New York ISO
Independent System Operator

2026-2027 IRM Study: Summer Maintenance Considerations

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NYISO

ICS Meeting #309

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Agenda

- Background
- Maintenance Observations
- Sensitivity Results
- Next Steps

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Background

Background

- **Currently, the Installed Reserve Margin (IRM) study models 50 MW of summer maintenance divided equally between Load Zones J and K (i.e., 25 MW is modeled for each zone)**
  - No other maintenance is currently modeled in the IRM study
  - The current 50 MW of summer maintenance assumption was recommended for continuation in the 2026-2027 IRM study based on the review of the most recent data*
    - This review observed a 362.7 MW daily average quantity of maintenance outages across all zones when load exceeded 28,000 MW during the 2024 summer period
- **During the Installed Capacity Subcommittee (ICS) meeting on 8/6/2025, the ICS expressed interest in exploring potential alternative maintenance modeling assumptions in the IRM model**
  - A sensitivity case was requested using the observed daily average of ~363 MW of maintenance outages during peak summer days when gross load exceeds 28,000 MW.
- **NYISO and NYSRC conducted additional analyses to determine an allocation of the alternative assumption of 363 MW of summer maintenance outages based on a review of historical data for the same period used as the most recent summer maintenance assessment (i.e., 6/1/2024-9/15/2024).**

*https://www.nysrc.org/wp-content/uploads/2025/08/2024-Summer-Maintenance-Analysis-Presentation.pdf

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Gross Load Above 28,000 MW

- For 2024, gross load exceeded 28,000 MW on 19 days (or 120 individual hours) between June 1 and September 15.

Date	Hours with gross load exceeding 28,000 MW (Hour Beginning)										
6/18/2024					14	15	16	17			
6/19/2024				13	14	15	16	17			
6/20/2024			12	13	14	15	16	17	18		
6/21/2024		11	12	13	14	15	16	17	18		
6/26/2024					14	15					
7/5/2024					14	15	16	17			
7/8/2024		11	12	13	14	15	16	17	18	19	
7/9/2024		11	12	13	14	15	16	17	18	19	
7/10/2024		11	12	13	14	15	16	17	18		
7/11/2024						15	16				
7/15/2024		11	12	13	14	15	16	17	18	19	
7/16/2024	10	11	12	13	14	15	16	17	18	19	
7/17/2024			12	13	14	15	16	17			
7/30/2024				13	14	15	16	17			
7/31/2024				13	14	15	16	17	18		
8/1/2024		11	12	13	14	15	16	17	18	19	20
8/2/2024		11	12	13	14	15	16	17			
8/5/2024				13	14	15	16	17			
8/28/2024					14	15	16	17			

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Maintenance Observations

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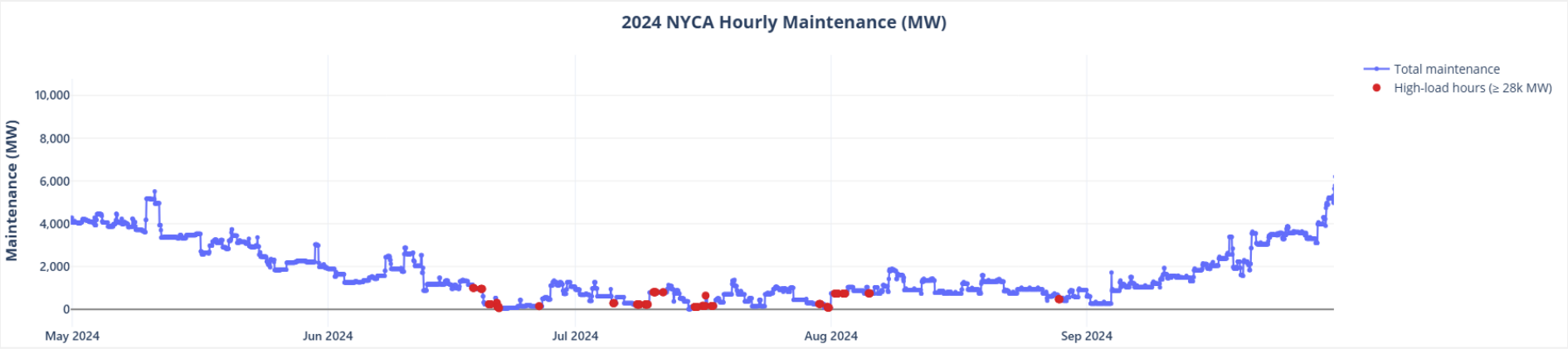
Maintenance Observations during Peak Hours

- A limited amount of maintenance appears to be occurring during hours when gross load exceeds 28,000 MW (i.e., peak load periods consistent with expectations of tighter operating conditions).



Zonal Allocation of Maintenance

- **The period June 1 to September 15 was reviewed for reported maintenance events. An event is only included if it occurs during peak hours on a day when gross load was above 28,000 MW (see Appendix for additional information).**
  - For example: If a 100MW unit is on maintenance from HB10-HB18 on a day when peak gross load exceeds 28,000MW during HB14-HB18 (i.e. the load was below 28,000 MW for the other 20 hours), 100 MW of maintenance is recorded for that day.
- **The NYISO found a total of 8,121 MW of total maintenance outages during the identified 19 days (see Slide 5).**
  - This is largely consistent with the result of the Summer 2024 maintenance assessment conducted by the NYSRC.
- **The distribution of these maintenance outages was used to allocate the potential alternative assumption of 363 MW of summer maintenance outages to all Load Zones.**
  - Load Zones not represented in the table below (i.e., Load Zones B, E, and I) were not allocated any maintenance outage MW for purposes of this sensitivity (i.e., the sensitivity modeled 0 MW of summer maintenance for these zones).
  - For this sensitivity, the previously modeled summer maintenance of 25 MW each in Load Zones J and K was not incorporated (i.e., the maintenance outage assumptions used for Load Zones J and K were the values identified in the table below).

Zone	Maintenance (MW)	Percent of total	Allocation Per Zone (MW)
A	326	4%	15
C	2,167	27%	97
D	79	1%	4
F	794	10%	35
G	3,635	45%	163
H	21	0.3%	1
J	252	3%	11
K	847	10%	38
Total	**8,121**	**100%**	**363**

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Sensitivity Results

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Sensitivity Results

- Using the parametric methodology, the NYISO conducted a sensitivity to assess the potential impact of using the 363 MW alternative assumption for summer maintenance for the 2026-2027 IRM preliminary base case (PBC)
  - The 2026-2027 IRM PBC used the 50 MW summer maintenance assumption (i.e., 25 MW each in Load Zones J and K)
- Compared to the 2026-2027 IRM PBC, the alternative summer maintenance assumption increased the IRM by 0.44%. The locational requirements (LCRs) also increased by a similar magnitude
  - Increasing the amount of planned maintenance during summer months has a corresponding impact on the July and August LOLE causing the IRM and LCRs to increase.
  - The A-K parametric solver methodology balances the MW distribution between upstate and downstate causing the Load Zone J and Load Zone K LCRs to increase.
- Compared to the 2026-2027 IRM PBC, the alternative summer maintenance assumption increased the observed summer LOLE by 2.53% with a corresponding decrease in the observed winter LOLE

Seasonal LOLE	PBC26-27 Tan45	Alternative Maintenance	Delta
Summer LOLE	86.16%	88.70%	2.53%
Winter LOLE	13.84%	11.30%	-2.53%
EOP Calls	7.48	7.49	0.01

Margin	PBC26-27 Tan45	Alternative Maintenance	Delta
IRM	27.30%	27.74%	0.44%
J LCR	80.62%	80.96%	0.34%
K LCR	106.92%	107.34%	0.42%
G-J LCR	89.72%	90.06%	0.34%

Monthly LOLE			
JAN	0.00851	0.00707	-0.00144
FEB	0.00058	0.00043	-0.00015
MAR	0.00000	0.00000	0.00000
APR	0.00000	0.00000	0.00000
MAY	0.00000	0.00000	0.00000
JUN	0.00026	0.00008	-0.00018
JUL	0.06550	0.06988	0.00438
AUG	0.01323	0.01379	0.00056
SEP	0.00696	0.00487	-0.00209
OCT	0.00000	0.00000	0.00000
NOV	0.00000	0.00000	0.00000
DEC	0.00470	0.00379	-0.00091

Next Steps

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Next Steps

- **Begin the whitepaper effort in 2026 to assess enhancements to maintenance modeling in the IRM model**
  - Effort will aim to align with NYISO and Transmission Owner Operations and Outage Scheduling practices.
  - Research to inform reasonable assumptions at various operating conditions such as season peaks, shoulder periods, and extreme load conditions.

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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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Questions?

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Appendix

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Review of NERC Cause Codes and Event Types

- **Cause codes removed from 2024 data**
  - 9300:Transmission system problems other than catastrophes, transmission limitations.
  - 3113: Condenser tube and water box cleaning (including circulating water flow reversal) which normally occurs late in the evening and completes in the early hours of the next day and not during peak hours. The 2024 dataset included cause code 3113, but it was observed that it only occurred for a few hours, late at night to early in the morning of the next day. This cause code will continue to be reviewed during future research and will not automatically be removed.

- **Overview of event types included from 2024 data**
  - Maintenance outage (MO): this is an outage that can occur any time during the year, has a flexible start date, may or may not have a predetermined duration.
  - Planned outage (PO); this is an outage that is scheduled well in advance and is of a predetermined duration, can last for several weeks, and occurs only once or twice a year.
  - Maintenance derate (D4): this is a derating event, which can have a flexible start date and may or may not have a predetermined duration.
  - Maintenance outage extension (ME): this is an extension of a maintenance outage (M0)
  - Maintenance derating extension (DM): this is an extension of a maintenance derate (D4)
  - Planned derate (PD): This is a derating that is scheduled well in advance and is of a predetermined duration.

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