

Maintenance Modeling & Output Factor Curves: NYISO Outage Scheduling Process

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Background

- **The objective of this whitepaper is to assess potential enhancements to the planned maintenance derates and outages modeled for the 2027-2028 installed reserve margin (IRM) study.**
- **Currently only forced outages and 50 MW of planned summer maintenance (allocated equally between Load Zones J and K) are assumed to occur in the IRM study.**
 - With the increasing winter risks, renewable penetration and thermal resource deactivations, accurate planned maintenance modeling is critical to understand reliability risks in both the peak and shoulder seasons.
- **Today's presentation will provide an overview of NYISO's maintenance outage management practices and timelines**

NYISO's Outage Scheduling Process

Annual Maintenance Outage Scheduling

- **All Installed Capacity (ICAP) suppliers are required to abide by NYISO maintenance coordination, and all other generating resources are required to inform the NYISO of their annual maintenance plans.**
- **Annually resources submit their proposed maintenance outage schedule for the next two calendar years by September 1 of the current year.¹**
 - For example, by September 1, 2026, resources submit their proposed annual maintenance schedules for the 2027 and 2028 calendar years.
- **The NYISO performs a reliability assessment to determine whether, with the submitted maintenance outage schedules, seasonal capacity margins can be maintained²**
 - Capacity margins are calculated by taking the total projected seasonal capacity and subtracting the base load forecast, known maintenance outages, unplanned forced outages based on historical average unavailability, and the NYCA 30-minute reserve requirement (see Appendix for additional information).
 - The winter assessment also includes a loss of gas assumption during the winter peak months.
- **If deficiencies are projected for any week within the upcoming two-calendar-year period, the NYISO will request that resources voluntarily reschedule their proposed maintenance outages.**
 - If deficiencies remain after a request for voluntary rescheduling, the NYISO can invoke forced rescheduling of planned maintenance outages.
- **Annual maintenance outages can only be performed if approved by the NYISO and the local transmission owner.**

1. [Outage Scheduling Manual](#)

2. [NYISO Installed Capacity & Load Maintenance Survey](#)

Other Maintenance Scheduling

- **On a shorter term, resources may request the NYISO's approval for any additional maintenance outages.**
 - The NYISO enforces a two-day minimum advance notification period to request planned maintenance.
 - Any requests made with less than 2-days advance notice will be classified as a forced outage.
- **Capacity margins are calculated using best available data, including up to date power system information and load forecasts.**
- **Maintenance outages are reviewed in real time as power system conditions evolve to ensure capacity margins would not be violated as a result of an outage.**
 - If at the time of a previously approved maintenance outage, capacity margins are determined to be at risk of being violated, the NYISO may cancel the outage for rescheduling at a later date.
- **Any maintenance outage that takes effect but not approved by NYISO will be classified as forced outage.**

Maintenance Outages in GADS

- **Generator Availability Data System (GADS) data for the prior operating month must be submitted to NYISO by the 20th of the following month.**
 - For example, on or before May 20, 2026, resources shall report GADS data pertaining to their operations during the month of April 2026.
- **Only full or partial outages that have been reviewed and approved by the NYISO are eligible to be reported in GADS as “Planned” or “Maintenance” outage or derating event types.**
 - Planned and Maintenance event types do not affect the Equivalent Forced Outage Rate on demand (EFORd) used in the NYISO’s Installed Capacity (ICAP) market and are excluded from the Generator Transition Rate Matrices utilized in GE Multi-Area Reliability Simulation (MARS) modeling for the IRM study.

Next Steps

- **Return to a future ICS to review the modeling of maintenance within the GE MARS model.**

Questions?

Appendix

Capacity Margin Assessments

NYISO Installed Capacity & Load Maintenance Survey (NYISO website → Markets → Reports & Info → General Information → ICAP Gen Unit Maintenance Survey)

Available Reserve = Capability Contracts – Load Forecast (MW)

Reserves

Based on an amount equal to two times the operating capability loss caused by the most severe contingency observed under normal transfer criteria

Week Beginning	Total Capacity	SCR - ICAP Values	Load Forecast	Available Reserves	Known Maintenance	Unplanned Outages	Generation at Risk	Required Reserves	Net Margin
01/05/2025	38,480	0	24,825	13,655	1,050	2,377	6,494	2,620	1,114
01/12/2025	38,480	0	24,825	13,655	1,410	2,377	6,494	2,620	754
01/19/2025	38,480	0	24,825	13,655	1,702	2,377	6,494	2,620	462
01/26/2025	38,480	0	24,825	13,655	1,885	2,377	6,494	2,620	280
02/02/2025	38,480	0	24,825	13,655	1,886	2,377	6,494	2,620	278
02/09/2025	38,480	0	24,485	13,995	1,885	2,377	6,494	2,620	619
02/16/2025	38,480	0	24,235	14,245	1,595	2,377	6,494	2,620	1,159
02/23/2025	38,480	0	23,948	14,532	1,854	2,377	6,494	2,620	1,187
03/02/2025	38,480	0	23,572	14,908	5,857	2,377	0	2,620	4,054
03/09/2025	38,480	0	23,325	15,155	5,152	2,377	0	2,620	5,006
03/16/2025	38,480	0	22,736	15,744	6,463	2,377	0	2,620	4,284
03/23/2025	38,480	0	22,068	16,412	6,335	2,377	0	2,620	5,081
03/30/2025	38,480	0	21,508	16,972	8,034	2,377	0	2,620	3,940
04/06/2025	38,480	0	21,183	17,297	6,334	2,377	0	2,620	5,967
04/13/2025	38,480	0	21,044	17,436	7,333	2,377	0	2,620	5,106
04/20/2025	38,480	0	22,276	16,204	5,947	2,377	0	2,620	5,259
04/27/2025	38,480	0	23,744	14,736	4,061	2,377	0	2,620	5,678
05/04/2025	40,937	1,487	24,840	14,610	2,303	5,352	0	2,620	4,335
05/11/2025	40,937	1,487	26,140	13,310	2,239	5,352	0	2,620	3,099
05/18/2025	40,937	1,487	27,120	12,330	1,561	5,352	0	2,620	2,797
05/25/2025	40,937	1,487	28,050	11,400	1,254	5,352	0	2,620	2,174
06/01/2025	40,937	1,487	28,900	10,550	880	5,352	0	2,620	1,698
06/08/2025	40,937	1,487	29,748	9,702	587	5,352	0	2,620	1,143
06/15/2025	40,937	1,487	30,932	8,518	0	5,352	0	2,620	546

Generation at Risk

Value included to account for cold weather operations – reflects loss of non-firm gas supply, fuel delivery issues, and cold weather equipment issues related to extreme temperatures

Net Margin

Value of remaining capacity after the Special Case Resource (SCR) ICAP values, forecasted load, known maintenance, unplanned outages, generation at risk and reserve requirements are subtracted

1. <https://www.nyiso.com/documents/20142/3694424/InstCapLoadMaintSurvey-2024.pdf/10af6fd7-23f6-497c-8fa2-c95f0b396a64>

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

