

Reserves for Resource Flexibility

SENY Reserve Region Enhancements

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Market Issues Working Group

June 30, 2020

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Agenda

- **Background**
- **SENY Binding Transmission Constraint Data**
- **Updated Proposal**
- **Proposed Tariff Revisions**
- **Next Steps**

Background

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



Date	Working Group	Discussion Points and Links to Materials
May 9, 2019	ICAPWG/MIWG	Project overview https://www.nyiso.com/documents/20142/6474763/5_9_2019_Reserves_for_Resource_Flexibility_FINAL.pdf/f5b74852-2b18-9233-a8fa-bfc488ed1238
July 15, 2019	ICAPWG/MIWG	Discuss additional SENY reserve requirement for Normal Transfer Criteria post-contingency https://www.nyiso.com/documents/20142/7575688/7_15_2019_Reserves_for_Resource_Flexibility_FINAL.pdf/60a62b16-895c-9185-9ba5-d3538da9e10b
September 26, 2019	ICAPWG/MIWG	Discuss SENY Reserve Region Enhancements and Uncertainty Analysis https://www.nyiso.com/documents/20142/8414685/9_26_2019_Reserves_for_Resource_Flexibility_FINAL.pdf/ba7fb774-49d5-0c96-1d2c-664a2c9c3c05
October 28, 2019	ICAPWG/MIWG	Market Design Concept Proposal https://www.nyiso.com/documents/20142/8922912/10_28_2019_Reserves_for_Resource_Flexibility_MDCP_FINAL.pdf/e8bedc39-867b-88d6-ef5a-fe92943d48ba
April 22, 2020	ICAPWG/MIWG	Discuss draft tariff language https://www.nyiso.com/documents/20142/12170360/4_22_2020_Reserves_for_Resource_Flexibility_FINAL.pdf/b2db3169-5d56-ec11-1541-c83bc5f58ed5
April 27, 2020	ICAPWG/MIWG	Discuss Consumer Impact Analysis Methodology https://www.nyiso.com/documents/20142/12170360/CIA%20Methodology%20for%20Reserves%20for%20Resource%20Flexibility.pdf/a994ee00-e91b-1e70-44c8-7eba40645503
June 2, 2020	ICAPWG/MIWG	Discuss Supplemental Analysis https://www.nyiso.com/documents/20142/12891716/3%20Reserves_for_Resource_Flexibility_FINAL.pdf/89165cef-43da-e54f-19f4-770728ccdc4d Discuss Consumer Impact Analysis https://www.nyiso.com/documents/20142/12891716/4%20CIA%20-%20Reserves%20for%20Resource%20Flexibility.pdf/2f4dc147-8904-b325-3c34-ebf9bc304525

Reserves for Resource Flexibility: SENY Reserve Region Enhancements

- **The NYISO proposes to procure up to an additional 500 MW of 30-minute reserves in the Southeastern New York (SENY) reserve region as part of the Reserves for Resource Flexibility project.**
 - Proposal contemplates shifting of current locational reserve procurements only and does not propose to increase the 2,620 MW level of 30-minute total reserves procured statewide (NYCA).
 - This additional reserve requirement would, when applicable, be procured consistently in the Day-Ahead and Real-Time Markets (except in real-time during Thunderstorm Alerts when the SENY reserve requirement is reduced to zero MW).
- **Consistent with the treatment of SENY reserves, the NYISO is also proposing to reduce the NYC (Load Zone J) reserve requirements to zero MW in real-time during Thunderstorm Alerts (TSAs) as part of this project.**

Background

- **The purpose of this presentation is to provide additional information about procuring additional 30-minute reserves in SENY, including:**
 - Additional transmission constraint data
 - Refining the prior proposal to vary the amount of additional SENY 30-minute reserve required on an hourly basis
- **This presentation and analysis has been developed in close collaboration with NYISO Operations.**

SENY Binding Transmission Constraint Data

Normal Transfer Criteria Analysis

- **NYISO Operations originally conducted an analysis to determine the proposed additional reserve quantity.**
 - A summer case was analyzed with transmission facility flow into SENY at limits.
- **The analysis established that increasing the SENY 30-minute reserve requirement by an additional 500 MW provides ready access to resource capability that allows the NYISO to return transmission facilities into SENY to Normal Transfer Criteria post-contingency.**
 - Normal Transfer Criteria in this case indicates that post-contingency flow would be below long-term emergency (LTE) ratings.
- **Stakeholders have requested that the NYISO analyze historical data to determine when the applicable SENY transmission facilities were at limits.**

SENY Transmission Facility Considerations

- **Transmission constraints on the applicable SENY facilities, as well as forced outages of the transmission facilities, can and do occur at any time.**
 - Procuring the proposed additional reserve will provide NYISO Operators access to resource capability in SENY that is needed to meet the operating objective to return to Normal Transfer Criteria now and in the future by incenting the necessary resource fleet flexibility.
 - The impact of procuring additional reserve in SENY today is expected to be limited given the current resource mix and system conditions. As system conditions and the resource mix changes during the transition to the grid of the future, the need to incent additional resource flexibility will increase.

Binding Transmission Constraints

- If the applicable SENY transmission constraints are binding, then this indicates that a contingency occurring for one of these limiting facilities would require 1,800 MW in SENY to return to normal transfer criteria. These facilities include:
 - LEEDS___-PLSNTVLY_345_92
 - ATHENS__-PLSNTVLY_345_91
- Data presented at the June 2, 2020 ICAPWG/MIWG meeting indicated that the applicable SENY transmission facilities were binding a low percentage of the time during the 5 year period from 2015 to 2019.
- The NYISO has expanded the binding transmission constraint analysis to include the years 2010 to 2019.
 - Data presented on the next slide shows the percent frequency of total hours with applicable transmission constraints binding by year and hour for the Day-Ahead Market (DAM).

Percent frequency of total DAM hours with applicable transmission constraints binding by year and hour*

		Day Ahead Market Hour																							
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Year	2010	0%	0%	0%	0%	0%	0%	0%	1%	3%	5%	7%	9%	12%	17%	20%	20%	23%	20%	15%	14%	11%	6%	1%	0%
	2011	0%	0%	0%	0%	0%	0%	0%	1%	2%	2%	4%	7%	10%	16%	18%	19%	17%	16%	11%	8%	5%	2%	1%	0%
	2012	0%	0%	0%	0%	0%	0%	0%	1%	2%	4%	7%	7%	8%	12%	14%	16%	14%	10%	4%	4%	3%	1%	0%	0%
	2013	0%	0%	0%	0%	0%	0%	0%	0%	2%	4%	7%	9%	14%	15%	20%	22%	21%	19%	13%	12%	5%	5%	3%	0%
	2014	0%	0%	0%	0%	0%	0%	0%	2%	3%	4%	5%	7%	6%	8%	10%	12%	10%	10%	7%	5%	4%	4%	3%	1%
	2015	1%	1%	0%	0%	1%	1%	1%	10%	13%	15%	16%	18%	19%	22%	23%	22%	21%	15%	12%	11%	12%	9%	3%	1%
	2016	1%	0%	0%	0%	0%	0%	1%	8%	8%	8%	8%	11%	14%	17%	19%	20%	15%	10%	8%	8%	7%	2%	3%	1%
	2017	0%	0%	0%	0%	0%	0%	3%	7%	10%	12%	13%	15%	17%	19%	20%	22%	23%	18%	19%	20%	16%	12%	2%	0%
	2018	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	3%	5%	5%	4%	2%	1%	1%	0%	0%	0%
	2019	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	3%	5%	6%	5%	4%	3%	2%	1%	1%	0%

* Percentages are out of 365 days for each hour, except for 2012 and 2016, which are leap years, and therefore out of 366 days for each hour. Values are rounded to the nearest whole number.

Proposed SENY Reserve Requirement Assessment

- **When the applicable SENY transmission constraints will bind, and when transmission outages will occur, is uncertain.**
 - However, the historical data indicates that likelihood of the relevant transmission constraints binding is typically low in some hours.
- **After considering stakeholder feedback and additional data analysis, the NYISO proposes to further refine the proposal to vary the additional reserve requirement on an hourly basis.**
 - This varying requirement is informed by the binding transmission constraint data.

Updated Proposal

Updated Proposal

- Binding constraints for the relevant transmission facilities are concentrated in certain hours throughout the year, thus the NYISO proposes to vary the additional SENY 30-minute reserve requirement based on hours within the year. The SENY 30-minute reserve requirement is proposed to be:

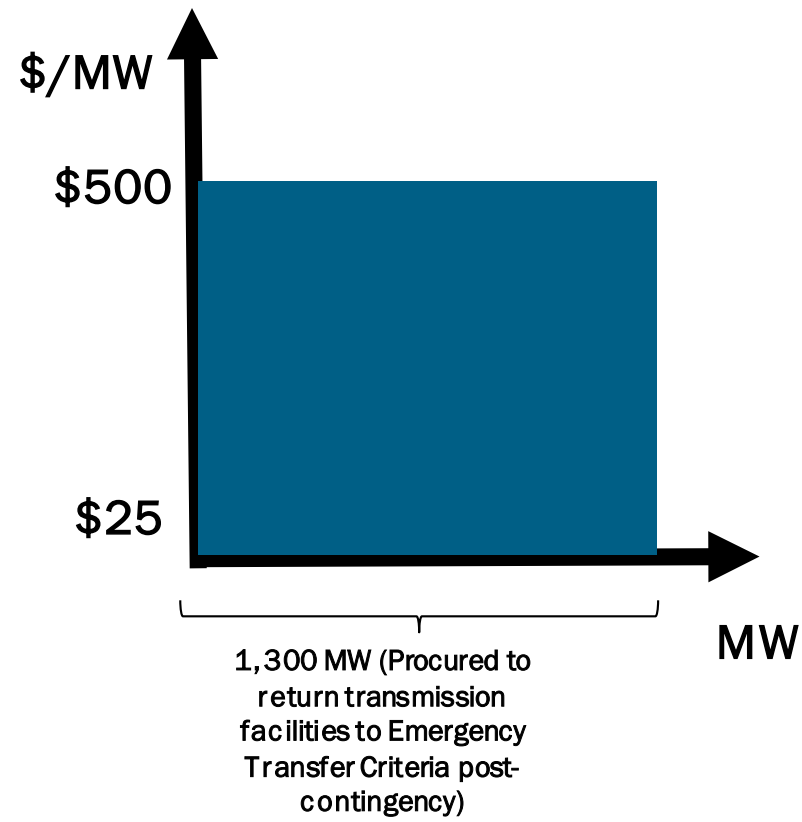
Hour(s)	Additional SENY Reserve (MW)	SENY 30-Minute Reserve Requirement (MW)
HB6	250	1,550
HB7 to HB21	500	1,800
HB22	250	1,550
HB23 to HB5	0	1,300

Updated Proposal

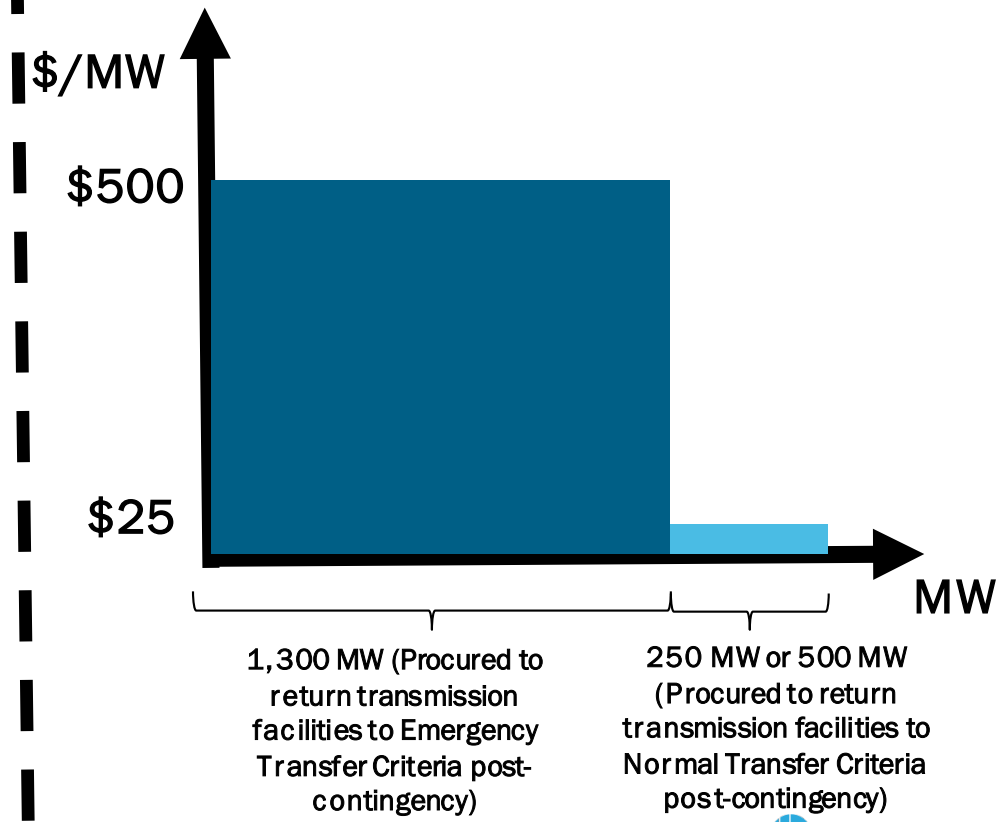
- **The NYISO will continue to monitor the effectiveness of the proposed hourly reserve requirements, and, if warranted, propose modifications in the future to meet changing system needs.**
- **The NYISO views its updated proposal as an incremental improvement toward a more dynamic procurement of reserves that is feasible to implement with the current technology available.**
 - The potential for a more dynamic procurement of reserves (including the feasibility thereof) is being considered as part of the “Reserve Enhancements for Constrained Areas” project being considered as part of the ongoing project prioritization process for 2021 projects.

Proposed SENY 30-Minute Reserve Demand Curve

Hours when SENY Requirement is 1,300 MW



Hours when SENY Requirement is 1,550 MW or 1,800 MW



Scarcity Pricing Logic

- **The NYISO proposes that the \$25/MW value for the additional 30-minute reserves in SENY be maintained during an SCR/EDRP activation for intervals when the additional requirement is applicable (i.e., during periods when the SENY 30-minute reserve requirement is 1,550 or 1,800 MW).**
 - Any Scarcity Reserve Requirement in SENY during these hours would be added to the \$500/MW “step” of the SENY 30-minute reserve demand curve.
 - This treatment is similar to the treatment of the East of Central-East reserve region during an SCR/EDRP activation.*
- **The SENY 30-minute reserve demand curve will continue to function as it does today during SCR/EDRP activations for intervals when the SENY 30-minute reserve requirement is 1,300 MW.**

*For further information on the treatment of the East of Central-East reserve region during an SCR/EDRP activation, see p.71-72 of the Ancillary Services Manual: <https://www.nyiso.com/documents/20142/2923301/ancserv.pdf/df83ac75-c616-8c89-c664-99dfea06fe2f>

Proposed Tariff Revisions

Updated Tariff Revisions

- **Updated revisions are proposed in Section 15.4.7(m) of the MST (Rate Schedule 4), which describes the SENY 30-minute reserve demand curves.**
 - The updated revisions reflect the addition of a new \$25/MW demand curve “step” for the proposed incremental reserve requirement and accounts for the proposal to utilize a time differentiated requirement.
 - The description of the reserve demand curves during various SCR/EDRP activations has also been revised to reflect the additional \$25/MW “step.”
- **Incremental changes to the proposed revisions reviewed at the April 22, 2020 ICAPWG/MIWG meeting are highlighted within the document posted as part of the meeting material.**

Next Steps

Next Steps

✓ April/May 2020

- ✓ Present Consumer Impact Analysis methodology.

✓ May/June 2020

- ✓ Continue to discuss proposal.
- ✓ Present Consumer Impact Analysis.

■ July 2020

- Seek stakeholder approval of proposal at BIC and MC.

■ 2021

- Currently targeted timeframe to develop the necessary software.

■ 2022

- Currently targeted timeframe to implement the proposed enhancements.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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



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