new capacity zones when they are no longer necessary. In response, the NYISO reminded stakeholders that rules governing the elimination of zones was beyond the scope of the proceeding and that FERC expressly authorized the NYISO to defer to the stakeholder process the rules pertaining to the elimination of capacity zones. In its Order, FERC reiterated its earlier determination on rules to eliminate zones and left it to the NYISO to discuss with its stakeholders whether rules to eliminate capacity zones are necessary.

NYISO Proposal

The NYISO started stakeholder discussions on rules to eliminate capacity zones in October 2014 and went back to stakeholders in November 2014 for additional discussions. At a July 2015 ICAP meeting, the NYISO presented its proposal to eliminate capacity zones. A modified proposal in response to stakeholder feedback was subsequently presented at a September 2015 ICAP meeting. The NYISO's proposal applies only to Localities created based on NCZ Study findings (i.e., the deliverability test). Two conditions are required for capacity zone (i.e., a Locality) elimination:

- *Eliminate a Locality when the deliverability constraint is no longer binding by a substantial margin*
 - ✓ Equal to the size of the largest single contingency in the Locality at the time the Locality was created
- *Eliminate a Locality based on the results of two separate deliverability studies*
 - ✓ 1) A deliverability study using the elements of the NCZ Study, but including the examination of the former Highway constraint that gave rise to the creation of the Locality, and the Localities that are expected to exist if the studied/subject Locality is eliminated – this prong of the test would be satisfied if it shows that the former Highway is not binding; and
 - ✓ 2) A deliverability study based on the “as found” system indicates that the binding Highway constraint that gave rise to the creation of the Locality has headroom that exceeds the headroom threshold.



Benefits of NYISO Proposal

The NYISO’s proposal reduces the likelihood of oscillating between creating and eliminating Localities. It avoids premature elimination by establishing a reasonable target threshold level and time duration for elimination. Moreover, it provides for a way to eliminate Localities when no longer needed to avoid unnecessary cost to consumers.

Consumer Impact Analysis

The potential long-term impact of premature elimination ranges from NYCA-wide capacity cost increases of \$763 million to \$1,481 million for the study year (2019/20). The range of the impact is based on assumptions of different levels of generation retirement and lack of new entry as a result of prematurely eliminating Localities while substantial price separation continues to exist between Localities. Significant generation retirements and/or lack of new entry also pose a potential reliability risk by creating inadequate capacity within the Locality.

RELIABILITY

Potential for inadequate capacity within the Locality from premature elimination

COST IMPACT/MARKET EFFICIENCIES

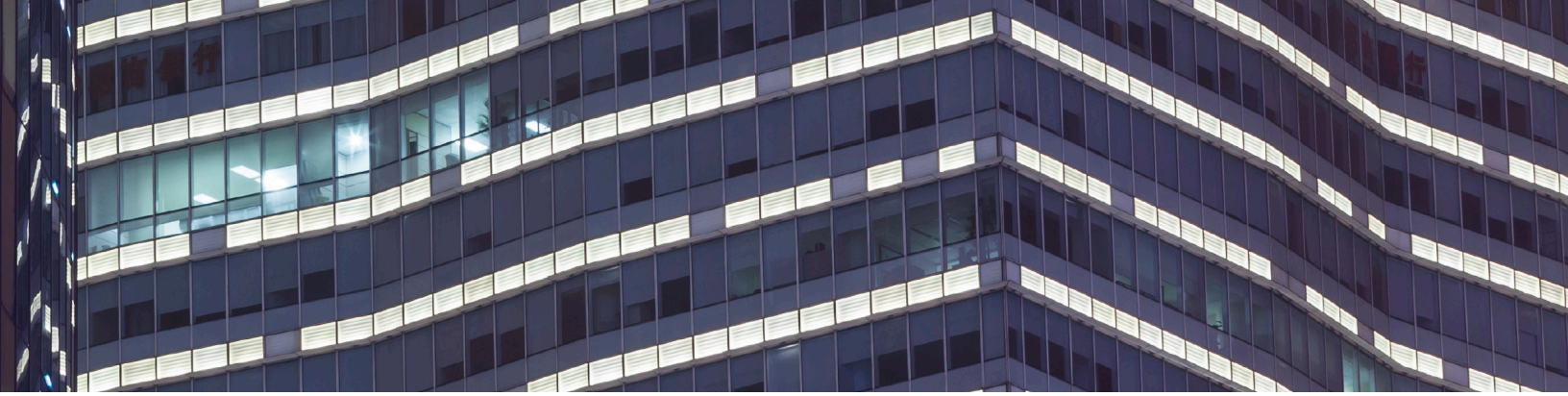
Potential long-term impact from premature elimination ranging from NYCA-wide capacity cost increases of \$763 to \$1,481 million for the study year

ENVIRONMENT/NEW TECHNOLOGY

No Negative Impact

TRANSPARENCY

No Impact Expected



Potential Impact on Costs

To evaluate the cost impact on consumers of Locality elimination, we looked at the following three possibilities:

- *Premature Elimination of Localities*
- *Keeping Localities in place longer than needed*
- *The impact of uncertainty on Demand Curve reset proxy plant amortization*

Premature Elimination of Localities

Eliminating a Locality prematurely would potentially result in the following:

- *Not providing the correct price signal for siting new generation or retaining and investing in existing generation*
- *Early retirements and a potential for inadequate capacity within the Locality*

To illustrate the short-term impact, we assumed two cases in which 1000MW and 500MW (1,000/500MW) will retire and computed the impact on Capacity prices. For the long-term impact, we assumed that in addition to retirements, some expected new generation no longer will come into service.

Short-Term Impact

Table 1 below shows the short-term (2015/2016) impacts of eliminating the G-J Locality prematurely. For illustration, we assumed that 1,000/500 MW of generation retire if we eliminate the Locality. For the 1,000 MW retirement case, NYCA-wide capacity costs increase as the increase in costs to NYCA, Zone K and NYC (LCR increase to .85) are more than the costs savings from eliminating the Locality. For the 500 MW retirement case, NYCA-wide capacity costs again increase as the increase in costs to NYCA and NYC (LCR increase to .84) are more than the costs savings from eliminating the Locality; however, the increase is less than the 1,000 MW retirement case.

Table 1

| Short Run Capacity Cost Impacts 2015/16 (in millions) | | | | | | | | | | | |
|---|--------------|--------------|-------------------------------|--------------|--------------|--|------------------------------|--------------|--------------|---|------------------------------|
| Capacity Area | Summer Price | Winter Price | With G-J Locality (Base Case) | Summer Price | Winter Price | G-J Locality Eliminated 1000MW Retired NYC LCR .85 | Change in Capacity Area Cost | Summer Price | Winter Price | G-J Locality Eliminated 500MW Retired NYC LCR .84 | Change in Capacity Area Cost |
| NYCA | \$3.83 | \$0.60 | \$488.57 | \$6.12 | \$2.91 | \$1,214.45 | \$725.88 | \$4.97 | \$1.75 | \$923.62 | \$435.05 |
| G-J | \$9.10 | \$3.54 | \$373.75 | | | | -\$373.75 | | | | -\$373.75 |
| J | \$15.38 | \$6.32 | \$1,274.04 | \$17.46 | \$8.65 | \$1,535.49 | \$261.45 | \$16.08 | \$7.10 | \$1,361.94 | \$87.90 |
| K | \$5.72 | \$1.81 | \$257.42 | \$6.12 | \$2.91 | \$310.42 | \$53.01 | \$5.72 | \$1.81 | \$257.42 | \$0.00 |
| TOTAL | | | \$2,393.8 | | | \$3,060.4 | \$666.6 | | | \$2,543.0 | \$149.2 |

Long-Term Impact

Table 2 shows the long-term (2019/2020) impacts of eliminating the G-J Locality. For illustration, we assume that in addition to 1,000 MW retiring, CPV does not come into service as prices are too low as a result of Locality elimination. With Locality elimination, NYCA-wide capacity costs increase significantly as the increase in costs for NYCA, Zone K and NYC (LCR increase to .85) are substantially more than the costs savings from eliminating the zone. Table 2 also shows 1,000 MW retiring with CPV remaining in service. NYCA-wide costs again increase as the increase in costs for NYCA, Zone K and NYC (LCR increase to .84) are more than the costs savings from eliminating the zone, but not as much as the prior case that assumed CPV would not come in.

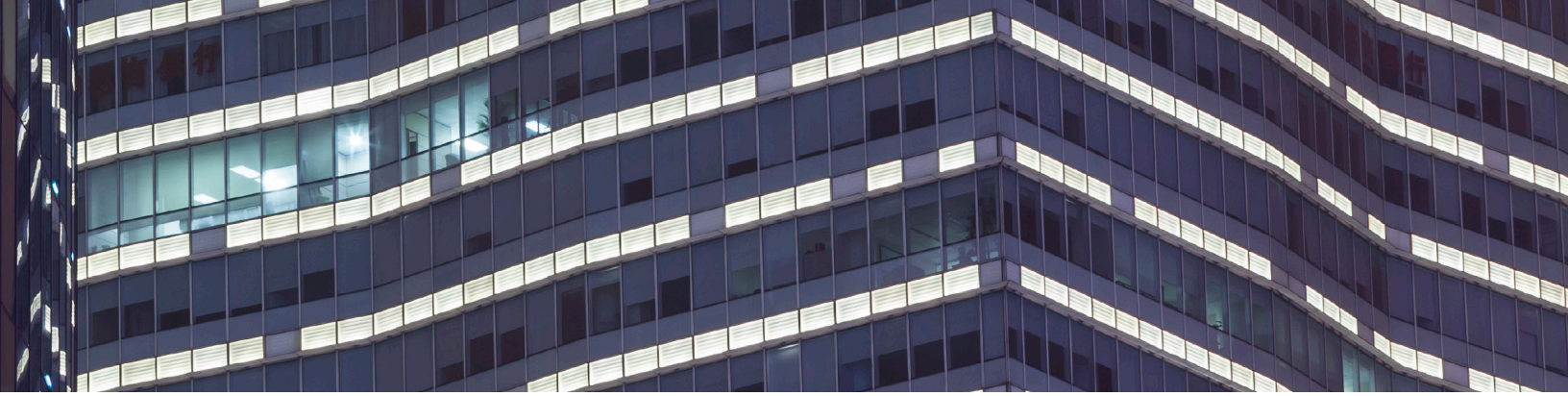


Table 2

| Long Run Capacity Cost Impacts 2019/20 (in millions) | | | | | | | | | | | |
|--|--------------|--------------|---|--------------|--------------|---|------------------------------|--------------|--------------|--|------------------------------|
| Capacity Area | Summer Price | Winter Price | With G-J Locality (Base Case) NYC LCR .83 | Summer Price | Winter Price | G-J Locality Eliminated 1000MW Retired No CPV Entry NYC LCR .85 | Change in Capacity Area Cost | Summer Price | Winter Price | G-J Locality Eliminated with CPV Entry and 1000MW Retirement NYC LCR .84 | Change in Capacity Area Cost |
| NYCA | \$4.07 | \$0.56 | \$510.85 | \$8.19 | \$4.76 | \$1,743.64 | \$1,232.79 | \$6.53 | \$3.04 | \$1,326.19 | \$815.34 |
| G-J | \$8.14 | \$1.98 | \$339.91 | | | | -\$339.91 | | | | -\$339.91 |
| J | \$20.21 | \$10.74 | \$1,820.33 | \$23.16 | \$14.05 | \$2,191.12 | \$370.79 | \$21.70 | \$12.41 | \$2,007.93 | \$187.60 |
| K | \$5.52 | \$1.19 | \$228.74 | \$8.19 | \$4.76 | \$446.48 | \$217.74 | \$6.53 | \$3.04 | \$328.93 | \$100.18 |
| TOTAL | | | \$2,899.8 | | | \$4,381.2 | \$1,481.4 | | | \$3,663.0 | \$763.2 |

Keeping Locality in place longer than needed

For illustration, we assume that transmission and/or other changes have led to a situation where the conditions for Locality elimination may have been met and a Locality is no longer needed. In such a situation, keeping a Locality in place when it is no longer needed could potentially have cost impacts on consumers if prices do not fully converge. Table 3 shows the cost impact of prices not fully converging for different levels of assumed price separation between the G-J Locality and NYCA. On the X-axis, we show different levels of price separation between the G-J Locality and NYCA. The Y-axis shows the amount of UCAP MW. For example, if the price separation between ROS and Zones G-I is \$1 and the incremental Zone G-I MW are 4,500, the total impact would be \$54 million.

Table 3

| UCAP MW Difference (in millions) | | | | | | | | | |
|----------------------------------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| Price Differential | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 | 7000 |
| \$0.25 | \$9.00 | \$10.50 | \$12.00 | \$13.50 | \$15.00 | \$16.50 | \$18.00 | \$19.50 | \$21.00 |
| \$0.50 | \$18.00 | \$21.00 | \$24.00 | \$27.00 | \$30.00 | \$33.00 | \$36.00 | \$39.00 | \$42.00 |
| \$0.75 | \$27.00 | \$31.50 | \$36.00 | \$40.50 | \$45.00 | \$49.50 | \$54.00 | \$58.50 | \$63.00 |
| \$1.00 | \$36.00 | \$42.00 | \$48.00 | \$54.00 | \$60.00 | \$66.00 | \$72.00 | \$78.00 | \$84.00 |
| \$1.25 | \$45.00 | \$52.50 | \$60.00 | \$67.50 | \$75.00 | \$82.50 | \$90.00 | \$97.50 | \$105.00 |
| \$1.50 | \$54.00 | \$63.00 | \$72.00 | \$81.00 | \$90.00 | \$99.00 | \$108.00 | \$117.00 | \$126.00 |
| \$1.75 | \$63.00 | \$73.50 | \$84.00 | \$94.50 | \$105.00 | \$115.50 | \$126.00 | \$136.50 | \$147.00 |
| \$2.00 | \$72.00 | \$84.00 | \$96.00 | \$108.00 | \$120.00 | \$132.00 | \$144.00 | \$156.00 | \$168.00 |

Proxy Plant Amortization

Some stakeholders suggested that the option of Locality elimination will lead to additional risk and that may impact the net CONE of the proxy plant used to establish the ICAP Demand curve. Table 4 shows different levels of potential impact on reference prices for G-J and the resulting impact on capacity costs.

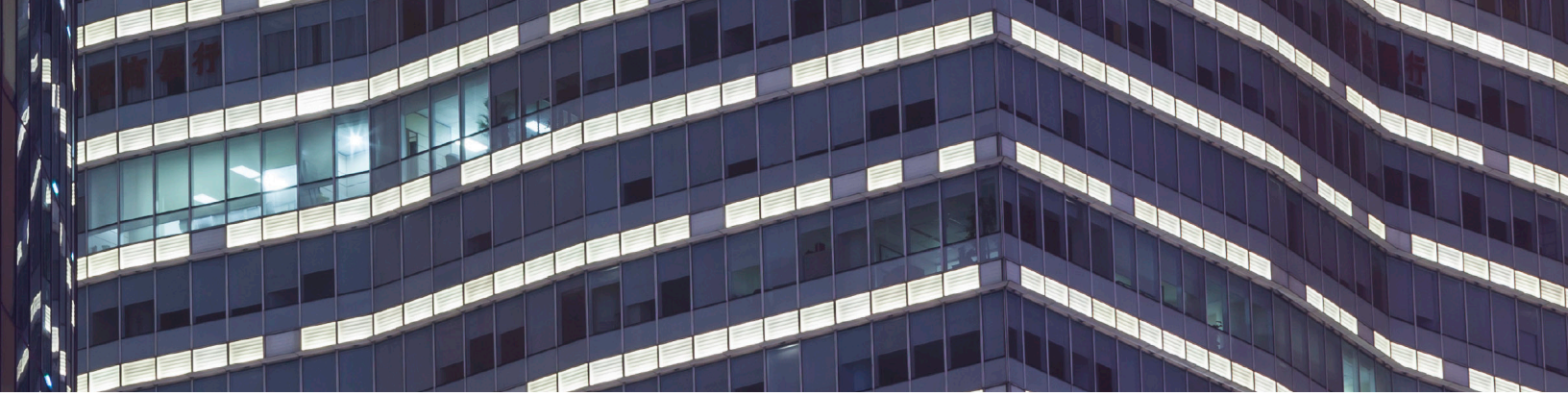


Table 4

| Length of Term | Factor | Reference Price | Total Capacity Cost | Total Cost Difference |
|--------------------|--------|-----------------|---------------------|-----------------------|
| G-J Unadjusted | Base | \$12.42 | \$2,393.8 | |
| 10yr G-J then NYCA | 15% | \$14.27 | \$2,449.8 | \$56.1 |
| 7yr G-J then NYCA | 25% | \$15.51 | \$2,487.2 | \$93.4 |
| 5yr G-J then NYCA | 50% | \$18.62 | \$2,580.7 | \$186.9 |
| 3yr G-J then NYCA | 75% | \$21.72 | \$2,674.1 | \$280.3 |

Reliability Impact

Premature elimination of the G-J Locality could lead to early retirements and the lack of new entry. Hence, creating the potential for inadequate capacity in the region.

Environmental Impact

No negative impact expected.

Impact on Transparency

No impact expected.

Consumer Impact Analyses: 2016 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 NY 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:

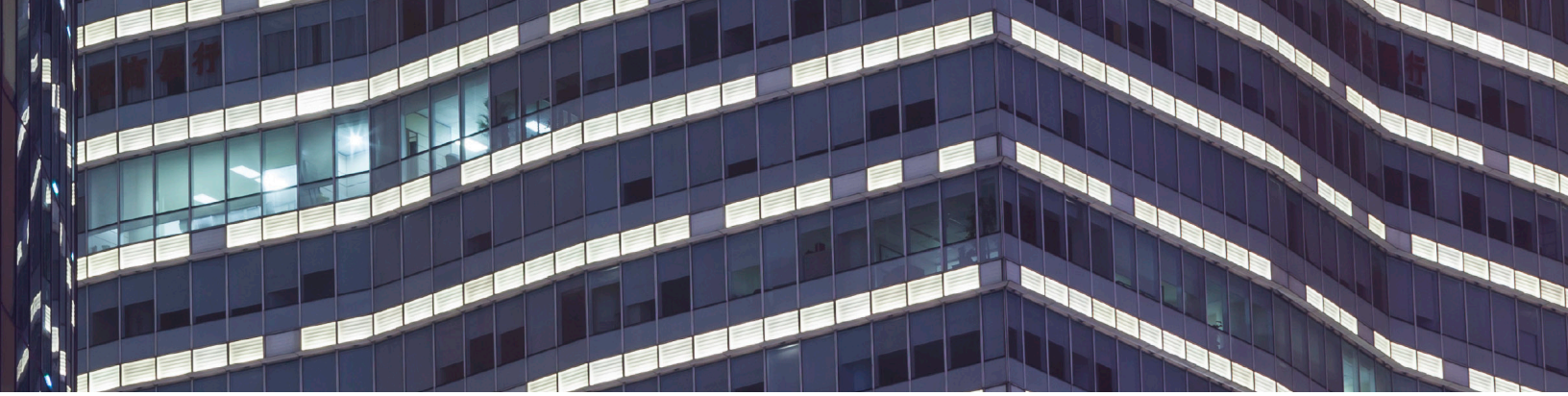
- *FERC directives (compliance filings) where the NYISO has implementation flexibility*
- *Emerging stakeholder issues*

2016 Proposed Projects

- *Alternative Methods for Calculating the Locational Capacity Requirements*
- *Model Zone K as Export Constrained*
- *Performance Assurance – Study*
- *Fuel Assurance – Fuel Constrained Supply Bidding*
- *Criteria for Including Mothballed Units in the Forecast for Buyer-Side Mitigation Determinations³*

Alternative Methods for Calculating the Locational Capacity Requirements

- *Description:* This project would consider alternative methods for calculating Locational Capacity Requirements (LCRs) for the G-J, J and K localities



- *Benefit:* Enhance market efficiency. May reduce the costs of meeting the LCRs
- *Screen:* Significant Market Design Concept
- *Preliminary Estimate:* Expected consumer impact greater than \$50 million per year

Model Zone K as Export Constrained

- *Description:* Zone K capacity is not fully fungible with capacity in the G-J Locality, and was excluded from the G-J Locality boundary due to the Zone K export constraints. However, the reliability of the G-J Locality may benefit from Zone K exports, up to the export limit, if it is modeled that way in the auction
- *Benefit:* May increase market efficiency by recognizing the reliability value of Zone K capacity up to the export limit to the G-J Locality
- *Screen:* Allows or encourages a new type or category of market product
- *Preliminary Estimate:* Expected consumer impact greater than \$50 million per year

Performance Assurance – Study

- *Description:* Explore market design changes that provide generators incentives to be available, especially during times when the risk of reduced real-time resource availability is high due to interchange and fuel supply uncertainty
- *Benefit:* Provide incentives for intra-day operational flexibility and promote increased resource availability and performance
- *Screen:* Significant Market Design Concept
- *Preliminary Estimate:* Expected consumer impact greater than \$50 million per year

Fuel Assurance – Fuel Constrained Supply Bidding

- *Description:* Allow generators to submit offers that are scheduled subject to an inter-temporal constraint in the Day-Ahead Market. The premise behind this proposal is that generators face significant fuel supply constraints that can be difficult or impossible to reflect efficiently in day-ahead offers. Also, allow generators to submit offers in the Day-Ahead market that reflect quantity limitations over the day. This would allow some generators to be scheduled more efficiently when they are subject to fuel or other production limitations.

- *Benefit:* These measures would reduce the financial risks that generators face and also reduce costs to consumers by allowing generators to schedule more efficiently with energy or fuel limitations
- *Screen:* Significant Market Design Concept
- *Preliminary Estimate:* Expected consumer impact could be greater than \$50 million per year

Criteria for Including Mothballed Units in the Forecast for Buyer-Side Mitigation Determinations

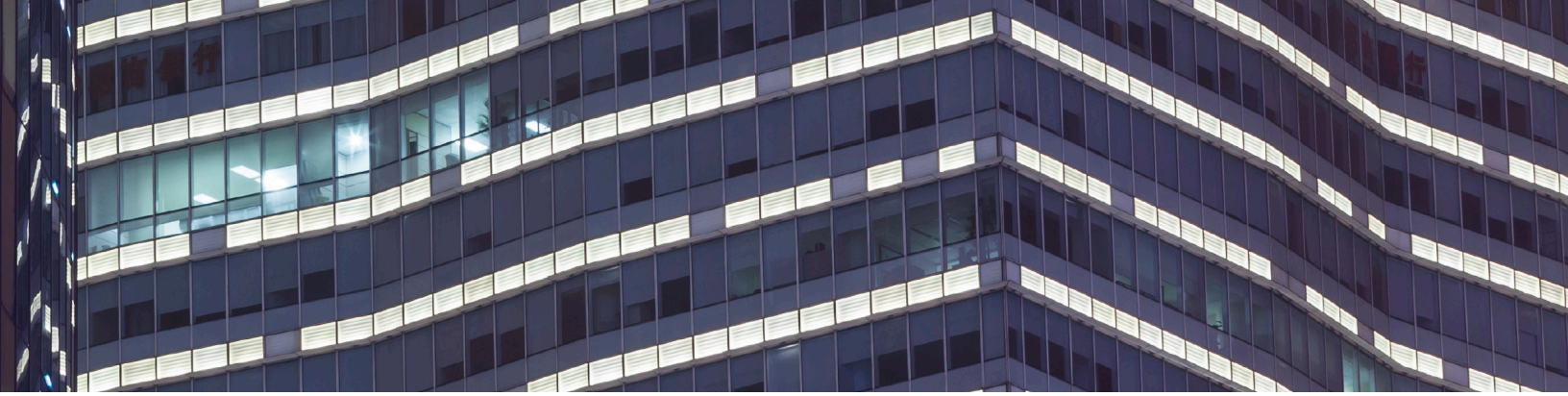
- *Description:* FERC asked the NYISO, in consultation with stakeholders, to consider the need to modify the current Buyer-Side Mitigation (BSM) Rules with regards to mothballed units. Evaluate and recommend the criteria for determining the set of resources included when forecasting capacity and energy revenues for BSM
- *Benefit:* Improved accuracy in the forecast of capacity and energy revenues that are expected to be available will improve the BSM test
- *Screen:* Emerging stakeholder issue

Key 2016 Electrical Industry Initiatives

The Consumer Interest Liaison supports the end use sector by, among other things, providing information necessary to keep current with the ever-changing electrical energy market and facilitating informed decisions on relevant issues. As the NYISO market rules change, new products become available, and new technology affects the markets, the Consumer Interest Liaison will continue to inform consumers of these changes. As we enter 2016 we find that technology and innovation are bringing substantial change to the energy landscape. The approaching parity of renewables, smart grid, and distributed energy production are just a few of the areas that will have a large effect on New York's grid. Listed below are some areas of interest that the NYISO is currently addressing and the Consumer Interest Liaison office is closely monitoring for possible future analysis emerging from these areas of interest.

AC Transmission

The NYISO is managing a competitive process for Alternating Current (AC) Transmission projects as initiated through a public policy need determined by the New York State Public Service Commission (PSC).



The PSC initiated the AC Transmission proceedings to address persistent transmission congestion that exists at the Central East and Upstate New York/Southeast New York (UPNY/SENY) electrical interfaces⁴.

Under provisions of the NYISO's tariffs, the PSC reviews and identifies Public Policy Transmission Needs. The public policy requirements can be an existing federal, state or local law or regulation, or a new requirement that the PSC establishes after public notice and comment under the state law.

Once the PSC decides the Public Policy Transmission Needs, the NYISO solicits transmission and other types of projects, performs the planning studies, and selects the most efficient and cost-effective projects to meet the public policy needs.

A Developer can build a transmission project and obtain recovery of its costs under the NYISO's tariffs, as approved by the Federal Energy Regulatory Commission, if it is selected by the NYISO and it receives a certificate from the PSC and any other necessary permits, *e.g.* environmental permits.

On December 17, 2015, the PSC determined that there is a public policy need to build new 345-kV high-voltage lines representing the backbone of the State's electric transmission system running west to east and north to south. This finding triggered a solicitation and review process of transmission and other generation and demand response solutions by the NYISO with the potential for the selected transmission developers to recover development and construction costs from the beneficiaries of the improvements through the NYISO tariff that is regulated by the Federal Electric Regulating Commission (FERC). "The NYISO stands ready to solicit projects and will conduct the planning studies necessary to select the most efficient and cost-effective projects that will meet the public policy needs identified by the commission," NYISO President and CEO Brad Jones said.⁵

Using existing rights-of-way, the transmission upgrade will have two primary segments. The first segment runs approximately 91 miles starting in Oneida County, through Herkimer, Montgomery and Schenectady counties, and ending in Albany County. The second segment runs 51 miles starting in Rensselaer County, through Columbia County and ending in Dutchess County. A related upgraded line runs 11 miles in Orange County. Any successful project will need to obtain final siting permits from the PSC.

The PSC decision (Case Number 13-T-0454) is available on its web site at www.dps.ny.gov.

A second Public Policy Transmission Need was established on July 20, 2015, when the PSC issued a Public Policy Requirements order for transmission planning purposes, including identification of a Public Policy Transmission Need (PPTN) for Western New York.

The NYISO established and posted a Sufficiency Base Case using:

- *2014 Comprehensive Reliability Plan base case representation for 2024*
- *Niagara and Lewiston output of 2,700 MW*
- *1,000 MW Ontario Import to Zone A*
- *With and without major fossil-fueled generation in Zone A*
 - ✓ Dunkirk
 - ✓ Huntley
 - ✓ Lockport
 - ✓ Somerset

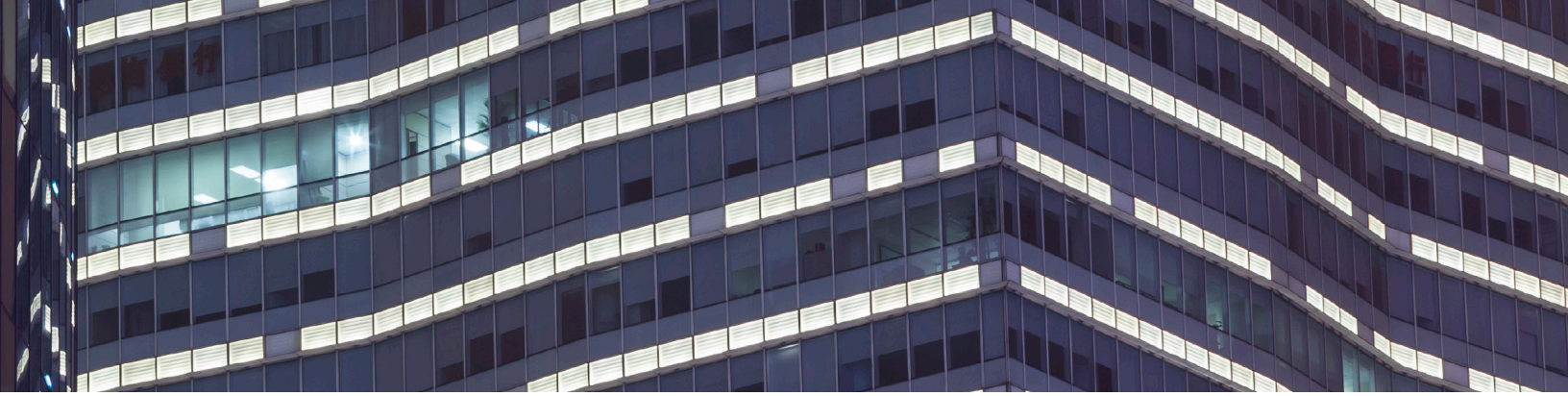
As 2015 ended, the NYISO was soliciting Public Policy Transmission Projects and Other Public Policy Projects to conduct Viability and Sufficiency Assessments of all proposed projects. The NYISO will forward the result of the analyses to the PSC with a recommendation of a Transmission Solution for consideration by the PSC.

The PSC case number is 14-E-0454 and can be viewed on the PSC web site at www.dps.ny.gov.

New York State Clean Energy Standard

In 2015, Governor Andrew M. Cuomo directed the State Department of Public Service to design and enact a new Clean Energy Standard mandating that 50 percent of all electricity consumed in New York by 2030 results from clean and renewable energy sources.

In 2014, 35,756 gigawatt-hours of New York's electricity was produced by renewable resources (hydropower, wind, solar and other) representing approximately 25 percent of New York's electric generation⁶.



Wholesale electricity market initiatives have contributed to the growth of New York's renewable resources. The generating capacity of wind-powered projects in New York grew from 48 megawatts in 2005 to 1,746 megawatts in 2014. Electricity generated by wind power increased from 112 gigawatt-hours in 2004 to 3,986 gigawatt-hours in 2014.

Wind power output in New York marked a new record of 1,524 megawatts⁷ on March 2, 2015. At the time of record production, wind power provided 7 percent of New York's 20,894 megawatts of total system demand.

Projects capable of supplying another 2,300 megawatts of wind power are currently proposed for future interconnection with the New York bulk electricity grid.

Wholesale electricity markets and open access to the grid provided by independent system operators, such as the NYISO, facilitate development of renewable resources. The NYISO shared governance system provides a forum for market participants and stakeholders to collaborate on market changes that address new technologies.

The design of New York's wholesale electricity markets addresses the unique characteristics of wind power by: (1) recognizing wind as a variable energy resource and exempting it from undergeneration penalties in 2006; (2) establishing a centralized wind forecasting system in 2008 to better utilize and accommodate wind energy by forecasting the availability and timing of wind-powered generation; and (3) pioneering the economic dispatch of wind power in 2009 to fully balance the reliability requirements of the power system with the use of the least cost power available.

For more information visit: <https://home.nyiso.com/renewable-resources/>

Federal Clean Power Plan

In 2015, the U.S. Environmental Protection Agency (EPA) issued the Clean Power Plan (CPP), which was modified from the initial draft plan to address a number of issues raised by the NYISO in collaboration with New York State agencies, other Independent System Operators and Regional Transmission Organizations (ISO/RTOs), and market participants.

The final rule recognizes and reflects the significant progress New York has achieved in reducing emissions, and it contains new provisions to address potential electric system reliability concerns. The combination of lower carbon dioxide (CO₂) reduction targets for 2022 and 2030, and the inclusion of a reliability review and reliability safety valve means that New York should be able to meet its CPP obligations while maintaining a reliable electric system.

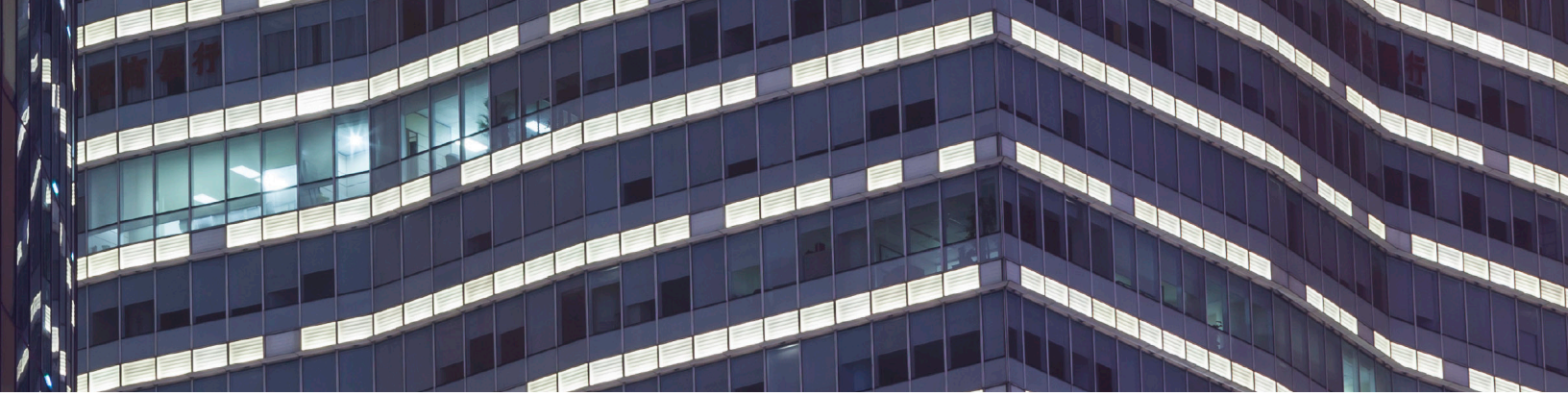
In comments on the draft plan, the NYISO encouraged the EPA to recognize the state's successful track record in reducing emissions, noting that New York already has reduced CO₂ emissions from its power sector by 41.6% below 2005 levels and now generates approximately 53% of the electricity it uses on an annual basis from zero-carbon emitting resources. In addition, the state's generation fleet is the ninth cleanest in the country, and New York's commitment to the Regional Greenhouse Gas Initiative (RGGI) calls for even further CO₂ reductions between now and 2020. Based on an initial review, it appears the CO₂ reduction targets in the final rule are a significant improvement for New York over those contained in the draft.

In November 2015, the NYISO's Environmental Advisory Council (EAC) focused on the Clean Power Plan. The EAC discussed various compliance strategies New York might pursue in the context of the competitive wholesale electricity markets, New York's participation in RGGI, and the potential approaches of other states. Working together, meeting participants outlined the direction the NYISO needs to go as it addresses the initiatives.

For more information view the [presentation from the EAC meeting](#).

Reforming the Energy Vision

New York State's *Reforming the Energy Vision* (REV) initiatives are underway. On January 8, 2015, an Administrative Law Judge issued a ruling in the REV proceeding (PSC case number 14-M-0101) that New York State Department of Public Service (DPS) Staff should immediately coordinate working groups with the Rocky Mountain Institute (RMI) and the New York State Smart Grid Consortium (NYSSGC) to address market design and platform technology. The NYISO is participating with 28 other companies and organizations in the Market Design and Platform Technology (MDPT) working group.



The NYISO also is working with the Public Service Commission to provide data and analysis that will inform the effort. While distributed resources may be expected to play a larger role in the grid of the future, the NYISO is researching ways to best integrate customer-sited solar photovoltaic systems, community-level microgrids, combined heat and power systems, and other distributed energy resources into the NYISO's markets and the operation of New York's electric system.

The NYISO's principal objective is to maintain sound market design principles; ensure consistency and coordination with competitive wholesale markets; develop consistency in dispatch and pricing signals; and implement sound technology designs that integrate with existing platforms and look to future needs.

The "Core Team" comprising DPS, RMI and NYSSGC staff issued a [final report](#) on its findings in August 2015.

The report identifies several staged improvements to distribution system planning, market operations, grid operations and data access. These steps are essential to optimize interactions between the bulk system operator, utilities, distributed energy resource (DER) providers, and customers. Thus, the Working Group explicitly delineated development stages that consider important tradeoffs in planning the evolution of the DSP market.

The NYISO has been active within this development structure. The NYISO continues to participate in the REV MDPT working groups. The NYISO also continues to review and comment on white papers and guidance based on its above position. There will be further involvement as the NYISO partners with REV Demonstration Projects.

The PSC is currently examining what regulatory changes are needed to better align utility interests with achieving the PSC's objectives. The goal is to ensure: (1) a regulatory and ratemaking model for New York that moves away from electricity as a commodity, (2) promotes the penetration of clean and renewable resources, (3) ultimately decarbonizes the electric sector, and (4) becomes a model for other jurisdictions⁸.

For 2016, the NYISO has approved "Wholesale Market Alignment with the PSC REV Proceeding" as a formal project. This project will develop paths for aligning NYISO markets with the REV initiatives—through participation in REV development activities, advancement of wholesale market design concepts, and support for applicable pilot projects. The NYISO will collaborate with Distribution System Platform

providers (DSPs) and other external organizations to demonstrate the potential future structure of market participation for distributed energy resources and prepare for new resources in the NYISO markets⁹.

For more information visit the [2015 Power Trends](#) report.

Demand Response

The Federal Energy Regulatory Commission defines demand response as “[a] reduction in the consumption of electric energy by customers from their expected consumption in response to an increase in the price of electric energy, or to incentive payments designed to induce lower consumption of electric energy.”¹⁰

Demand response programs enlist large electricity consumers and aggregations of smaller energy users to reduce consumption during periods of peak demand. Demand response continues to evolve as demand management capabilities broaden and technology grows ever more sophisticated.

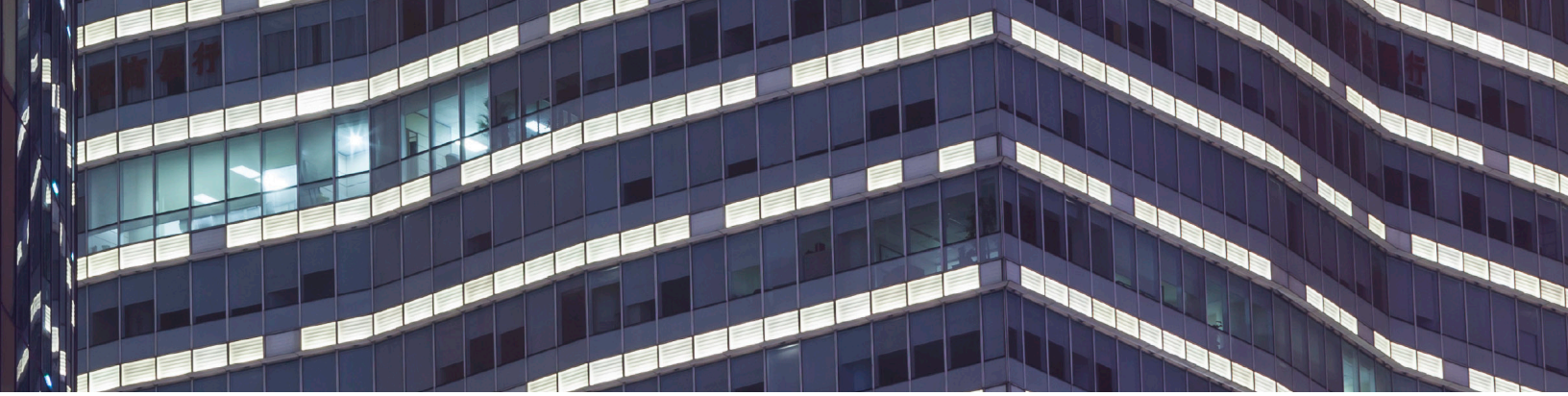
Prior to the establishment of wholesale electricity markets, the electric system generally addressed growth in peak demand with comparable increases in generating capacity. Demand response programs have helped alleviate the need for more generation by focusing on consumers to assist in reducing the use of electricity.

Today, the scope of consumer-controlled electricity demand is growing. So-called “smart” thermostats and other sophisticated devices are enabling consumers to monitor and manage their electricity use.

Similarly, distributed energy resources, which allow consumers to shift their power supply to onsite generation, also can serve to reduce peak loads during periods of high demand¹¹.

According to the Federal Energy Regulatory Commission, demand response resources in the nation’s seven FERC-regulated ISO/RTO regions totaled 28,934 megawatts in 2014, up 0.5 percent from the previous year¹².

Large power customers and aggregated groups of smaller consumers participate in four wholesale demand response programs administered by the NYISO. In summer 2015, the programs involved almost 3,900 end-use locations providing a total of 1,325.4 megawatts of load reduction capacity, representing 4.3 percent of the 2015 summer peak demand¹³. The NYISO’s Special Case Resource program, the largest of



the NYISO's demand response programs, is projected to be capable of offering up to 1,252 megawatts of capacity. In addition, the Emergency Demand Response Program is expected to provide 86 megawatts in summer 2016.

Demand response programs in New York did not encounter robust growth in 2014 and 2015 as the programs faced an uncertain future due to a legal challenge of FERC's jurisdiction over wholesale demand response. In question was FERC Order No. 745, which was issued in 2011 and required that demand response resources be compensated at market prices for energy under certain circumstances. In May 2014, the U.S. Court of Appeals for the District of Columbia invalidated the order as an infringement on state powers to regulate retail electricity sales¹⁴.

FERC appealed the court's decision at the U.S. Supreme Court, and in January 2016, the Supreme Court reversed the U.S. Court of Appeals, and confirmed that FERC did have jurisdiction over wholesale demand response programs. The NYISO will continue to administer this valuable resource.

No demand response resources were required to be activated by the NYISO during the 2015 moderate summer weather.

For more information view the [2015 Power Trends](#) report.

Fuel Assurance

The severe cold experienced in the 2013-2014 winter season consisted of five major "Cold Snaps," including Polar Vortex conditions, extending across much of the county and throughout the Eastern Interconnection. Due to a growing dependence on natural gas in the electrical industry and a lack of natural gas infrastructure, there were periods that generators became unsure of their gas supply. The severe temperatures also created several mechanical issues and hindered the ability of plants to start and operate normally.

Following that winter, the several ISO/RTOs developed mechanisms that provide incentives for suppliers to be available to reliably meet the real-time needs of their respective control areas, especially on days when there is a high risk of a reduction in real-time resource availability due to factors including high demand and fuel supply uncertainty.



The NYISO also determined that its markets already encourage fuel assurance¹⁵.

Disruptions in the supply or delivery of natural gas can affect the ability of gas-fueled generation to provide power, which could impact electric system reliability. In New York, natural gas supplies much of New York's generating capacity, mostly from "dual-fuel" units capable of using gas or oil to produce power. This fuel-switching capability helps to mitigate the impact of fuel supply disruptions. The NYISO also has control room procedures, including procedures for extreme cold weather events, to respond to potential gas system disruptions.

The NYISO conducts generator fuel inventory surveys. In addition, the hourly bid process, increasing bids in real-time for fuel costs, and a timely day-ahead market for posting gas nominations represent strong market design for coordinating natural gas purchases.

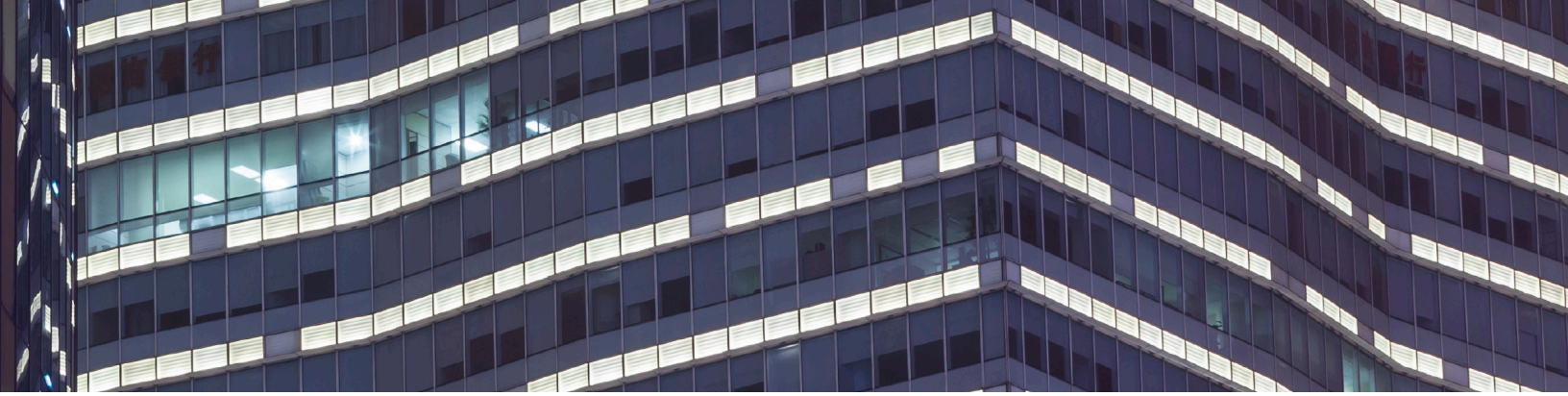
For the 2014-2015 season the NYISO added an energy management system visualization of the natural gas system so grid operators can see more clearly where fuel sources are located. It also increased day-ahead reference level flexibility for generators; conducted winter preparedness outreach among market participants; and expanded both the fuel and emissions surveys to enhance reliability. New gas infrastructure serving the downstate region is expected to improve generators' access to fuel sources, as well.

Comprehensive Scarcity Pricing and Comprehensive Shortage Pricing programs were enhanced through 2015, as well, to incentivize suppliers to meet their schedules or be available for additional revenue opportunities.

The NYISO continues to look into methods to incentivize generator performance. There is currently a Fuel Assurance initiative underway to develop functionality that allows suppliers to offer their resources efficiently subject to fuel or production limitations.

As the NYISO develops proposals to assist in Fuel Assurance, the Consumer Interest Liaison will monitor the progress of the proposals and evaluate any potential impact to consumers to assist in the governance process.

For more information, visit the [2015-2016 Winter Preparedness presentation](#).



EMS/BMS

The NYISO currently utilizes a combined Energy Management System (EMS) and Business Management System (BMS) provided by a third-party vendor, ABB, which is collectively referred to as the Ranger system. These systems are used to operate New York's bulk power system and manage the NYISO-administered wholesale energy and ancillary services markets. The Ranger system was initially placed into operation in 2005, upgraded in 2007 and incrementally enhanced over time. The Ranger system runs on a dedicated hardware platform that was installed in 2011.

In 2012, ABB publicly announced that it would cease further development of the Ranger system in favor of consolidating their products into a single Network Manager Product platform ("Network Manager"). Network Manager is ABB's current and future product line replacement for Ranger. While ABB continues to support the NYISO, development timelines and costs are increasing because subject matter experts and support staff familiar with the legacy Ranger product are less available to provide enhancements. Additionally, the dedicated hardware platform that Ranger runs on is projected to reach its end of support life in 2019.

With continued demand and need for new and innovative market design features, structural and performance limitations of the current software and hardware could become apparent and may constrain the NYISO's ability to deliver further enhancements. With both the Ranger system and its underlying hardware approaching the end of their lifecycles, it became necessary for the NYISO to assess future options with respect to its EMS and BMS. In 2014, the NYISO commenced an assessment to develop a strategy for addressing the future of its EMS and BMS. This assessment included a review of third-party vendors and their product offerings, as well as investigation of an option to extend the life of the current system. The option to pursue a life extension of the current system was not recommended due to the high risk and cost for what would ultimately be a short-term solution.

Based on the results of the assessment, the NYISO recommended pursuing replacement of the Ranger system with a new system utilizing ABB's Network Manager. The project is anticipated to be completed in less than four years, beginning in 2016 with project completion expected in 2019. The estimated cost of the new system is approximately \$30 million.

NYISO Governance

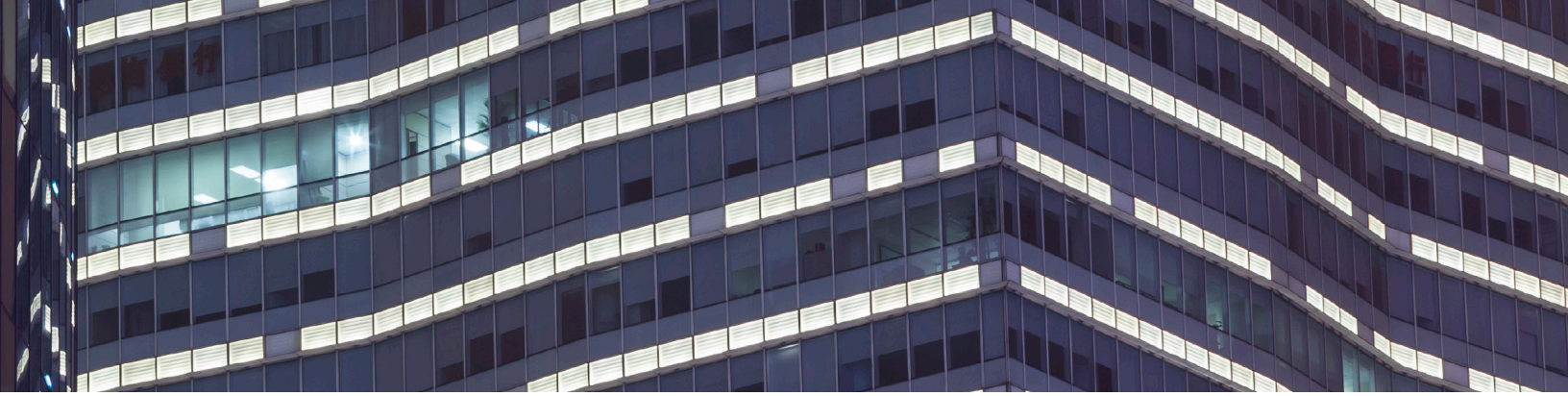
Stakeholders, including end use consumer representatives, play a significant role in decision making through the NYISO's shared governance process. Stakeholders participate in NYISO's governance through three standing committees: the Management Committee (MC), the Business Issues Committee (BIC), and 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 the New York's bulk power system, and the planning for system reliability.

In 2015, 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 governing agreements establish specific responsibilities for all three standing stakeholder committees. These committees perform their responsibilities in accordance with their bylaws and in coordination with work performed by NYISO management and staff. Stakeholders are responsible for a range of duties in the shared governance process, including:

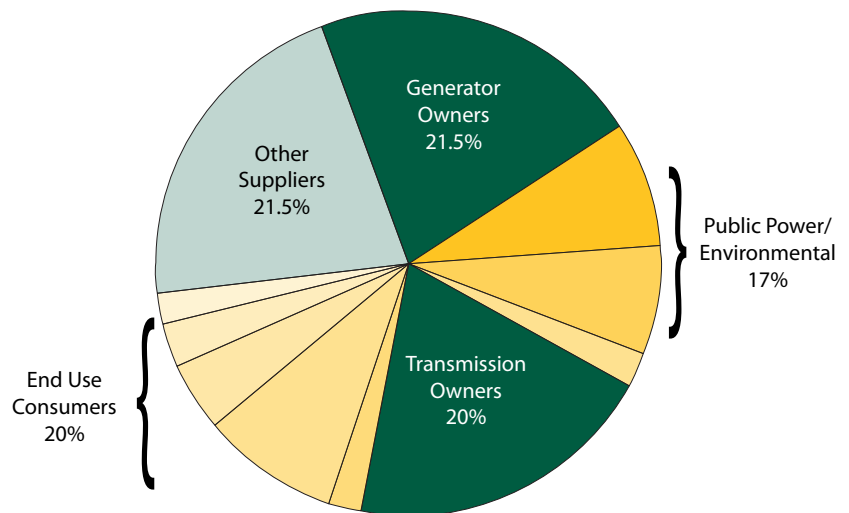
- *reviewing and recommending candidates for Board vacancies,*
- *developing and reviewing technical guidelines for the operation of the bulk power system,*
- *developing and reviewing enhancements to market design,*
- *developing and reviewing system planning reports and*
- *reviewing the preparation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

The NYISO stakeholders and the NYISO Board of Directors share the responsibility for developing and approving proposed changes to the NYISO's governing documents and federally-approved 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 the Federal Energy Regulatory Commission (FERC) under Section 205 of the Federal Power Act¹⁶. The FERC has 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 issues¹⁷..."



The participants of the NYISO market place are categorized into five stakeholder sectors including Transmission Owners, Generation Owners, Other Suppliers, End Use Consumers, and Public Power/Environmental interests. Sector representatives vote in the stakeholder committees. Each stakeholder's vote in a committee is equal to a percentage of its sector's allocated voting shares. 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:

- *Generation Owners - 21.5%*
- *Other Suppliers - 21.5%*
- *Transmission Owners - 20.0%*
- *End Use Consumer - 20.0%*
 - ✓ Large Consumer (9.0)
 - ✓ Large Consumer – Government Agencies (2.0)
 - ✓ Small Consumer (4.5)
 - ✓ Government - Statewide Consumer Advocate (2.7)
 - ✓ Government - Small Consumer & Retail Aggregators (1.8)
- *Public Power and Environmental Parties - 17.0%*
 - ✓ State Power Authorities (8)
 - ✓ Municipal and Cooperatively Owned Electric Systems (7)
- *Environmental Parties (2)*



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 New York State Public Service Commission (PSC) and the Federal Energy Regulatory Commission (FERC) regularly participate in and monitor issues addressed by the NYISO committees.

Endnotes

¹ When energy and operating reserves necessary to maintain reliability are in short supply, one would expect to see higher prices. Scarcity pricing is the method the NYISO employs to more accurately price energy and operating reserves when market conditions are tight, and Demand Response resources have been activated. These more accurate prices are intended to achieve two primary goals. The first goal is to send a short-term price signal to incent performance of existing resources and help to maintain reliability. The second goal of scarcity pricing is to facilitate long-term economic entry through the construction of new supply resources and exit of resources that are no longer economic.

² The following assumptions were used for all three scenarios of the July 19, 2013 simulation:

- 556 MW of EDRP/SCR were activated in Zones G, H, I, J and K from 12:00 to 17:59 and
- 713 MW of EDRP/SCR were activated in Zones A, B, C, D, E and F from 13:00 to 17:59
 - G-K scarcity reserve region from 12:00 to 17:59
 - A-K scarcity reserve region from 13:00 to 17:59
- Scenarios were run in the Real-Time Market only
- Scenarios assumed “perfect dispatch” that excluded operator actions on July 19, 2013
- Reserve requirements and shortage prices in effect on July 19, 2013 were maintained
- Imports into NYCA were limited to imports scheduled in the Day-Ahead Market
- Exports from NYCA were allowed to flow

³ From the 2015 Project List

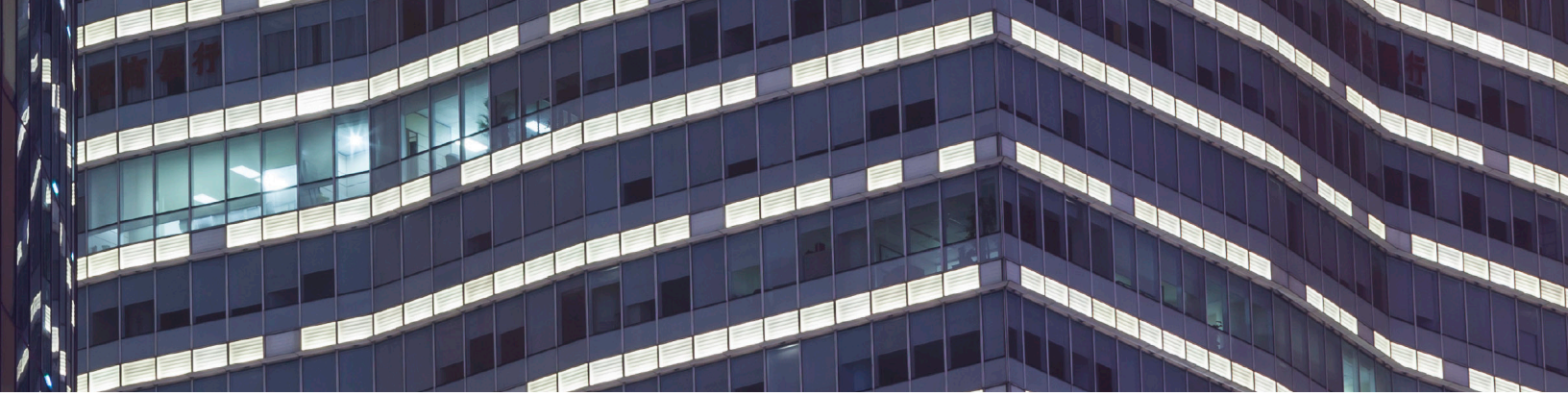
⁴ <http://www.dps.ny.gov/>

⁵ http://www.nyiso.com/public/webdocs/media_room/publications_presentations/NYISO_Connection/NYISO_Connection/nyiso_connectionQ4_2015_FINAL_dec21.pdf

⁶ Power Trends 2015 http://www.nyiso.com/public/webdocs/media_room/publications_presentations/Power_Trends/Power_Trends/ptrends2015_FINAL.pdf

⁷ http://www.nyiso.com/public/webdocs/media_room/press_releases/2015/Wind%20Peak%20-%20NYISO%20Marks%20New%20Wind%20Power%20Peak_3_5_15_DRAFT.pdf

⁸ NYS DPS, Support for NY REV Track 2: Changes to Regulatory Designs and Incentives Structures, <http://www.synapse-energy.com/project/support-ny-rev-track-2-changes-regulatory-designs-and-incentives-structures>



⁹ NYISO, Update on NYISO's participation in the REV MDPT Working Group, July 28, 2015, Nicole Bouchez, http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/6%20NYISO%20REV%20Update%20FOR%20POSTING%20MIWG%2020150728.pdf

¹⁰ 18 C.F.R. § 35.28(b)(4) (2013). FERC Staff Report, Assessment of Demand Response and Advanced Metering at 11 (2015), available at <http://www.ferc.gov/legal/staff-reports/2015/demand-response.pdf> These figures do not include resource participation in the NYISO's Demand Side Ancillary Services Program. *Electric Power Supply vs. FERC* 753 F.3d 216 (D.C. Cir., 2014)

¹¹ 2014 Assessment of Demand Response and Advanced Metering, Staff Report, Federal Energy Regulatory Commission, December 2014

¹² FERC Staff Report, Assessment of Demand Response & Advanced Metering at 11 (2015), available at <http://www.ferc.gov/legal/staff-reports/2015/demand-response.pdf>. These figures do not include resource participation in the NYISO's Demand Side Ancillary Services Program. *Electric Power Supply vs. FERC* 753 F.3d 216 (D.C. Cir., 2014)

¹³ These figures do not include resource participation in the NYISO's Demand Side Ancillary Services Program. These figures do not include resource participation in the NYISO's Demand Side Ancillary Services Program. *Electric Power Supply vs. FERC* 753 F.3d 216 (D.C. Cir., 2014)

¹⁴ *Electric Power Supply Association v. FERC*, 753 F.3d 216 (D.C. Cir. 2014).

¹⁵ http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-02-26/ICAP%20WG%20FA%20Initiative%20Presentation%20022615.pdf

¹⁶ The NYISO Board is also permitted to pursue such change in advance of Management Committee approval, under exigent circumstances, and pursuant to Section 206 of the Federal Power Act in the absence of Management Committee approval. Proposed changes filed under Section 206 are reviewed by FERC under a more stringent standard. The NYISO Board has acted in this manner only on rare occasions.

¹⁷ *New York Independent System Operator, Inc.*, 122 FERC ¶ 61,064 (2008) (January 29, 2008 Order)



Appendix - End Use Summary



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NYISO Consumer Interest Liaison Weekly

July 27 – July 31, 2015

Notices:

- *The first session of Sandbox Testing for Joint Energy Scheduling System (JESS) and Coordinated Transaction Scheduling (CTS) with ISO-NE planned for July 28-30th was postponed. The NYISO is currently targeting August 10th – 13th as reschedule dates for the initial sandbox session. The August 25th - 28th sessions will be presented as planned and the NYISO will schedule additional training for September.*
- *The new Non-Physical Rate Schedule One Recovery Rates have been posted to the web. These go into effect on January 1, 2016 and are used to recover Rate Schedule 1 from both Virtual and TCC customers. The new Non-Physical Rate Schedule One Recovery Rates can be found on the NYISO's pricing data webpage at:
http://www.nyiso.com/public/webdocs/markets_operations/market_data/pricing_data/rate_schedule_1/2016/2016_Sched_One_Posting-non-Physical.pdf*
- *The Redline and Clean versions of the Transmission Congestion Contracts Manual (M-03) have been re-posted to the [NYISO Manuals & Guides webpage](#) under the 'Manuals>Under Review' folder. The additional revisions were discussed at the July 28, 2015 MIWG meeting.*
- *On July 29, 2015 the New York Independent System Operator filed, with the NYPSC, a letter, addressed to Charles Pratt from Carl Patka, written in response to Mr. Pratt's July 24, 2015 letter to Graham Jesmer of DPS Staff.
A copy of the filing can be viewed on the NYISO Website at:
http://www.nyiso.com/public/webdocs/markets_operations/documents/Legal_and_Regulatory/NY_PS_C_Filings/2015/20150729_NYISO_Ltr_ACTrnsmsn_TchnclCnfrnc_AnswrBoundless.pdf*

Meeting Summaries:

Tuesday, July 28, 2015

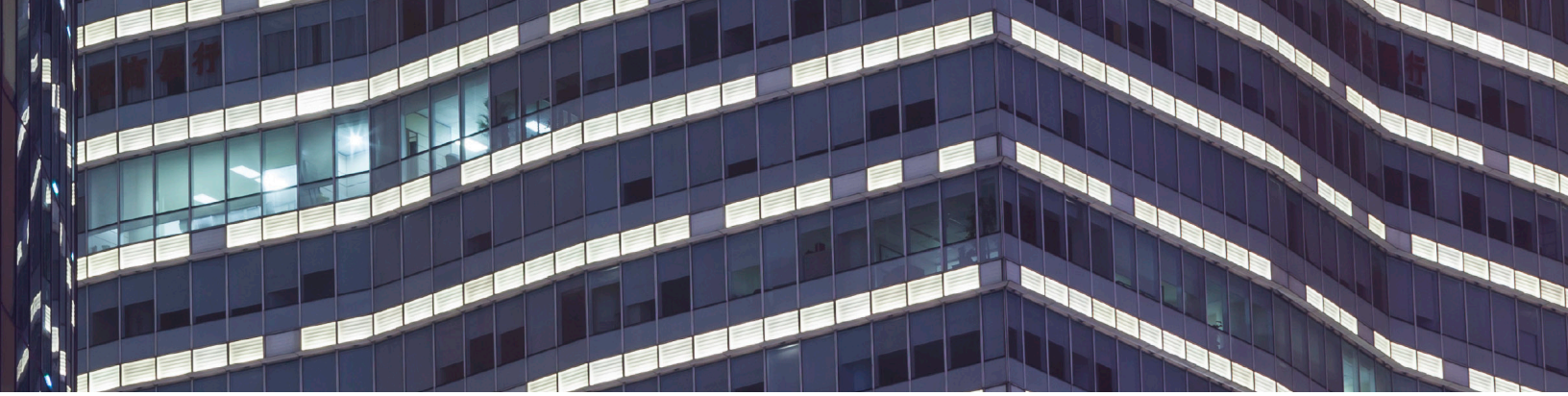
Market Issues Working Group

Broader Regional Markets Metrics

David Edelson of the NYISO presented metrics for the Broader Regional Markets initiative for the month of June 2015. To see Mr. Edelson's presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/Monthly%20Report%20-%202015_06.pdf

Fuel Assurance – Energy Market Concepts



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Cristy Sanada of the NYISO presented follow-up material on Fuel Constrained Bidding concepts previously presented at a MIWG meeting in April. The NYISO is working with stakeholders to develop bidding mechanisms that better reflect fuel or production limitations in the day-ahead market. Ms. Sanada explained that the Fuel Constrained Bidding concept would allow generators to submit a total energy demand curve reflecting a resources total production capability over the day or a subset of hours in a day, submitted in addition to conventional hourly bids. This allows generators to submit offers that more accurately reflect fuel supply or production constraints in the Day-Ahead Market. With the implementation of Mixed Integer Programming in the DAM, there is increased flexibility in the market software to model energy constraints. The bidding functionality offers the following benefits:

- *More accurately reflects limited fuel supplies or production limitations and associated costs in the Day-Ahead Market*
- *Allows generators to be scheduled subject to fuel or other production limitations, increasing market efficiency*
- *Allows units more flexibility to bid when OFOs are anticipated*
- *Helps generators reflect expected real-time conditions in day-ahead bids*

Examples of bidding were provided for both a single generator and a generator portfolio to illustrate the functionality and modeling of the concept with and without the anticipation of a gas Operational Flow Order (OFO). The NYISO will continue to work with stakeholders to prototype fuel and energy constraints in the market software. To see Ms. Sanada's presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/3%20Market%20Concepts%20for%20Energy%20Market%20Fuel%20Assurance_MIWG_07282015%20final.pdf

Day-Ahead Window Optimization Study

Mike Swider of the NYISO presented the results of a NYISO study to evaluate the impact of different electric day start times on Day-Ahead Market optimization. The study addressed the fundamental question of “ Given the resource mix and the typical load pattern, what is the ideal window of operation in order to optimize dispatch?” Before listing the dates and scenarios studied, Mr. Swider led a discussion of the study framework and assumptions used in the study. The results of the study revealed that there would be a minimal impact to production costs by changing the Day-Ahead window. Examples were presented illustrating the potential impact on generators with a long minimum run time and import/export transactions. The conclusions of the study determined:

- *Study did not show a significant impact in terms of production cost, energy marginal prices, and generator commitments, if bidding behavior remains unchanged.*
- *Generators with long minimum run time would be expected to change their bidding behavior*
- *Increased volumes of import/export transactions during the transition periods could potentially impact the performance of the Real-Time Market*



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To see the complete presentation by Mr. Swider, please go to:

[http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/4%20DAWO%20MIWG%20July%2028%202015\(2\).pdf](http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/4%20DAWO%20MIWG%20July%2028%202015(2).pdf)

TCC Manual Revisions

Lisa Travaly of the NYISO presented an update on revisions to the TCC Manual. The draft TCC Manual was posted for review on June 25, 2015 and changes were presented at the June 30, 2015 MIWG. Stakeholder feedback prompted a minor change to the following paragraph in Section 2 of the Manual (original in red):

- *The DAM Congestion Rents are determined by the **difference in the** Congestion Component of the DAM Locational Based Marginal Price (LBMP) at the POW of the TCC **and minus** the Congestion Component of the DAM LBMP at the POI of the TCC, for each hour of the Effective Period.*

The TCC Manual has been reposted for review prior to seeking approval at the August BIC meeting. To see the complete presentation by Ms. Travaly, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/5%20Presentation%20-TCC%20Manual%20Revisions%20-%20MIWG%207_28_2015.pdf

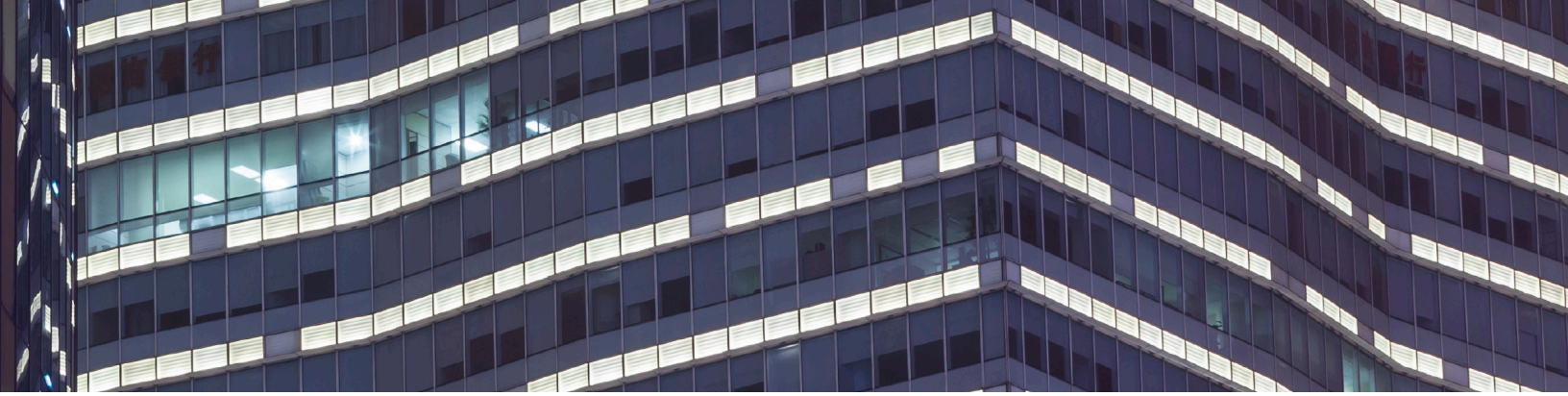
Update on NYISO's Participation in the REV MDPT Working Group

Dr. Nicole Bouchez of the NYISO presented an update on the NYISO's participation in the Market Design and Platform Technology (MDPT) working group of the REV proceeding. The MDPT is a result of Administrative Law Judge Bielawski issuing a ruling in the REV proceeding that the New York State Department of Public Service (DPS) Staff should immediately select, convene and coordinate, with Rocky Mountain Institute (RMI) and the New York State Smart Grid Consortium (NYSSGC), two closely-related groups addressing market design and platform technology. The NYISO, along with 28 other companies and organizations was selected to participate in the MDPT working group. The major themes/positions conveyed by the NYISO to the group include:

- *sound market design principles*
- *consistency and coordination with competitive wholesale markets*
- *behaviorally consistent design including consistency of dispatch and the pricing signals*
- *sound technology design that integrates with existing platforms and looks to future needs*

Dr. Bouchez identified the REV MDPT sub groups and briefly described their areas of responsibility. In-progress REV topics of possible interest to the NYISO were listed as well as pertinent upcoming reports and deadlines for the REV proceeding. Dr. Bouchez explained how the NYISO projects relating to the REV proceeding will progress as REV develops. To see the presentation by Dr. Bouchez, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-07-28/6%20NYISO%20REV%20Update%20FOR%20POSTING%20MIWG%2020150728.pdf



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Changes to the Reference Level Manual and MST Attachment H

Giacinto Pascazio of the NYISO presented a follow-up to the proposed changes to the Reference Level Manual (Manual) as requested by stakeholders at a previous BIC. Stakeholders had requested additional time to review and discuss the proposed changes with their internal stakeholders prior to the BIC governance action on the Manual. Stakeholders offered suggestions on wording in the Manual and associated tariff sections that would reduce ambiguity. Mr. Pascazio noted stakeholder feedback and agreed to consider changes prior to seeking committee approval on the Manual. To see the complete presentation with associated tariff language, please go to: http://www.nyiso.com/public/committees/documents.jsp?com=bic_miwg

Wednesday, July 29, 2015

Budget Priorities Working Group

Rate Schedule 1: Allocation of NYISO Budget

Cheryl Hussey of the NYISO reminded stakeholders of language included in Rate Schedule 1 requiring a vote by the Management Committee in Q3 2015 to determine whether a new Cost of Service Study should be conducted to evaluate the Rate Schedule 1 allocation between withdrawals and injections. If the vote does not result in a recommendation for conducting a study of RS1 in 2015-2016, the tariff outlines the required process for extending the current structure in future years. A history of the changes to the allocation of RS1 was presented showing that the current allocation is effective through December 2016. The tariff requirements and language were presented and discussed with stakeholders to provide clarity to the process. The study would be performed by an outside consultant during the first two quarters of 2016 with the cost included in the 2016 NYISO budget. The vote for the RS1 Allocation Study will be conducted at the August 26, 2015 Management Committee meeting. To see Ms. Hussey's complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2015-07-29/Agenda%2002_BPWG_RS1%20Study.pdf

EMS/BMS Strategy Update

Diane Peluso of the NYISO presented an update on the process used to select a vendor for EMS/BMS. An evaluation team was selected with members chosen from NYISO Operations, IT and Product and Project Management to assess the vendor proposals. Following a thorough analysis it was determined that:

- *Functionality of all of the alternatives are competitive (ABB, Siemens and Alstom)*
- *ABB solution offered lower project cost, schedule and risk*
- *NYISO has 15 years of intellectual property invested with ABB*
- *Discussions with other ISO's were positive*

The NYISO is currently engaged in negotiations with ABB to finalize the scope and cost of the project. A timeline was provided to illustrate the implementation steps beginning in 2014 and culminating in 2019 following an almost year long User Acceptance Testing period. The estimated cost of the project is \$30,730,000. The NYISO will continue to discuss progress with stakeholders as the negotiations with ABB are finalized. A Statement of Work is anticipated for



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August 2015. To see the complete presentation by Ms. Peluso, go to http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2015-07-29/Agenda%2003_EMS_BMS%20Stategy%20Update.pdf

2015 Project Prioritization and Budgeting Process

Ryan Smith of the NYISO presented the initial project budget proposal for 2015. Mr. Smith introduced each product category and requested stakeholder questions and comments on the project selections. NYISO personnel responded to several stakeholder inquiries on specific project selection by explaining the decision making process, frequently conveying the resource limitations posed by certain projects. The BPWG Chair suggested that there was justification for another BPWG meeting on August 26, 2015 to allow stakeholders the opportunity to submit written comments and continue the discussion prior to a recommendation to the governance process for budget approval. To see the presentation by Mr. Smith along with the initial 2015 project list please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2015-07-29/Agenda%2004_2016%20Project%20Prioritization.pdf

Thursday, July 30, 2015

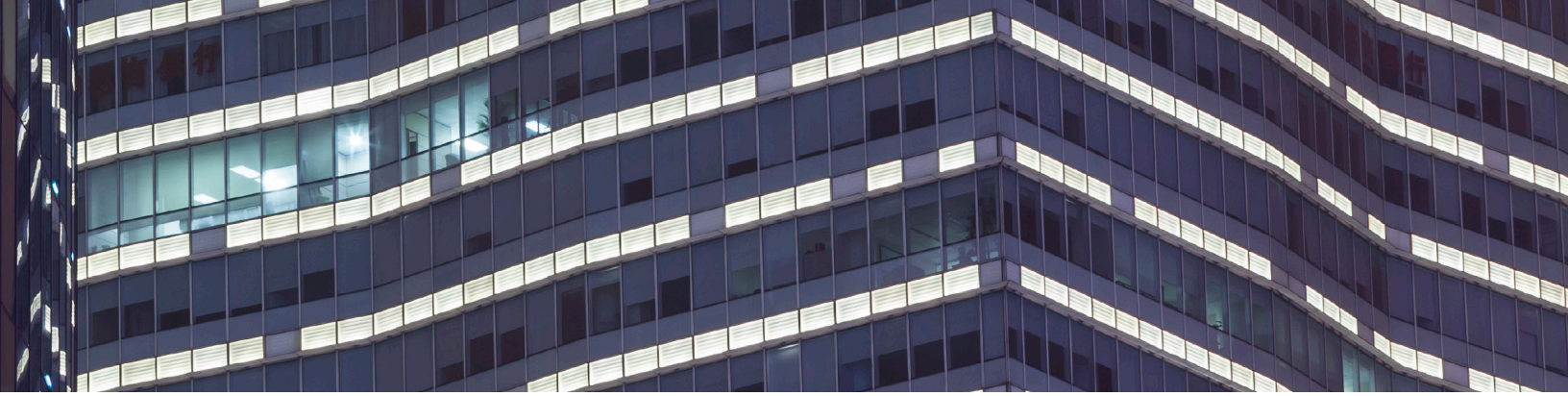
Electric System Planning Working Group

Public Policy Transmission Need – Western NY

Zach Smith of the NYISO presented the New York State Public Service Commission (PSC) determination of a transmission need in Western New York. The NYISO's Public Policy Transmission Planning Process (PPTPP) dictates that following the PSC order addressing Public Policy Requirements for transmission planning purposes, including identification of a Public Policy Transmission Need (PPTN) for Western NY, the NYISO will solicit solutions that meet the need established by the PSC that sufficiently:

- *Obtain the full output from Niagara (2,700 MW including Lewiston Pumped Storage);*
- *Maintain certain levels of simultaneous imports from Ontario across the Niagara tie lines (i.e., maximize Ontario imports under normal operating conditions and at least 1,000 MW under emergency operating conditions);*
- *Maximize transfers out of Zone A to the rest of the state;*
- *Prevent transmission security violations (thermal, voltage or stability) that would result under normal and emergency operating conditions; and*
- *Maintain reliability of the transmission system with fossil-fueled generation in Western NY out-of-service, as well as in-service*

The next step in the process is to define parameters for the sufficiency base case to be studied. The NYISO will then present the base case results to the ESPWG. With the base case finalized and made public the NYISO will open a 60 day solicitation window for Public Policy Transmission Projects and other Public Policy projects to provide a solution to the established need. Mr. Smith explained that the NYISO will then conduct a Viability and Sufficiency assessment of the projects received prior to presenting the solutions to the PSC for review. To see the presentation by Mr. Smith please go to:



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https://www.nyiso.com/public/webdocs/markets_operations/committees/bic_espwg/meeting_materials/2015-07-30/Western_NY_PPTN.pdf

2015 CARIS 1 Preliminary Identification of Three Studies/Generic Solutions

Tim Duffy of the NYISO presented the preliminary identification of three studies for analysis in the 2015 CARIS 1 study currently under way. Mr. Duffy displayed charts identifying demand congestion by constraints in Central and Eastern NY to illustrate congestion costs over a 10 year and 15 year outlook. Utilizing a relaxation process for the top five constraints, the NYISO determined which constraints had the greatest effect on demand congestion cost and therefore should be studied. The process was repeated for the Western constraints. The following constraints were chosen for study:

- *Study # 1: Central East – New Scotland Pleasant Valley Edic - New Scotland - Pleasant Valley (345 kV)*
- *Study #2: Central East Edic - New Scotland (345 kV)*
- *Study #3: Western 230 kV System Niagara – Gardenville (230 kV)*

Parameters for transmission, generator, energy efficiency and demand response solutions for the study were defined. Mr. Duffy detailed the upcoming steps in the process that will take place prior to presenting a draft report. To see Mr. Duffy's presentation, please go to:

https://www.nyiso.com/public/webdocs/markets_operations/committees/bic_espwg/meeting_materials/2015-07-30/2015%20CARIS%201%20Preliminary%20Identification%20of%20Three%20Studies.pdf

FERC Filings

July 31, 2015

NYISO filing of revisions to its Services Tariff to change the timeframe for requiring credit support for External Transactions

July 31, 2015

NYISO 205 filing to create an independent cost recovery mechanism for the annual FERC fee

July 31, 2015

NYISO filing of proposed tariff revisions to enhance the ICAP Spot Market Auction Credit Requirement.

July 30, 2015

NYISO filing of a motion to intervene and comments on Erie Power's July 2015 tariff waiver request regarding Class Year eligibility requirements

July 27, 2015

Joint filing of comments by NYISO, MISO, ISO-NE, and PJM in response to the FERC NOPR proposing approval of Reliability Standard TPL-007-1 – Transmission System Planned Performance for Geomagnetic Disturbance Events



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July 27, 2015

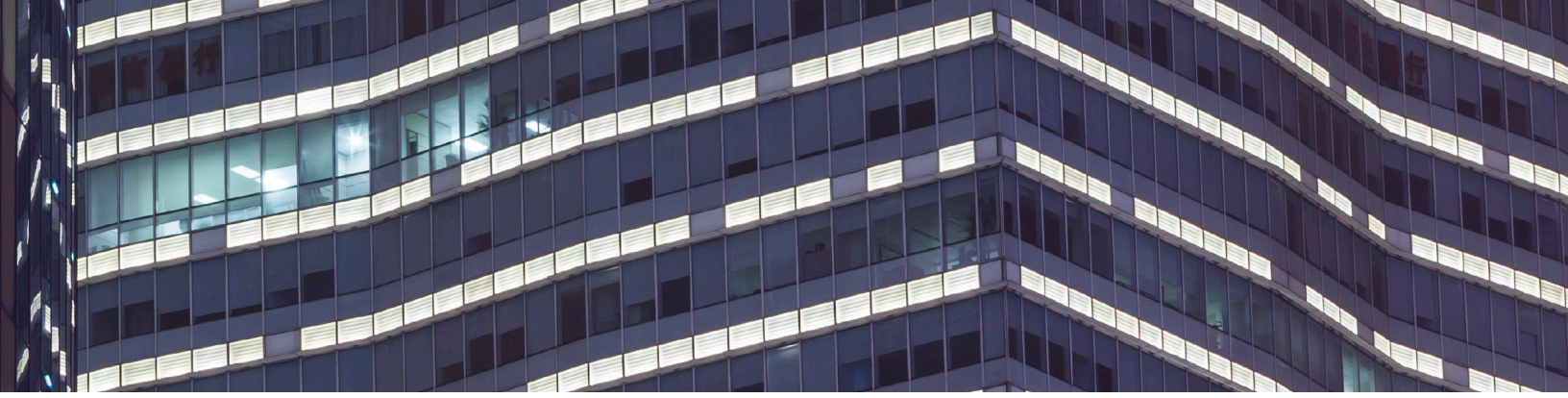
NYISO filing of an executed SGIA among NYISO, NMPC and Monroe County, SA No. 2219.

FERC Orders

There were no FERC Orders issued to NYISO for this week

Link to FERC Filings and Orders:

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



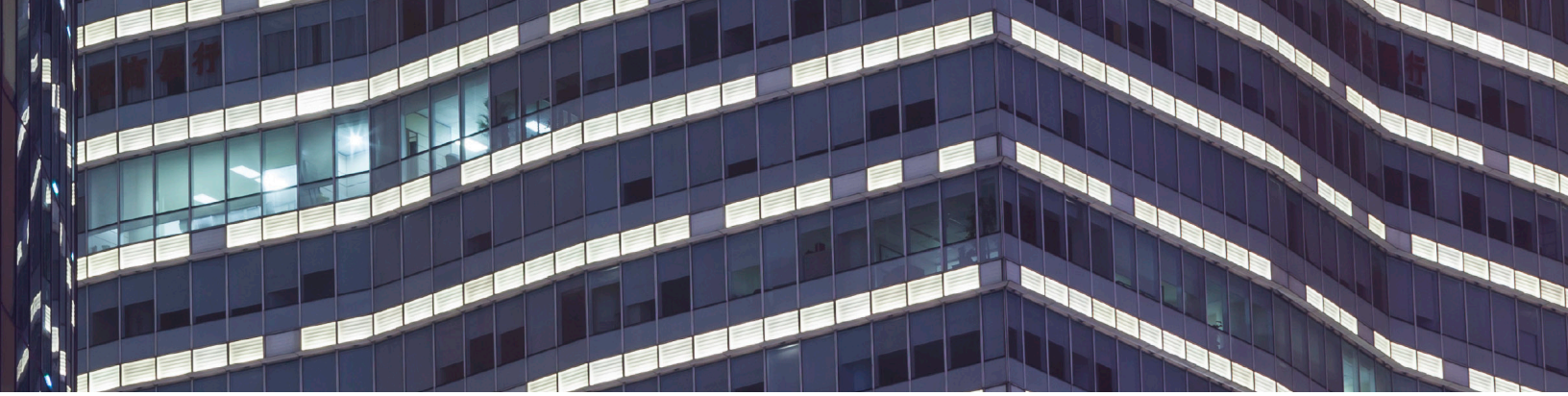


For More Information

In addition to this report from the Consumer Interest Liaison and other documents referenced in this report, various governmental agencies and electric system organizations provide information useful to the electricity consumer, including:

- *Division of Consumer Protection, New York State Department of State*
<http://www.dos.ny.gov/consumerprotection>
- *New York State Public Service Commission (PSC)* *<http://www.dps.state.ny.us>*
- *New York State Energy Research and Development Authority (NYSERDA)* *<http://nyserda.org>*
- *Federal Energy Regulatory Commission (FERC)* *<http://www.ferc.gov>*
- *New York State Reliability Council (NYSRC)* *<http://www.nysrc.org>*
- *North American Electricity Reliability Corporation (NERC)* *<http://www.nerc.com>*
- *Northeast Power Coordinating Council (NPCC)* *<https://www.npcc.org>*

In addition, consumer-related information is available directly from the electric utilities serving New York State.



NYISO Publications

The NYISO issues a number of publications related to planning for the future electric grid and markets, critical and evolving energy issues, and new technologies. They are available on the NYISO website, www.nyiso.com.

Power Trends

The annual Power Trends report provides a review and analysis of the forces and factors influencing the future of New York’s bulk electricity grid and its wholesale electricity markets.

The “Gold Book”

Published annually, the Load & Capacity Data Report (known as the “Gold Book”) presents New York Control Area system, transmission and generation data and NYISO load forecasts. It includes forecasts of peak demand, energy requirements, energy efficiency, and demand response; existing and proposed resource capacity; and current and proposed transmission facilities.

Strategic Plan

The multi-year Strategic Plan outlines the NYISO’s vision, mission, core values, and guiding principles, as well as NYISO goals and initiatives for the next five years.

Planning Reports

Reports published include the Reliability Needs Assessment, Comprehensive Reliability Plan, Congestion Assessment and Resource Integration Study, Wind Integration Study, and other documents vital to planning New York’s energy future



New York Independent System Operator
10 Krey Boulevard
Rensselaer, NY 12144
www.nyiso.com