

Coordination of Energy & Ancillary Service Projects

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BIC

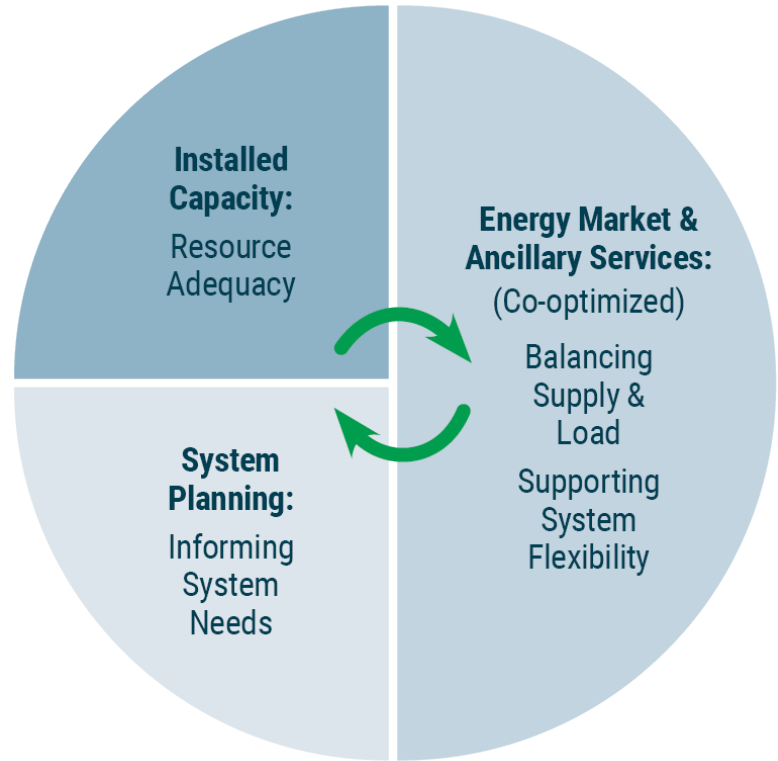
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Background

A Grid in Transition - Role of Markets

- **The NYISO supports reliability through three complementary markets for energy, ancillary services, and capacity.**
 - Each addresses distinct reliability needs through competitive market pricing that benefits New York consumers while reducing costs.
 - Together, energy, ancillary services, and capacity market revenues provide economic signals for new investment, retirement decisions, and participation by demand response providers.



A Grid in Transition – Path Forward

- **The NYISO’s wholesale markets can serve as an effective platform for helping to achieve New York State environmental objectives.**
 - Through active engagement with stakeholders and policymakers, the NYISO is developing design improvements to meet the future challenges expected to arise with high levels of intermittent renewable and distributed energy resources.
- **The plan includes a set of market design enhancements that work together coherently and efficiently to satisfy New York’s changing grid reliability needs.**
 - Nine areas of market design opportunities across three main points of focus (discussed on the next slide) require immediate attention and are recommended for implementation in the next five years, through 2024.



A Grid in Transition – The Plan

- Carbon Pricing
- Comprehensive Mitigation Review
- DER Participation Model
- Energy Storage Participation Model
- Hybrid Storage Model

Aligning Competitive Markets and New York State Clean Energy Objectives



- Enhancing Energy & Shortage Pricing
 - Ancillary Services Shortage Pricing
 - Constraint Specific Transmission Shortage Pricing
 - Enhanced Fast Start Pricing
- Review Energy & Ancillary Services Product Design
 - More Granular Operating Reserves
 - Reserve Enhancements for Constrained Areas
 - Reserves for Resource Flexibility

Valuing Resource & Grid Flexibility



- Enhancements to Resource Adequacy Models
- Revise Resource Capacity Ratings to Reflect Reliability Contribution
 - Expanding Capacity Eligibility
 - Tailored Availability Metric
- Capacity Demand Curve Adjustments

Improving Capacity Market Valuation



Ancillary Services Shortage Pricing Project

Ancillary Services Shortage Pricing

- Started in April 2018
- The project was proposed following the 2017 NYISO analysis of issues and concerns with increased renewable penetration
- Further rationale was included in late 2018 following the recommendations of the MMU in its state of the market and the Analysis Group's Performance Assurance study
- A study released by the NYISO in 2019 also included analysis and rationale for this effort

Ancillary Services Shortage Pricing

- **The purpose of this effort is to:**
 - Improve today's real-time energy pricing during tight operating conditions which incents resource performance and improves economic signals for import and export scheduling
 - Improve today's energy market pricing by introducing more gradual demand curve steps which seek to mitigate unnecessary price volatility
 - Prepare the NYISO for a future with much more intermittent renewable resources by introducing a process where the market can adjust to manage the ever changing resource mix
 - Improve procurement of reserves so that reserves procured by loads day-ahead remain available to operators in real-time

Ancillary Services Shortage Pricing

- **The NYISO can manage some of this today through out of market actions including:**
 - Uneconomic curtailment of exports
 - Emergency purchases of imports
 - Out of merit commitment of uneconomic internal generators
 - Additional commitments of generation after the day ahead market through Supplemental Resource Evaluation
- **These actions are not optimal and can create reliability issues in the longer term such as:**
 - Failing to incent new flexible resources like energy storage
 - Failing to create economic incentives for generators to reduce their minimum generation limits, which reduces the flexibility of the generator

Ancillary Services Shortage Pricing

■ How does this relate to other efforts?

- This project is focused on ensuring the pricing levels for reserves support grid operations and account for existing operating protocols
 - The NYISO expects the resource mix, and subsequent growth in reliability risks, could change quickly and therefore also proposes to include a mechanism to allow the markets to adjust more quickly to changing conditions and system needs
- This project is NOT focused on the pricing of transmission congestion, but must be coordinated with the Constraint Specific Transmission Shortage Pricing effort because all shortage prices must work together to support grid operations
- This project is NOT focused on creating new reserve regions or modifying reserve procurement levels to manage existing reliability requirements, but again must be coordinated with the Reserves for Resource Flexibility and More Granular Operating Reserves efforts to ensure efficient market pricing outcomes to support grid operations

Reserves for Resource Flexibility Project

Reserves for Resource Flexibility

- **Started in April 2018**
- **The project was proposed following the 2017 NYISO analysis of issues and concerns with increased renewable penetration**
- **Further rationale was included in late 2018 following the recommendations of the Analysis Group's Performance Assurance study**

Reserves for Resource Flexibility

- **The purpose of this effort is to:**
 - Improve today's real-time energy pricing during tight operating conditions to encourage the procurement of fuel and incent resource performance in the constrained Southeastern New York (SENY) region
 - Ensure that the energy market supports transmission loading reliability criteria
 - Improve market pricing within NYC during Storm Watch conditions by reducing unneeded reserve procurements during these events

Reserves for Resource Flexibility

- **The NYISO can manage some of this today through out of market actions including:**
 - Additional commitments of generation after the day ahead market through Supplemental Resource Evaluation
 - Out of merit commitment of uneconomic internal generators in SENY
- **These actions are not optimal and can create reliability issues over the longer term such as:**
 - Failing to incent new flexible resources like energy storage
 - Failing to create economic incentives for generators to maintain real-time availability or improve operational flexibility

Reserves for Resource Flexibility

■ How does this relate to other efforts?

- This project is focused on ensuring the procurement levels of reserves in the energy markets supports grid reliability standards for the operation of the transmission system that connects SENY to the rest of the New York Control Area
 - The NYISO expects the resource mix, and subsequent growth in reliability risks, could change quickly and therefore believes it is important that market outcomes rather than solely operator actions support grid reliability standards before they become reliability issues
- This project is NOT focused on broadly ensuring the pricing levels across the NYCA are sufficient and appropriate to support grid operations, but this effort must be coordinated with the Ancillary Service Shortage Pricing recommendations to ensure that the proposed SENY reserve enhancements are considered as part of that broader effort
- This project is NOT focused on the pricing of transmission congestion, but must be coordinated with the Constraint Specific Transmission Shortage Pricing effort because all shortage prices must work together to support grid operations
- This project is NOT focused on creating new reserve regions in NYC load pockets, as that is a separate and distinct reliability concern

Constraint Specific Transmission Shortage Pricing Project

Constraint Specific Transmission Shortage Pricing

- Started in January 2018
- The project was proposed following the transmission constraint pricing enhancements implemented on June 20, 2017
- Further rationale was included in recommendations of the MMU in its State of the Market reports and a study completed by the NYISO in 2018

Constraint Specific Transmission Shortage Pricing

- **The purpose of this effort is to:**
 - Improve pricing of transmission constraints, as the current methodology can over and/or under value existing transmission constraints
 - The concept would also support improved congestion pricing in NYC load pockets, especially as the resource fleet in NYC changes in response to environmental requirements and other energy-related policies
 - Today, offline GT pricing is utilized as part of supporting efficient pricing in the load pockets during constrained periods

Constraint Specific Transmission Shortage Pricing

- **The NYISO can manage some of this today through out of market actions including:**
 - Reliance on out of merit actions to manage transmission issues
- **These actions are not optimal and can create reliability issues over the longer term such as:**
 - Sub-optimal pricing signals reflecting real-time system conditions and needs
 - Failing to incent new flexible resources like energy storage and DERs
 - Failing to create economic incentives for generators to maintain real-time availability or improve operational flexibility

Constraint Specific Transmission Shortage Pricing

- **How does this relate to other efforts?**
 - This project is focused on the pricing of transmission congestion, but must be coordinated with the other reserve pricing efforts because all shortage prices must work together to support grid operations

More Granular Operating Reserves Project

More Granular Operating Reserves

- Started in early 2019
- The project was proposed following the recommendations of the Analysis Group's Performance Assurance Study
- Further rationale was included in the recommendation of the MMU in subsequent State of the Market recommendations

More Granular Operating Reserves

- **The purpose of this effort is to:**
 - Ensure that the energy market supports NYSRC rules for maintaining 10 minute Operating Reserves in NYC
 - Improve locational prices by considering additional reserves in load pockets which would support investment decisions for locating flexible resources such as DERs and energy storage in strategic transmission and resource constrained areas of NYC
 - Improve energy market pricing due to the need for consistent local reliability rule commitments in strategic NYC load pockets, which would improve transparency of the reliability need and support alternative ways to manage local reliability rules

More Granular Operating Reserves

- **The NYISO can manage some of this today through out of market actions including:**
 - Additional commitments of generation after the day ahead market through Supplemental Resource Evaluation
 - Out of merit commitment of resources to address local reliability requirements
- **These actions are not optimal and could potentially give rise to reliability issues in the longer term such as:**
 - Failing to incent new flexible resources like energy storage and DERs in appropriate locations to support system needs
 - Failing to create economic incentives for generators to maintain real-time availability or improve operational flexibility

More Granular Operating Reserves

■ How does this relate to other efforts?

- This project is focused on creating new reserve regions within NYC for certain NYC load pockets, due to distinct reliability concerns in these areas
 - The NYISO expects the resource mix, and subsequent growth in reliability risks, could change quickly and therefore believes it is important that market outcomes rather than solely operator actions support grid
- This project will need to be coordinated with the Ancillary Service Shortage Pricing proposal to ensure the proposed reserve enhancements within NYC are considered in the context of broader considerations of shortage pricing levels

Reserves Enhancements for Constrained Areas Project

Reserve Enhancements for Constrained Areas

- Project is expected to start in 2021
- This project will evaluate ways to improve the modeling of reserve and transmission constraints to potentially allow reserve requirements to be shifted to lower cost reserve regions as long as transmission head room exists to deliver the reserves to where needed without compromising grid reliability
- This type of dynamic requirement modeling becomes much more important with smaller reserve regions where there can be limited and sometimes costly actions to maintain reserves in those smaller regions
 - This project would be complimentary to More Granular Operating Reserves and could improve the efficiency of introducing reserve requirements for certain NYC load pockets
- The MMU has recommended the NYISO pursue such an approach in several of its State of the Market reports

Next Steps and Timeline

Reserves for Resource Flexibility

- **Seek stakeholder approval at BIC/MC in August 2020**
- **If approved, seek to implement the proposal in 2021**

Ancillary Services Shortage Pricing

- Continue to discuss the proposal over the coming months
- Complete the Consumer Impact Analysis by early September 2020
- Seek stakeholder approval in October 2020
- If approved, seek to implement after the Reserves for Resource Flexibility implementation in 2021

Constraint Specific Transmission Shortage Pricing

- **Continue to discuss the proposal in 2021**
- **Seek stakeholder approval by the end of 2021**
 - Based on feedback at the July 30, 2020 BPWG meeting, the NYISO is proposing to shift more resources away from the development of this proposal to supporting the development of the DER participation model
- **Implementation timing for this project will be further considered during the 2022 project prioritization planning**

More Granular Operating Reserves

- **The NYISO recommends suspending work on this project to allow focusing on the Reserve Enhancements for Constrained Areas project**
 - The Reserve Enhancements for Constrained Areas project will investigate potential ways to dynamically allocate reserves requirements between regions based on available transmission head room
 - This functionality would greatly improve the existing proposal for procuring reserves in certain NYC load pockets based on the design previously developed in the More Granular Operation Reserves project

Reserve Enhancements for Constrained Areas

- **For 2021, the NYISO recommends studying ways to potentially include a dynamic reserve allocation in the existing market software**
 - This functionality would greatly improve the existing proposal for procuring reserves in certain NYC load pockets based on the design previously developed in the More Granular Operation Reserves project

Questions?

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

