Market Design Concepts to Prepare for Significant Renewable Generation

Reserve Procurement for Resilience: Market Design Concept Proposal

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NEW YORK INDEPENDENT SYSTEM OPERATOR

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Agenda

- Background
- Reserve Procurement for Resilience
- Timeline
- Appendix: Example

Reserve Procurement for Resilience

"The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event."

-Federal Energy Regulatory Commission, Grid Resilience in Regional Transmission Organizations and Independent System Operators, January 8, 2018 (AD18-7-000)

Procuring reserves beyond the minimum reliability requirement could help the NYISO to absorb, adapt to, and/or rapidly recover from a disruptive event.

Expected Benefits

- **Additional reserves would provide NYISO Operations with more flexibility to respond to unforeseen grid conditions in RT.**
- **Pricing volatility was observed in the 2017 Market Assessment with increased renewable generation.***
  - Generally, quick increases or decreases in price provide valid price signals reflecting grid conditions.
  - Procuring more reserve at lower price points could provide more gradual price signals that still incent appropriate resource behavior.
  - Including more gradual steps within the reserve demand curve could help to smooth unnecessary pricing volatility associated with the anticipated increase in weather dependent renewable generation, while prices continue to appropriately reflect system conditions.
- **Providing resources with a reserve schedule incents those resources to take additional steps to prepare for conversion from reserve to energy.**
  - These steps, such as managing fuel and conducting maintenance, increase the likelihood that resources will be able to perform when called upon.

*See Integrating Public Policy: A Wholesale Market Assessment of the impact of 50% Renewable Generation, page 84, Figure 64: http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2017-12-20/2017%20Market%20Assessment%20with%2050%20percent%20Renewables,%20Report.pdf

Market Design Concept

- The NYISO proposes to develop a method to procure additional operating reserve above minimum requirements when cost effective.
  - A concept akin to the capacity market approach of procuring excess capacity through the Installed Capacity Demand Curves could be used to enhance existing operating reserve shortage pricing mechanisms.
- The additional reserve requirements would be included in both the DAM and RTM.
- Resilience reserve requirements could be in effect at all times, or increased with the greater likelihood of critical system conditions.

Enhancing Fuel and Energy Security

- In response to stakeholder feedback, the NYISO has proposed a resiliency risk study, which would consider fuel and energy security for the New York State grid looking over a ten year horizon.*
  - The NYISO has recommended that this study be prioritized for completion in 2019.

Link to the Resiliency Risk Study Proposal:
http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2018-05-30/07%20Resiliency%20Risk%20Study%20Proposal.pdf

Questions for the Market Design Complete Phase

- **The NYISO and its stakeholders should consider a number of additional questions if this project is prioritized for 2019:**
  - How should the benefits of additional reserve procurement be quantified?
  - How many additional MW of reserve should be procured?
  - Where should the additional reserve be procured?
  - When should the additional reserve be procured?
  - What shortage pricing levels should be used for the reserve demand curves?

NYISO Recommendation

- The NYISO recommends that stakeholders prioritize Reserve Procurement for Resilience for 2019.
- This project will help the NYISO to position for operational resilience of the system in the face of unforeseen events and the anticipated increase in weather dependent renewable generation.

2018	2019	2020	2021	2022	2023	Resource Flexibility	Grid Resilience	Price Formation
Market Design Concept Proposed	Market Design Complete	Functional Requirements	Development Complete	Deployment			X	X

Next Steps

Timeline

- **June 15, 2018**
  - Stakeholders receive final project prioritization survey.
- **June 26, 2018**
  - Deadline for stakeholders to submit project prioritization survey.
- **Q3 2018**
  - The NYISO will continue any prioritized projects.

Appendix: Example

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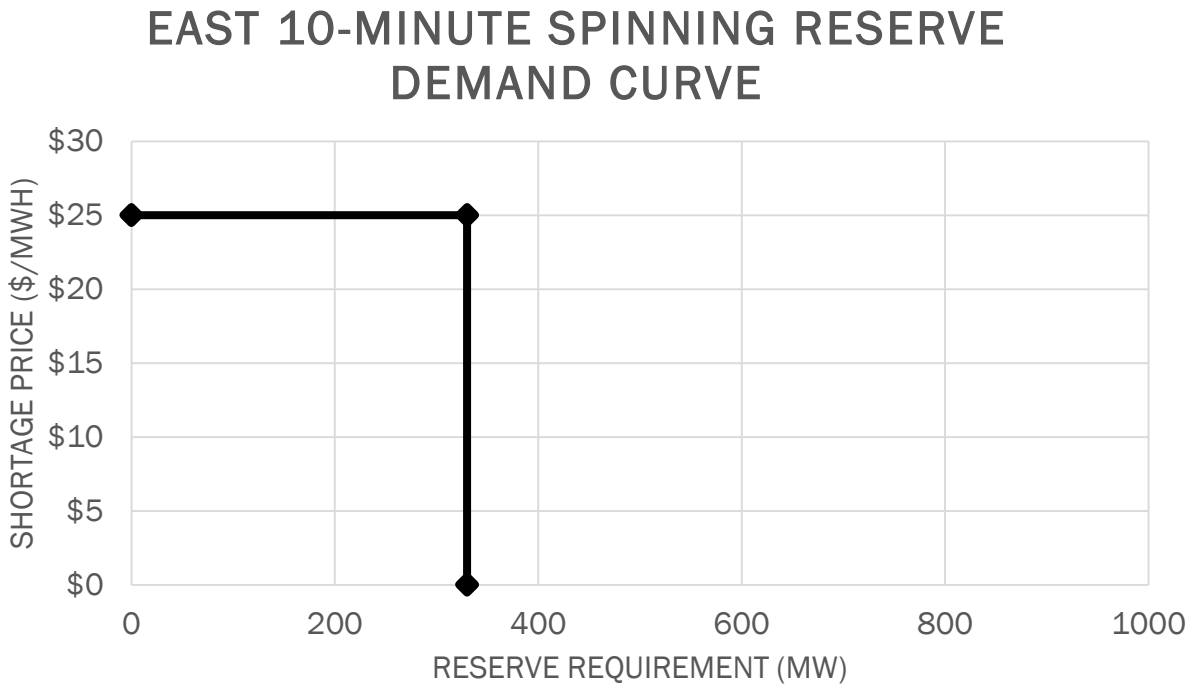
Example

- **The following example is for illustrative purposes only.**
  - Actual reserve products impacted, resilience reserve requirements, and shortage price values will have to be determined as part of the market design complete phase of this project.

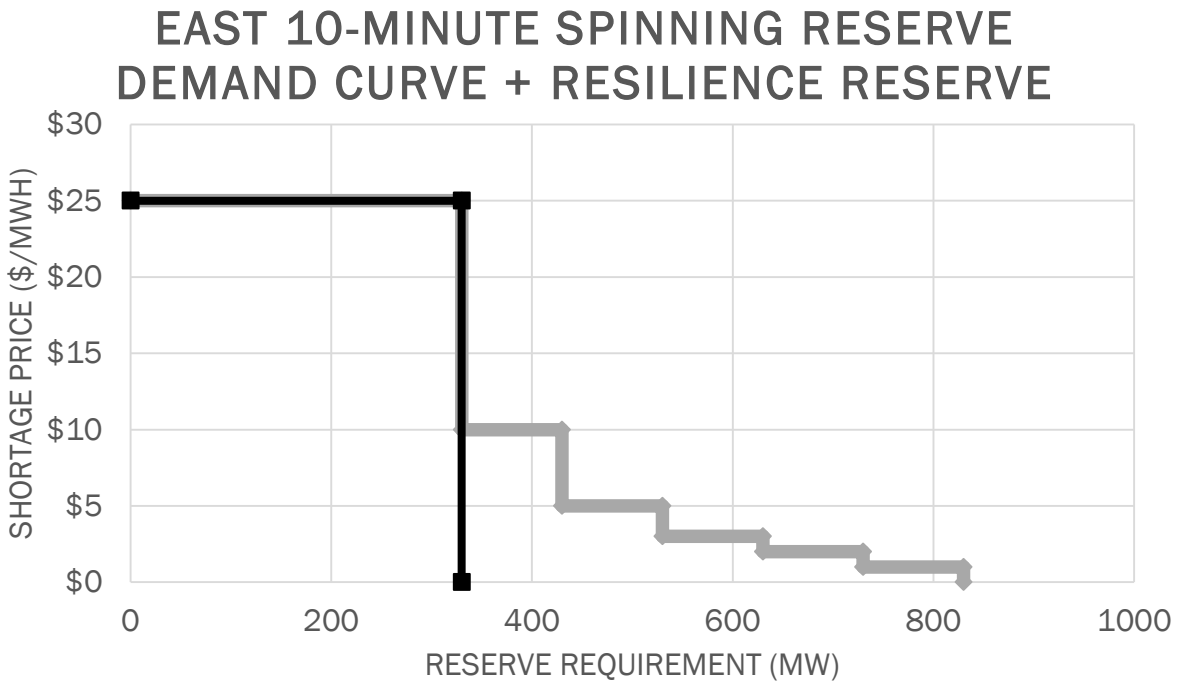
Example

- East 10 Minute Spinning Reserve Demand Curve
  - 330 MW at $25



Example

- East 10 Minute Spinning Reserve Demand Curve
  - 330 MW at $25
  - 100 MW at $10
  - 100 MW at $5
  - 100 MW at $3
  - 100 MW at $2
  - 100 MW at $1



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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