

Ancillary Services Shortage Pricing- Study Report Overview

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Market Issues Working Group:

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Agenda

- Background
- Study Objective
- Overview of the Analysis Performed
- Observations and Conclusions
- Next Steps
- Appendix

Previous Presentations

Date	Working Group	Discussion points and links to materials
12-17-14	MC	Comprehensive Shortage Pricing
04-10-18	Market Issues Working Group (MIWG)	Ancillary Services Shortage Pricing Reserve Procurement for Resilience
05-09-18	MIWG	Ancillary Services Shortage Pricing
05-31-18	MIWG	Ancillary Services Shortage Pricing : Market Design Concept Proposal
01-24-19	MIWG	Operating Reserve Background
05-22-19	MIWG	2019 Master Plan: Draft & Discussion
03-27-19	MC	Establishing Zone J Operating reserve requirement
07-10-19	MIWG	Ancillary Services Shortage Pricing
10-18-19	MIWG	Ancillary Services Shortage Pricing- Data Analysis

Background

Purpose of today's meeting

- **Provide an overview of the study report posted with today's meeting materials**
 - Stakeholders requested certain additional analysis at the 10/18/2019 MIWG meeting. The analysis has been included in the study report and is summarized in the Appendix
- **Outline the next steps for stakeholder collaboration in 2020**

Background- A Grid in Transition

- Environmentally focused public policies in New York are driving a transition to increased reliance on weather-dependent resources.¹
- The variability and unpredictability of wind and solar generation resources and the potentially large quantities of each present a challenge for future grid operations.
 - The grid will need responsive and flexible resources to address changes in net load, as well as support reliable operations.

1. For further discussion, please see the report "Reliability and Market Considerations for a Grid in Transition" at the following link:
<https://www.nyiso.com/documents/20142/6785167/Grid%20in%20Transition%20DRAFT%20FOR%20POSTING.pdf/74eb0b20-6f4c-bdb2-1a23-7d939789ed8c>

Background- A Grid in Transition

- **Effective pricing of energy and ancillary services products to reflect system conditions and operational needs is crucial.**
 - Reserve prices fall when and where this grid reliability service is not needed or when there is ample supply.
 - In this way, and by fostering competition, prices help to maintain grid reliability at the lowest cost.

Study Objective

- **2019 Project Goal: Study Complete (Q4)**
- **Assess whether the current reserve demand curve pricing levels continue to support reliable operations**
- **Evaluate the appropriateness of revising the structure and/or pricing of the current reserve demand curves (e.g., including additional, more granular steps)**

Overview of the Analysis performed

- **Historic analysis of:**
 - Frequency of reserve shortage by reserve region and product
 - NYCA 30-minute reserve shortages by shadow price
 - Persistent reserve shortages
- **Review of the September 3, 2018 market outcomes**
- **Assessment of illustrative pricing values for reserves based on preliminary estimates of the value of lost load (VOLL)**

Observations

- **Ancillary services are becoming increasingly important for supporting system reliability as the grid transitions to include more weather-dependent renewables resources**
 - The price signals for these services are important for signaling the need for investment in maintaining and adding new resources capable of providing the resource capabilities needed to reliably operating the system
- **Historic shortage pricing outcomes demonstrate that the majority of current NYCA 30-minute reserve shortages occur at Shadow Price values of \$100/MWh or less**
 - The analysis also determined that shortages of NYCA 30-minute reserves persisting for three or more RTD intervals are most likely to occur at lower pricing levels

Observations (continued)

- **Analysis of NYISO market outcomes and events from September 3, 2018 (i.e., a day when pay-for-performance incentives were activated in ISO-NE during a period when both New York and ISO-NE experienced stressed operating conditions) highlight the potential need to further evaluate current reserve shortage pricing levels**
 - RTC realized reserve shortages rather than committing and/or dispatching additional resources to allow for procurement of the needed reserves
 - A rerun of the RTC market software demonstrated that these outcomes were primarily driven by the current reserve shortage pricing values employed by the NYISO markets
- **The illustrative VOLL-based curves could be useful when evaluating potential changes to the current shortage pricing values and/or including additional ORDC “steps” to help provide for more stable and predictable pricing outcomes**

Conclusions

- **The NYISO recommends further collaboration with stakeholders to assess potential changes to the current reserve shortage prices values used in the NYISO-administered markets**
- **The NYISO and its stakeholders should consider increasing lower reserve demand curve values to help avoid frequent shortages, and improve the consistency of market price signals with the reliability value of these ancillary services products**

Next Steps

■ 2020

- Finalize Market Design Concept
- Conduct Consumer Impact Analysis
- Present Market Design Complete and tariff language
- Seek stakeholder approval at BIC and MC of proposed enhancements

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

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



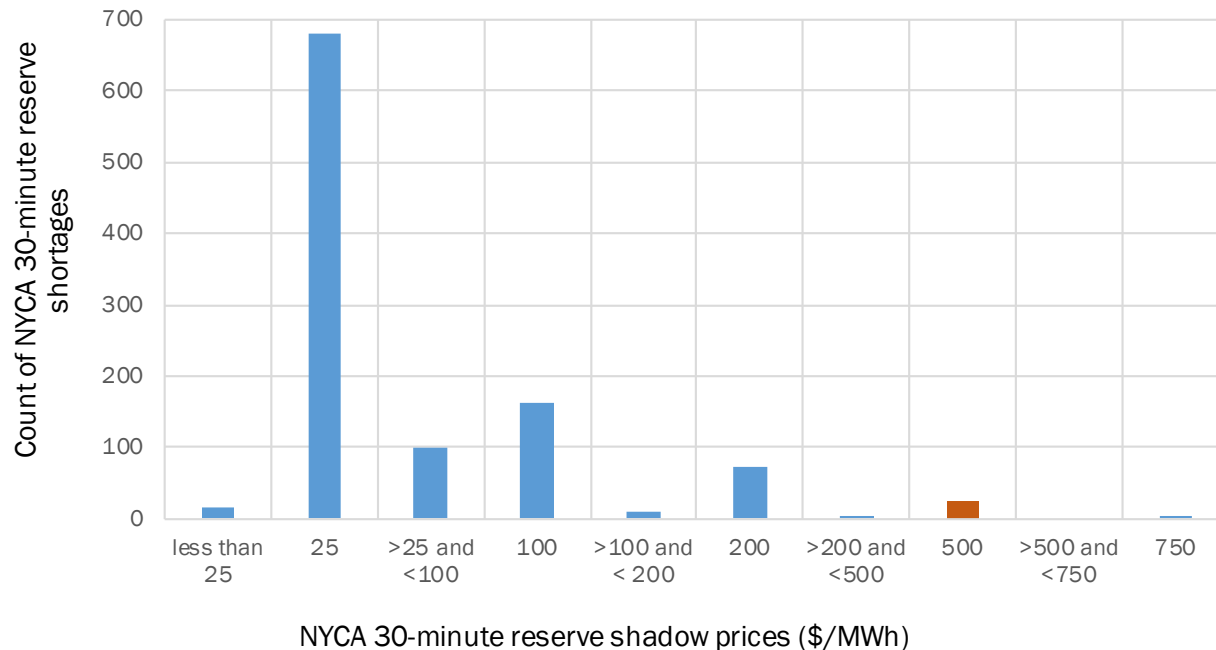
Questions?

Appendix

Frequency of NYCA 30-minute reserve shortages

- **Historic data from July 1, 2016 through September 30, 2019 was analyzed to assess the frequency and shadow price of NYCA 30-minute reserve shortages in real-time**
- **The graph on the following slide shows a histogram of the number of RTD shortages by shadow price during the timeframe analyzed**
 - SCR/EDRP activations are shown in orange as the demand curve during these activations is \$500/MWh for all pricing values otherwise priced below \$500/MWh

Frequency of NYCA 30-minute reserve shortages



- Most prevalent value of shortages occurs at a Shadow Price value of \$25/MWh
- 89.46% of all NYCA 30-minute reserves shortages occurred at a Shadow Price of \$100/MWh or less

Emergency Energy purchases on September 3, 2018

- **ISO-NE made emergency purchases from NY (up to 251 MW from 17:00 to 18:00).**
 - NYISO was experiencing 30-minute reserve shortages, resulting in emergency purchases from Ontario in order to provide the requested emergency energy to ISO-NE.
- **Analysis of the emergency energy purchase from Ontario was performed to compare the relative economics of the action taken to an alternative of supplying energy from NYCA generators.**
- **Energy prices in Ontario ranged between \$50/MWh to \$120/MWh for hour beginning 17:00 when the emergency energy was purchased.**
- **Energy prices in the NYCA ranged from \$200/MWh to \$960/MWh for the same timeframe.**
- **Had the emergency energy been provided from internal NYCA resources, the energy price in NYISO would increase by \$750/MWh due to a resulting increase in the 30-minute reserve shortage level that would have been priced by the final “step” on the NYCA 30-minute reserve demand curve.**