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Independent System Operator

Consumer Impact Analysis: Methodology for Ancillary Services Shortage Pricing

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Background

- **The Ancillary Services Shortage Pricing project consists of two components:**
  - Revisions to the current reserve demand curves
    - Adjustments to shortage pricing values
    - Additional "steps" for a more graduated demand curve for NYCA 30-minute reserves
  - Procuring additional reserves beyond the minimum reliability requirements as the amount of weather-dependent generation on the grid increases.
    - This concept was previously discussed as part of the Reserves for Resource Flexibility project
    - Procuring additional reserves for system uncertainty is now part of the Ancillary Services Shortage Pricing project.
- **The impact analysis is focused on the proposed revisions to the current demand curves as the procedures/processes and proposal for additional reserve procurement remains under consideration**

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Proposed Enhancements to Current Reserve Demand Curves

- The NYISO is proposing to increase the current $25/MWh reserve demand curve values to $40/MWh for all applicable products in reserve regions other than NYC and LI
- The NYISO is proposing to extend this increase to the incremental SENY 30-minute reserves (up to 500 MW depending on the hour) proposed to be procured under the Reserves for Resource Flexibility project
  - Additional details regarding this proposal were presented at the June 30, 2020 ICAPWG/MIWG meeting
- The NYISO is proposing additional pricing steps to smooth the relative magnitude of changes among the various pricing points for NYCA 30-minute reserve demand curve
  - The proposed values are detailed in Slides 4-5

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Overview of Proposed Enhancements

Reserve Region	Reserve Product	Reserve Reqt.	Demand curve ($/MWh)		Rationale
			Current	Proposed	
NYCA	30-minute	2,620 MW	300 MW at $25/MWh	200 MW at $40/MWh	Allow a portion of the 30 minute total reserves to be forgone against price volatility
			-	125 MW at $100/MWh	Facilitate reduction of unnecessary price volatility by further graduation of the NYCA 30-minute reserve demand curve
			355 MW at $100/MWh	55 MW at $175/MWh	Consistent with cost of operator actions to maintain 30-minute reserves (GT OOMs)
			-	55 MW at $225/MWh	Consistent with cost of operator actions to maintain 30-minute reserves (SREs)
			300 MW at $200/MWh	55 MW at $300/MWh	Facilitate reduction of unnecessary price volatility by further graduation of the NYCA 30-minute reserve demand curve
			-	55 MW at $375/MWh	Represents a value aligned with the average cost of 99% of the resource costs observed for historic SRE and OOM commitments
			-	55 MW at $500/MWh	Consistent with cost of activating SCR/EDRP resources to maintain reserves
			-	55 MW at $625/MWh	Facilitate reduction of unnecessary price volatility by further graduation of the NYCA 30-minute reserve demand curve
			1,665 MW at $750/MWh	1,965 MW at $750/MWh	Consistent with cost of operator actions to replenish by converting 30 min GTs to energy
NYCA	10 minute total	1,310 MW	$750/MWh	$750/MWh	Consistent with cost of operator actions to replenish by converting 30 min GTs to energy
NYCA	10 minute spin	655 MW	$775/MWh	$775/MWh	Provide scheduling priority to NYCA 10-minute total and NYCA 30-minute reserves
EAST	30-minute	1,200 MW	$25/MWh	$40/MWh	Facilitates distribution of reserves throughout NYCA
EAST	10 minute total	1,200 MW	$775/MWh	$775/MWh	Recognizes equal importance with NYCA 10-min spinning reserves
EAST	10 minute spin	330 MW	$25/MWh	$40/MWh	Facilitates distribution of reserves throughout NYCA

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Overview of Proposed Enhancements (cont'd)

Reserve Region	Reserve Product	Reserve Reqt.	Demand curve ($/MWh)		Rationale
			Current	Proposed	
SENY	30-minute	1,550 MW or 1,800 MW	250 MW or 500 MW at $25/MWh (proposed; pending stakeholder review/approval)	250 MW or 500 MW at $40/MWh (only if SENY incremental reserves proposal is approved by stakeholders)	Additional reserves to facilitate returning transmission assets to Normal Transfer Criteria following a contingency (see Reserves for Resource Flexibility project; 6/30/2020 ICAPWG/MIWG presentation)
			1,300 MW at $500/MWh	1,300 MW at $500/MWh	Consistent with cost of activating SCR/EDRP resources to maintain reserves
NYC	30-minute	1,000 MW	$25/MWh	$25/MWh	Facilitates distribution of reserves throughout NYCA
NYC	10-minute total	500 MW	$25/MWh	$25/MWh	Facilitates distribution of reserves throughout NYCA
LI	30-minute	270-540 MW	$25/MWh	$25/MWh	Facilitates distribution of reserves throughout NYCA
LI	10-minute total	120 MW	$25/MWh	$25/MWh	Facilitates distribution of reserves throughout NYCA

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Potential Benefits

- Setting shortage prices that are more consistent with operator actions helps in maintaining reliability.
- Re-runs conducted by the NYISO at $40/MWh enabled re-dispatch that resolved and/or minimized observed, historic shortages for various products at different locations (e.g., East spin, NYCA 30-minute)
- Further graduation of the NYCA 30-minute reserve demand curve could potentially reduce price volatility by providing the market software greater degrees of freedom to determine the least cost solution to meet system needs

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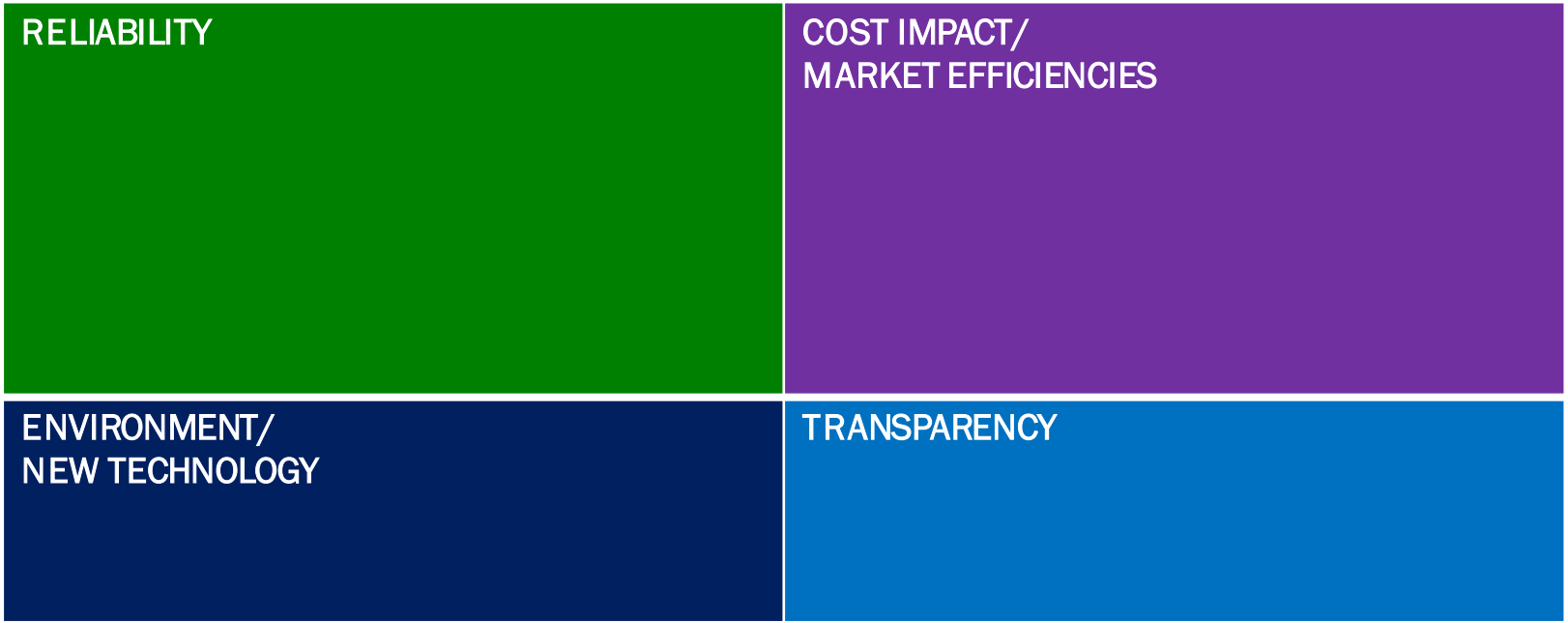
Consumer Impact Analysis (IA) Evaluation Areas

- Present the potential impact on all four evaluation areas



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Cost Impact Methodology – Energy Market Impact

- **Using the NYISO's market software, re-run select market intervals from the past year. The following revisions will be included in the market software re-runs:**
  - Incorporate the additional pricing steps to NYCA 30-minute demand curve among the various pricing points as shown in Slides 4 and 5
  - Increase the current $25/MWh value to $40/MWh for all applicable products in reserve regions other than NYC and LI
  - Increase the SENY 30-minute reserve requirement to 1,800 MW and assign a $40/MWh shortage pricing value to the incremental SENY 30-minute reserves; current 1,300 MW requirement will retain a shortage price value of $500/MWh.
- **Other considerations for the market software re-runs:**
  - Proposing to use data from the prior year to capture impacts as incremental to the implementation of the NYC reserve region in June 2019
  - Days selected for re-runs will be intended to be representative of shortage conditions that occasionally occur

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Cost Impact Methodology – Energy Market Impact

- **Compare prices from re-run cases to the original prices to determine price delta value(s) for periods with shortages.**
- **The price delta value(s) will be used to estimate the consumer impact due to changes in Day-Ahead Market (DAM) energy prices.**
  - Actual DAM energy prices for a one year period will be used to calculate the consumer impact due to changes in energy prices.
    - The price delta value(s) determined from the analysis will be applied to the actual, historic DAM prices to calculate adjusted DAM energy prices
  - The adjusted DAM energy prices will then be multiplied by the actual corresponding hourly demand in real-time during the historic one-year period when there were shortages
    - The result of this calculation will be summed to determine an estimated annual consumer impact due to changes in energy prices.

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Cost Impact Methodology –BPCG Impacts

- **The proposed reserve demand curve revisions may help reduce Bid Production Cost guarantee (BPCG) payments to resources.**
  - These revisions may potentially reduce or minimize the need for operator actions in response to contingencies and better align shortage pricing values with resource costs and the costs of actions taken by operators.
- **The Consumer Impact Analysis will seek to provide information regarding the potential impacts on BPCG payments.**

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Cost Impact Methodology - Capacity Market Impact

- **Using the 2020-2021 ICAP Demand Curve inputs and parameters, calculate revised net EAS revenue offset values and resulting reference price values to estimate the potential impact of the proposal on the ICAP Demand Curves**
  - Adjusted DAM and Real-Time Market LBMPs will be developed for each hour of year 3 of the historic three-year period used for the most recent annual update (9/1/2018 – 8/31/2019), using the results of the energy market impact analysis
    - Data for years 1 & 2 (9/1/2016 - 8/31/2018) will be retained and unadjusted
  - All other inputs and parameters of the annual update for the 2020-2021 Capability Year will be held constant
  - These new prices will be fed through the net EAS model to estimate revised net EAS revenue offset values; these revised values will be used to calculate revised reference price values for the 2020-2021 Capability Year ICAP Demand Curves
    - Note: the current peaking plant technology underlying each ICAP Demand Curve is a simple cycle F-Class frame unit

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Cost Impact Methodology - Capacity Market Impact

- **The NYISO will estimate both the short-term and long-term capacity market impacts of the proposal using the revised reference prices calculated for the 2020-2021 Capability Year ICAP Demand Curves**
  - Use the 2019 as-found system with the reference point values for the 2020-2021 ICAP Demand Curves as a "base case"
- **The short-term impact will use the revised reference prices calculated in the earlier analysis with no additional changes to generation or demand**
  - The impacts shown in the short-term may not be sustainable, as retirements and other changes could result from the reference price change. Potential impacts of market response to the changes in the references prices will be estimated in the long-term analysis, that assumes a supply level based on the historical level of excess

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Cost Impact Methodology - Capacity Market Impact

- **The long-term impact will use the same "base case" as the short-term analysis**
  - However, the supply stack in the base case will be adjusted to assume a historical level of excess
    - This is defined as a percentage of excess above the requirement observed within the last three Capability Years in each of the different Localities
  - The long-term change case will use the revised reference prices calculated in the earlier analysis together with the adjusted supply levels

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Other Impacts

- **Evaluate other Impacts:**
  - Reliability Impacts
  - Environmental Impacts
  - Impact on Transparency

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Feedback?

- Email additional feedback to: deckels@nyiso.com

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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