

# Short-Term Assessment of Reliability: 2025 Q1 Margin Sensitivity Results

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April 7, 2025

### Agenda

- Base case Zone J summer transmission security margin results
- Recap Zone J summer transmission security margin sensitivities results
  - Zone J Demand Forecast Update
  - CHPE unavailability
  - Heatwaves
  - Generator unavailability
  - Thermal unit derate factors
- Next Steps



#### **Base Case Results**

- The margin within New York City in 2025 would be deficient by 281 MW for a duration of five hours on the summer peak day during expected weather conditions if the Gowanus and Narrows peaker generators are unavailable.
- Base Case assumptions consider 2024 Gold Book demand forecast, Narrows and Gowanus peaking units unavailable, CHPE in-service by summer 2026, NYPA small plant retirement at end of 2030, and NERC class average derates for thermal generation.

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Zone J High Demand Transmission Security Margin	(461)	209	160	30	(100)



## Zone J Summer Transmission **Security Margin Sensitivities**



#### **Purpose of Sensitivity Analysis**

 NYISO performed sensitivity analysis for the 2025 Q1 STAR Zone J transmission security margin to evaluate the impact of updated data, potential system changes, and potential assumptions changes.



#### **Evaluated Sensitivities**

- NYISO calculated the impact to the Zone J transmission security margin due to the following factors:
  - **1.** Updated Zone J demand forecast
  - 2. CHPE unavailability
  - 3. Heatwave conditions
  - 4. Generator unavailability
    - a. Unplanned failures of aging fossil-fuel generators
    - b. Accelerated planned retirements
  - 5. Thermal unit derate factors



# Table Formatting for the SubsequentSensitivities

- The Zone J transmission security margin (TSM) sensitivities are summarized in the following slides
- The impact of each sensitivity is shown in reference to:
  - The base case Zone J TSM
  - The Zone J TSM sensitivity with updated demand forecast
  - Results tables show the "Impact to margin", i.e. MW delta, of the sensitivity compared to the base case and then the resulting TSM for that sensitivity. Further details on calculation of sensitivity impacts are included in the Appendix.

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin					
В	Sensitivity Impact to Margin					
С	Zone J Transmission Security Margin including impact of sensitivity					
D	Zone J Baseline Transmission Security Margin with Updated Forecast					
Е	Sensitivity Impact to Margin					
F	Zone J Transmission Security Margin with Updated Forecast including impact of sensitivity					



#### **Updated Zone J Forecast**

 Reflects preliminary 2025 Gold Book Zone J summer peak demand forecast

Comparison of 2024 Zone J Goldbook Forecast and 2025 Preliminary Zone J Forecast									
Item	2025	2026	2027	2028	2029				
Zone J Baseline Demand Forecast (2024 Goldbook) (MW)	10,960	10,990	11,020	11,040	11,050				
Zone J Baseline Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,764	10,790	10,820	10,840	10,860				
Impact (MW)	196	200	200	200	190				
Item	2025	2026	2027	2028	2029				
Zone J High Demand Forecast (2024 Goldbook) (MW)	11,140	11,270	11,400	11,530	11,660				
Zone J High Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,800	10,920	11,040	11,170	11,330				
Impact (MW)	340	350	360	360	330				

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Updated Zone J Forecast Impact	196	200	200	200	190
С	Zone J TSM Updated Forecast Sensitivity (A+B)	(85)	689	740	720	700
D	Zone J High Demand Transmission Security Margin	(461)	209	160	30	(100)
E	Updated Zone J High Demand Forecast Impact	340	350	360	360	330
F	Zone J TSM Updated High Demand Forecast Sensitivity (D+E)	(121)	559	520	390	230

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#### **CHPE Delay or Unavailability**

 Reflects unavailability of CHPE, or the delay of the CHPE inservice date

Line	Item	2025	2026	2027	2028	2029
А	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	CHPE Unavailability Impact	0	(800)	(800)	(800)	(800)
С	Zone J TSM CHPE Out Sensitivity (A+B)	(281)	(311)	(260)	(280)	(290)
D	Zone J Baseline TSM with Updated Forecast	(85)	689	740	720	700
Е	CHPE Unavailability Impact	0	(800)	(800)	(800)	(800)
F	Zone J TSM with Updated Forecast and CHPE Out Sensitivity (D+E)	(85)	(111)	(60)	(80)	(100)



#### **Heatwave Conditions**

 Reflects the impact of heatwave (98 degrees Fahrenheit) or extreme heatwave (102 degrees Fahrenheit) conditions

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Heatwave Impact	(208)	(209)	(210)	(211)	(211)
С	Zone J TSM Heatwave Sensitivity (A+B)	(489)	280	331	310	300
D	Extreme Heatwave Impact	(721)	(724)	(726)	(727)	(728)
Е	Zone J TSM Extreme Heatwave Sensitivity (A+D)	(1,002)	(235)	(185)	(206)	(217)
F	Zone J TSM Updated Forecast Sensitivity	(85)	689	740	720	700
G	Updated Forecast Heatwave Impact	(202)	(203)	(204)	(205)	(205)
Н	Zone J TSM Updated Forecast Heatwave Sensitivity (F+G)	(287)	486	537	516	496
1	Updated Forecast Extreme Heatwave Impact	(707)	(709)	(711)	(712)	(714)
J	Zone J TSM Updated Forecast Extreme Heatwave Sensitivity (F+I)	(792)	(20)	30	9	(13)



### **Aging Fossil Fleet**

- Reflects additional fossil-fuel generation deactivations based on age<sup>1</sup>
- Units older than the age at which 95% of similar capacity has been deactivated nationally
  - 62 years for fossil steam turbines
  - 47 years for gas turbines

	Zone J Units Reaching Critical Age											
Year	2025	2026	2027	2028	2029							
	East River 6	Ravenswood ST 01		Ravenswood ST 03								
	Astoria 2	Ravenswood ST 02										
1 In ite	East River 7											
Units	Astoria 3											
	Arthur Kill ST 2											
	Astoria 5											
Capability (MW)	1,593	742	0	987	0							
Running Total (MW)	1,593	2,335	2,335	3,323	3,323							

1. Unit ages are determined from the in-service dates listed in the NYISO Gold Book Table 3-2a

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Aging Fossil Fleet Impact	(1,426)	(2,090)	(2,090)	(2,974)	(2,974)
С	Zone J TSM Aging Fossil Fleet Sensitivity (A+B)	(1,707)	(1,601)	(1,550)	(2,454)	(2,464)
D	Zone J Baseline TSM with Updated Forecast	(85)	689	740	720	700
D E	Zone J Baseline TSM with Updated Forecast Aging Fossil Fleet Impact	(85) (1,426)	689 (2,090)	740 (2,090)	720 (2,974)	700 (2,974)
D E F	Zone J Baseline TSM with Updated Forecast Aging Fossil Fleet Impact Zone J TSM with Updated Forecast Aging Fossil Fleet Sensitivity (D+E)	(85) (1,426) (1,511)	689 (2,090) (1,401)	740 (2,090) (1,350)	720 (2,974) (2,254)	700 (2,974) (2,274)



#### **NYPA Small Plant Retirements**

 Assumes the potential accelerated retirement of all NYPA small natural gas power plants

	NYPA Small GTs (Zone J) Age <sup>1</sup>										
nit Name	In-Service Date	Nameplate (MW)	Summer Capability (MW)	Unit Age (Years)							
Gowanus 5	2001-08-01	47.0	40.0	24							
Gowanus 6	2001-08-01	47.0	39.9	24							
Kent	2001-08-01	47.0	46.0	24							
Pouch	2001-08-01	47.0	45.4	24							
Hellgate 1	2001-08-01	47.0	39.9	24							
Hellgate 2	2001-08-01	47.0	39.6	24							
Harlem River 1	2001-08-01	47.0	39.9	24							
Harlem River 2	2001-08-01	47.0	39.6	24							
Vernon Blvd 2	2001-08-01	47.0	40.0	24							
Vernon Blvd 3	2001-08-01	47.0	39.9	24							

1. Unit ages can be determined with in-service dates listed in the NYISO Gold Book Table 3-2a

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Accelerated Retirements Impact	(367)	(367)	(367)	(367)	(367)
С	Zone J TSM Accelerated Sensitivity (A+B)	(648)	122	173	153	143
D	Zone J Baseline TSM with Updated Forecast	(85)	689	740	720	700
E	Accelerated Retirements Impact	(367)	(367)	(367)	(367)	(367)
F	Zone J TSM with Updated Forecast Accelerated Retirements Sensitivity (D+E)	(452)	322	373	353	333



#### **Thermal Unit Derate Factor**

- Stakeholders have raised concerns about different assumptions used in the markets and planning studies, especially related to thermal derates and contribution of 9300 events (generator outages due to transmission system problems)
- Sensitivities were performed to evaluate potential alternatives to the Transmission Security Margin methodology using generator outage rates considering sample New York specific data and 9300-code events
  - NERC Class Average EFORd with an offset to account for New York average contribution of 9300 events
  - NYCA Zonal Average EFORd (accounts for 9300 outage cause-code)
    - Zone J 5-Year
    - Zone J 10-Year

Method	Zone J Avg EFORd	Zone J Total EFORd (MW)
NERC Class Avg	7.87%	(642)
NERC Class Avg with 9300 Offset*	5.37%	(442)
NYCA Zonal 5-year Avg (accounts for 9300)*	3.26%	(260)
NYCA Zonal 10-year Avg (accounts for 9300)*	5.34%	(429)
*Preliminary estimates of outages rates used for	r illustrative purpos	ses.



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\*Preliminary estimates of outages rates used for illustrative purposes.

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	NERC EFORd with 9300 Offset Impact	200	200	200	200	200
С	Zone J TSM 9300 Offset Impact Sensitivity (A+B)	(81)	689	740	720	710
D	Zone J 5-Year EFORd Impact	382	382	382	382	382
E	Zone J TSM 5-Year EFORd Sensitivity (A+E)	101	871	922	902	892
F	Zone J 10-Year EFORd Impact	213	213	213	213	213
G	Zone J TSM 10-Year EFORd Sensitivity (A+F)	(68)	702	753	733	723
Н	Zone J Baseline TSM with Updated Forecast	(85)	689	740	720	700
1	NERC EFORd with 9300 Offset Impact	200	200	200	200	200
J	Zone J TSM with Updated Forecast 9300 Offset Impact Sensitivity (H+I)	115	889	940	920	900
K	Zone J 5-Year EFORd Impact	382	382	382	382	382
L	Zone J TSM with Updated Forecast 5-Year EFORd Sensitivity (H+K)	297	1,071	1,122	1,102	1,082
М	Zone J 10-Year EFORd Impact	213	213	213	213	213
Ν	Zone J TSM with Updated Forecast 10-Year EFORd Sensitivity (H+M)	128	902	953	933	913



#### **Zone J TSM Sensitivities Comparison**



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#### **Combined Uncertainty Impacts**

- The impact of each sensitivity can be added to the base case
   Zone J TSM results to see how the margin would change
  - Several sensitivities can be considered concurrently
- Two combinations of sensitivities are provided as samples of the compounding effect of uncertainty

1. Updated load forecast + NYCA Zonal 10-year EFORd + CHPE unavailability + accelerated NYPA small plant retirements for baseline and high demand

2. Updated load forecast + NYCA Zonal 10-year EFORd + unplanned fossil fleet unavailability for baseline and high demand



#### Sensitivity Combination 1

#### Updated load forecast + NYCA Zonal 10-year EFORd + CHPE unavailability + accelerated NYPA small plant retirements for baseline and high demand

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Updated Zone J Forecast Impact	196	200	200	200	190
С	Zone J 10-Year EFORd Impact	213	213	213	213	213
D	CHPE Unavailability Impact	0	(800)	(800)	(800)	(800)
Е	Accelerated NYPA Small Plant Retirement Impact	(388)	(388)	(388)	(388)	(388)
F	Zone J Baseline Transmission Security Margin - Sensitivity Combination 1	(260)	(286)	(235)	(255)	(275)
G	Updated Zone J Forecast High Demand Impact	(36)	(130)	(220)	(330)	(470)
Н	Zone J High Demand Transmission Security Margin - Sensitivity Combination ${f 1}$	(296)	(416)	(455)	(585)	(745)



#### Sensitivity Combination 2

#### Updated load forecast + NYCA Zonal 10-year EFORd + unplanned fossil fleet unavailability for baseline and high demand

Line	Item	2025	2026	2027	2028	2029
Α	Zone J Baseline Transmission Security Margin	(281)	489	540	520	510
В	Updated Zone J Forecast Impact	196	200	200	200	190
С	Zone J 10-Year EFORd Impact	213	213	213	213	213
D	Aging Fossil Fleet Impact	(1,508)	(2,211)	(2,211)	(3,145)	(3,145)
E	Zone J Baseline Transmission Security Margin - Sensitivity Combination 2	(1,380)	(1,309)	(1,257)	(2,212)	(2,232)
F	Updated Zone J Forecast High Demand Impact	(36)	(130)	(220)	(330)	(470)
G	Zone J High Demand Transmission Security Margin - Sensitivity Combination 2	(1,416)	(1,439)	(1,477)	(2,542)	(2,702)



#### **Other Considerations**

- Recent operation experience has highlighted the importance of the Gowanus & Narrows barges to winter operability
- ConEd has identified local non-BPTF deficiencies in the Greenwood TLA which require the Gowanus & Narrows barges to remain in-service until a 4<sup>th</sup> Gowanus-Greenwood PAR enters service (expected summer 2026)



## **2025 Q1 STAR Sensitivities Takeaways**

- The baseline Zone J Summer transmission security margin identifies a reliability need:
  - The NYISO's designation of the Gowanus 2 & 3 and Narrows 1 & 2 generators to allow their continued operation beyond May 2025 continues to be necessary to address the reliability need identified in the 2023 Quarter 2 STAR until the earlier of May 1, 2027, or the date a permanent solution is in place and a reliability need does not exist.
- Sensitivities show significant reliability risks due to uncertainty pertaining to factors like weather, additional or accelerated generation unavailability, or the delay/unavailability of CHPE.
  - The CHPE line must enter full commercial service and demonstrate that it is capable of being operated to address the reliability needs identified in the 2023 Q2 STAR.
  - Additionally, ConEd's local non-BPTF analysis identifies that until the 4th Gowanus Greenwood 345/138 kV PAR controlled feeder is placed into service, the Narrows and Gowanus barges would be required to be in-service.



#### **Next Steps**

- NYISO will post the 2025 Q1 STAR report by April 14<sup>th</sup>
- To the extent possible, NYISO will update the base case assumptions used for the Transmission Security Margin calculations in the 2025 Q2 STAR including:
  - Updated inclusion rules
  - Demand forecasts as published in the 2025 Gold Book
  - Generator capabilities as published in the 2025 Gold Book
  - Updated calculations of imports into localities
- The NYISO will continue to consider modification to Transmission Security assumptions in Q2 STAR and 2025-2034 CRP.



#### **Our Mission & Vision**

 $\checkmark$ 

#### **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



# Appendix



### Margin Impact Calculation: Updated Forecast Sensitivity

Comparison of 2024 Zone J Goldbook Forecast and 2025 Preliminary Zone J Forecast									
Item	2025	2026	2027	2028	2029				
Zone J Baseline Demand Forecast (2024 Goldbook) (MW)	10,960	10,990	11,020	11,040	11,050				
Zone J Baseline Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,764	10,790	10,820	10,840	10,860				
Impact (MW)	196	200	200	200	190				
Item	2025	2026	2027	2028	2029				
Zone J High Demand Forecast (2024 Goldbook) (MW)	11,140	11,270	11,400	11,530	11,660				
Zone J High Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,800	10,920	11,040	11,170	11,330				
Impact (MW)	340	350	360	360	330				



#### Margin Impact Calculation: CHPE Unavailability Sensitivity

Item	2025	2026	2027	2028	2029
Base Case I+K to J	3,900	4,700	4,700	4,700	4,700
CHPE Unavailability Sensitivity I+K to J <sup>1</sup>	3,900	3,900	3,900	3,900	3,900
Difference (MW)	0	800	800	800	800
Base Case Loss of Source Contingency	(987)	(2,237)	(2,237)	(2,237)	(2,237)
CHPE Unavailability Sensitivity Loss of Source Contingency	(987)	(987)	(987)	<mark>(987)</mark>	(987)
Difference (MW)	0	(1,250)	(1,250)	(1,250)	(1,250)
Base Case Net ICAP External Imports	315	1,565	1,565	1,565	1,565
CHPE Unavailability Sensitivity Net ICAP External Imports	315	315	315	315	315
Difference (MW)	0	1,250	1,250	1,250	1,250
CHPE Unavailability Sensitivity Impact (MW)	0	(800)	(800)	(800)	(800)
1 Impact on margin reflects the changing limiting contingencies for the studied conditions with an					



### Margin Impact Calculation: Aging Fossil Fleet Sensitivity

Item	2025	2026	2027	2028	2029
Base Case J Generation	8,104	8,104	8,920	8,920	8,920
Aging Fossil Fleet Sensitivity J Generation	6,511	5,769	6,585	5,597	5,597
Difference (MW)	1,593	2,335	2,335	3,323	3,323
Base Case J Generation Derates	(642)	(642)	(1,377)	(1,377)	(1,377)
Aging Fossil Fleet Sensitivity J Generation Derates	(475)	(397)	(1,132)	(1,028)	(1,028)
Difference (MW)	(167)	(245)	(245)	(349)	(349)
Aging Fossil Fleet Sensitivity Impact (MW)	1,426	2,090	2,090	2,974	2,974
Note: I+K to J was not recalculated following the assumed unavailability of specific aging genera	tion units.				



#### Margin Impact Calculation: Accelerated Retirements Sensitivity

ltem	2025	2026	2027	2028	2029
Base Case J Generation	8,104	8,104	8,920	8,920	8,920
Accelerated Retirements Sensitivity J Generation	7,694	7,694	8,510	8,510	8,510
Difference (MW)	410	410	410	410	410
Base Case J Generation Derates	(642)	(642)	(1,377)	(1,377)	(1,377)
Accelerated Retirements Sensitivity J Generation Derates	(599)	(599)	(1,334)	(1,334)	(1,334)
Difference (MW)	(43)	(43)	(43)	(43)	(43)
Accelerated Retirements Sensitivity Impact (MW)	367	367	367	367	367



#### Margin Impact Calculation: Heatwave Sensitivity

Item	2025	2026	2027	2028	2029
Zone J Baseline Demand Forecast (2024 Goldbook) (MW)	10,960	10,990	11,020	11,040	11,050
Zone J Heatwave Demand Forecast (2024 Goldbook) (MW)	11,324	11,355	11,386	11,407	11,417
Difference (MW)	(364)	(365)	(366)	(367)	(367)
Heatwave Temperature Based Derates	(82)	(82)	(82)	(82)	(82)
SCRs	238	238	238	238	238
Impact (MW)	(208)	(209)	(210)	(211)	(211)
Zone J Baseline Demand Forecast (2024 Goldbook) (MW)	10,960	10,990	11,020	11,040	11,050
Zone J Extreme Heatwave Demand Forecast (2024 Goldbook) (MW)	11,776	11,809	11,841	11,862	11,873
Difference (MW)	(816)	(819)	(821)	(822)	(823)
Extreme Heatwave Temperature Based Derates	(143)	(143)	(143)	(143)	(143)
SCRs	238	238	238	238	238
Impact (MW)	(721)	(724)	(726)	(727)	(728)
Item	2025	2026	2027	2028	2029
Zone J Baseline Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,764	10,790	10,820	10,840	10,860
Zone J Heatwave Demand Forecast (Preliminary 2025 Goldbook) (MW)	11,122	11,149	11,180	11,201	11,221
Difference (MW)	(358)	(359)	(360)	(361)	(361)
Heatwave Temperature Based Derates	(82)	(82)	(82)	(82)	(82)
SCRs	238	238	238	238	238
Impact (MW)	(202)	(203)	(204)	(205)	(205)
Zone J Baseline Demand Forecast (Preliminary 2025 Goldbook) (MW)	10,764	10,790	10,820	10,840	10,860
Zone J Extreme Heatwave Demand Forecast (Preliminary 2025 Goldbook) (MW)	11,566	11,594	11,626	11,647	11,669
Difference (MW)	(802)	(804)	(806)	(807)	(809)
Extreme Heatwave Temperature Based Derates	(143)	(143)	(143)	(143)	(143)
SCRs	238	238	238	238	238
Impact (MW)	(707)	(709)	(711)	(712)	(714)

Note: SCR values have not been updated with the Preliminary 2025 Goldbook values. Temperature based derates have not been updated since the 2024 RNA.

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#### Margin Impact Calculation: Thermal Unit Derate Sensitivities

Item	Zone J Average EFFORd %	2025	2026	2027	2028	2029
Base Case J Generation Derates (NERC Class Average)	7.87%	(642)	(642)	(642)	(642)	(642)
NERC EFORd with 9300 Offset Sensitvity Derates	5.37%	(442)	(442)	(442)	(442)	(442)
NERC EFORd with 9300 Offset Sensitivity Impact (MW)	2.50%	200	200	200	200	200
Base Case J Generation Derates (NERC Class Average)	7.87%	(642)	(642)	(642)	(642)	(642)
Zone J 5-Year EFORd Sensitvity Derates	3.26%	(260)	(260)	(260)	(260)	(260)
Zone J 5-Year EFORd Sensitivity Impact (MW)	4.61%	382	382	382	382	382
Base Case J Generation Derates (NERC Class Average)	7.87%	(642)	(642)	(642)	(642)	(642)
Zone J 10-Year EFORd Sensitvity Derates	5.34%	(429)	(429)	(429)	(429)	(429)
Zone J 10-Year EFORd Sensitivity Impact (MW)	2.53%	213	213	213	213	213

