New York ISO
Independent System Operator

Maintenance Modeling Whitepaper: Final Recommendations

Max Kim

Associate Capacity Accreditation Engineer

ICS Meeting #318

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Background

- **The maintenance modeling whitepaper evaluates potential enhancements to planned maintenance derates and outages modeled in the IRM study.**
- **At the March 4, 2026 Installed Capacity Subcommittee (ICS) meeting,[1] the NYISO provided an overview of its maintenance outage management practices and timelines.**
  - Maintenance outages are evaluated weekly using seasonal capacity assessments and updated peak load and maintenance margin assessments.
  - During summer and winter peak months, outages are approved only when sufficient capacity margins preserve reliability; if conditions change, NYISO may cancel or reschedule approved outages.
- **At the March 31, 2026 ICS meeting,[2] the NYISO reviewed the use of the GE Multi-Area Reliability Simulation (MARS) program to model planned and forced outages and derates, providing a basis to evaluate alternative approaches and enhancements.**
  - Maintenance derating event types (D4, DM, and PD) are represented in the MARS Generator Transition Rate Matrices (GTRM), while planned and maintenance outage event types (PO, MO, etc.) are not included in the GTRM stochastic transition modeling.
- **At the June 3, 2026 ICS meeting,[3] the NYISO reviewed a proposed seasonal maintenance outage assessment and the NYISO's initial summer/winter modeling recommendations.**
  - Assessment used 5 years of historical planned outages during summer peak months (i.e. June, July and August) with durations greater than 7 days occurring when daily peak loads were ≥90% of the respective historical peak loads.
  - Initial recommendation: assign 25 MW of assumed maintenance outages to each of Load Zones G/J/K during both summer and winter for the 2027–2028 IRM study, with annual updates based on refreshed assessments for future study years.

1. ICS #314: Maintenance Modeling & Output Factor Curves: NYISO Outage Scheduling Process
2. ICS #315: Maintenance Modeling & Output Factor Curves: IRM & MARS Fundamentals
3. ICS #317: Maintenance Modeling & Output Factor Curves: Modeling Seasonal Generator Maintenance

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Updated Recommendations for the 2027-2028 IRM Study

Average 5-year Summer Maintenance Outage (MW) *Updated											
NYCA	A	B	C	D	E	F	G	H	I	J	K
65.0	10.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	15.0	25.0

- The NYISO recommends using a rolling five-year dataset and considering maintenance outages longer than seven days on days with load at or above 90% of coincident peak load.
  - For the 2027-2028 IRM study, the rolling five-year dataset consists of maintenance outages during the period of 2021-2025
- Based on ICS feedback, the updated recommendation is to round Load Zone maintenance outage values to the nearest 5 MW to preserve consistency with the NYISO's standardized zonal maintenance assignment approach for both Summer and Winter
  - Winter maintenance assumptions will be revisited as additional data reflecting updated outage scheduling practices becomes available.
- Updated recommendation for 2027-2028 IRM study: Model 65 MW of maintenance outages (allocated among Load Zones A, G, J and K as reflected in the table above) during peak summer (June–August) and peak winter (December–February) months.
  - The maintenance assumption will be updated during the development of Preliminary Base Case (PBC).
- A parametric assessment of updated seasonal maintenance assumptions using the 2026-2027 IRM FBC Special Sensitivity Case indicated an IRM impact of +0.066% with similar magnitude impacts on locational requirements, and an increase to winter LOLE risk (+0.90%).

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Future Process and Implementation

- **For future IRM study cycles, the NYISO recommends using a rolling five-year dataset of maintenance outages and load to inform the seasonal maintenance outage modeling assumptions.**
  - Summer Maintenance Assumptions:
    - Conduct maintenance outage assessments using qualifying high-load days (≥90% of coincident peak load forecast) during the peak summer period (June–August).
  - Winter Maintenance Assumptions:
    - Until sufficient representative winter maintenance outage data becomes available, apply summer-derived assumptions for winter peak period (December-February).
    - As sufficient representative historical data becomes available under improved winter outage scheduling practices and the firm fuel characteristic elections framework, develop analogous winter-specific high-load day assessments using data from the peak winter period (December–February).
    - Future winter analyses will also need to consider interactions between maintenance outages and winter fuel availability constraints model derates.

- **Additionally, the NYISO recommends continuing the current annual summer maintenance analysis in parallel with the rolling five-year approach to monitor year-to-year changes in recent maintenance outage trends.**
  - The current summer maintenance analysis will continue to review the prior year's reported planned and maintenance GADS events during the period June 1st to September 15th across NYCA.
    - While the data review is largely consistent with the maintenance modeling recommendation, the current summer maintenance analysis may exhibit greater year-to-year volatility, and capture more granular year-over-year changes using one-year of data compared to the review using a 5-year dataset
  - Subject to ICS discussion, sensitivity cases or potential adjustment (e.g., weighting approach that places greater emphasis on recent-year results) could be considered when there are significant differences between rolling five-year and single-year data.

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Next Steps

- Seek approval of the updated maintenance outage modeling recommendation at the July EC meeting.
- Subject to approval of the proposed maintenance outage modeling methodology, implement the final recommended maintenance assumptions in the 2027–2028 IRM PBC and evaluate resulting IRM impacts.

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Questions?

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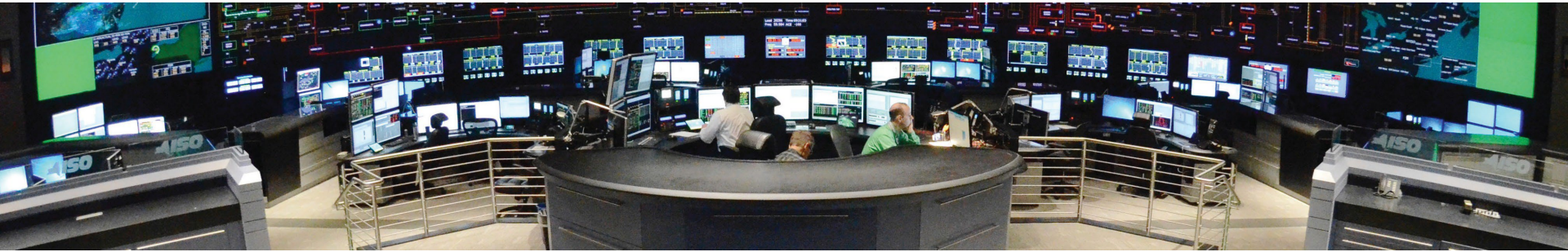
Our Mission and Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation



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