



# Consumer Impact Analysis: Ancillary Services Shortage Pricing

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# Background

- **The Ancillary Services Shortage Pricing project consists of two main 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 (“supplemental reserves”) as the amount of weather-dependent intermittent renewable generation on the grid increases.
    - This concept was previously discussed as part of the Reserves for Resource Flexibility project
    - Procuring supplemental 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.**
  - However, a separate analysis for the supplemental reserve procurement is included in the appendix.

# Proposed Enhancements to Current Reserve Demand Curves

- **The NYISO is proposing to increase the current \$25/MWh reserve demand curve step to \$40/MWh for all Operating Reserve products in reserve regions other than NYC and LI**
  - This includes applying the \$40/MWh reserve demand curve value to the additional 30-minute SENY reserves that were recently approved
- **The NYISO is also proposing additional pricing steps to smooth the relative magnitude of changes among the various pricing points for the NYCA 30-minute reserve demand curve**

# Potential Benefits

- **Setting shortage prices that are more consistent with operator actions helps in maintaining reliability.**
- **Improved graduation of the NYCA 30-minute reserve demand curve could improve energy market price formation and reduce unnecessary price volatility**

# Consumer Impact Analysis (IA) Evaluation Areas

- The potential impact on all four evaluation areas

## RELIABILITY

Setting shortage prices that are more consistent with operator actions helps in maintaining reliability

## COST IMPACT/ MARKET EFFICIENCIES

The potential short run energy market impact is estimated to be an increase of approximately \$5.6 million annually

The modest potential increase in energy prices results in a *de minimus* impact on capacity costs

## ENVIRONMENT/ NEW TECHNOLOGY

No impact expected

## TRANSPARENCY

No impact expected

# Potential Energy Market Impact

# Potential Consumer Impact Estimate

- **The potential short run consumer impact is estimated as an annual increase of \$5.6 million.**
  - The potential resulting impact on capacity market prices is minimal
    - A discussion of the potential estimated capacity market impact is included in this presentation.
  - Higher shortage pricing should generally lead to a reduction in Bid Production Cost guarantee (“BPCG”) payments in a competitive market.
    - The analysis performed did not simulate the re-run of an entire market day
    - This prevented being able to accurately estimate BPCG impacts, which is a daily settlement
    - However, we expect that BPCG payments will generally be lower as a result of this proposal
- **A separate analysis was completed that considered the NYISO’s proposal to establish a process to allow procurement of supplemental reserves when necessary in the future.**
  - This separate analysis is included within the appendix of this presentation.

# Energy Market Impact Assumptions

- **Using the NYISO's market software, re-ran select market intervals from the past year. The following revisions were included in the market software re-runs:**
  - Incorporated additional pricing steps to NYCA 30-minute demand curve among the various pricing points
  - Increased the current \$25/MWh value to \$40/MWh for all applicable products in reserve regions other than NYC and LI
  - Increased the SENY 30-minute reserve requirement to 1,800 MW and assigned a \$40/MWh shortage pricing value to the incremental SENY 30-minute reserves; a shortage price value of \$500/MWh was retained for the current 1,300 MW requirement
- **Other considerations for the market software re-runs:**
  - Used 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 were chosen to be representative of shortage conditions that occur, recognizing that the frequency of such conditions occurring is relatively low based on current system conditions



# Energy Market Impact Intervals

- **The following RTC intervals were used for the analysis, as these intervals featured Operating Reserve shortages:**
  - 7/26/2019 18:45
  - 8/18/2019 15:45
  - 10/2/2019 14:45

# Energy Market Approach

- Compared prices from re-run cases to the original prices to determine price delta value(s) for periods with shortages
- The price delta value(s) determined from the analysis were applied to the actual, historic DAM prices for hours during 2019 where there was an Operating Reserve shortage in at least one corresponding 15 minute RTC interval to calculate adjusted DAM energy prices
- The adjusted DAM energy prices were multiplied by the actual corresponding hourly demand in real-time during the historic one-year period when there was an Operating Reserve shortage in at least one 15 minute RTC interval during the applicable hour.
  - The result of this calculation was summed to determine an estimated annual consumer impact due to changes in energy prices.

# Energy Market - Potential Impact Estimate

- **The potential short run annual energy market impact is estimated at \$5.6 million.**
  - This value incorporates energy and ancillary services price impacts as described in previous slides.

# Potential Capacity Market Impact

# Capacity Market Impact Estimate: Assumptions

- **Using the 2020-2021 ICAP Demand Curve inputs and parameters, the NYISO calculated 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 RTM LBMPs were developed for each hour of “year 3” of the historic three-year study period used for the most recent annual update (9/1/2018 – 8/31/2019), using the results from the energy market analysis.
    - Data for years 1 & 2 (9/1/2016 - 8/31/2018) were retained and unadjusted
  - All other inputs and parameters of the annual update for the 2020-2021 Capability Year were held constant
    - Note: The current peaking plant technology underlying each ICAP Demand Curve is a simple cycle F-class frame turbine

# Capacity Market – Potential Impact Estimate

- **The potential impact on energy market prices is minimal.**
  - The net EAS revenue model thus produced minimal changes.

Zone	Net EAS Revenue Delta	Reference Price Delta
F – Capital	0.06	-0.01
G – Hudson Valley (Dutchess)	0.06	-0.01
J – New York City	0.07	-0.01
K – Long Island	0.11	-0.01

# Potential Capacity Market Impact Estimate

- The minimal change to the net EAS revenue offset values resulted in a minimal change in the resulting reference prices for the 2021-2020 ICAP Demand Curves.
- As a result, no potential impact was calculated for the capacity market.

# Additional Impacts



# Reliability Impacts

- **Setting shortage prices that are more consistent with operator actions helps in maintaining reliability**

# Environmental Impacts

- No impact expected

# Impact on Transparency

- No Impact Expected

# Appendix: Supplemental Reserve Requirements

# Supplemental Reserve Requirement Estimate Assumptions

- **Using the NYISO's market software, re-ran select SCUC days thought to reflect future system conditions of relatively low average prices with relatively high price volatility.**
  - These cases included all of the proposed revisions for the Ancillary Services Shortage Pricing project, modeled as described in this presentation.
  - Two cases were analyzed:
    - An increase in the NYCA 30-minute reserve requirement by 200 MW, an increase in the NYCA 10-minute total reserve requirement by 100 MW, and an increase in the NYCA 10-minute spinning reserve requirement by 50 MW
    - An increase in the NYCA 30-minute reserve requirement by 500 MW, an increase in the NYCA 10-minute total reserve requirement by 250 MW, and an increase in the NYCA 10-minute spinning reserve requirement by 125 MW
- **The following Day-Ahead Market days were used for the analysis:**
  - June 15, 2019
  - November 1, 2019

# Supplemental Reserve Requirement Estimate

## Approach

- Compared prices from re-run cases to the original prices to determine price delta value(s)
- The price delta value(s) were used to estimate the consumer impact based on changes in future Day-Ahead Market (DAM) energy prices.
  - The summer case prices were applied to the months of May through October, while the winter case prices were applied to the months of November through April to calculate the consumer impact due to changes in energy and ancillary services prices.
    - This approach served to simulate potential future grid conditions with increased weather dependent renewable entry, featuring prices that are lower on average, and more volatile, relative to today.
  - The adjusted energy prices were multiplied by the actual corresponding time-weighted integrated hourly demand in real-time during the historic one-year period for 2019.
  - The result of this calculation was summed to determine an estimated annual consumer impact due to changes in energy prices.

# Supplemental Reserve Requirement: Potential Consumer Impact Estimate

- **Results indicated that the potential consumer impact due to procuring the simulated supplemental reserve quantities under future system conditions may have a short run energy market impact of roughly \$9 million annual cost.**
  - Increased resource commitments to provide supplemental reserves have the potential to decrease marginal prices on some days
  - However, the short run impact is generally expected to result in a modest increase in prices, as the supplemental reserves would only be procured when system conditions indicate that such procurement is needed.
    - In the long run, price signals indicating the value of the supplemental reserves are intended to incent adequate reserve supply, which introduces downward pressure on prices.

# Feedback?

- Email additional feedback to: [deckels@nyiso.com](mailto:deckels@nyiso.com)



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