New York ISO
Independent System Operator

LOCATIONAL MINIMUM INSTALLED CAPACITY REQUIREMENTS STUDY

For the 2023–2024 Capability Year

Approved by NYISO OC, January 23, 2023

I. Recommendation

This report documents a study conducted by the New York Independent System Operator ("NYISO") to determine Locational Minimum Installed Capacity Requirements ("LCRs") for the Localities of New York City (Load Zone J), Long Island (Load Zone K), and the G-J Locality (Load Zones G, H, I, and J) for the 2023–2024 Capability Year beginning May 1, 2023.

The New York State Reliability Council ("NYSRC") approved the 2023–2024 Installed Reserve Margin ("IRM") at 20.0% on December 9, 2022. The NYISO then determined the LCRs using the IRM study database and the approved IRM.

Based on the NYSRC IRM study base case for the 2023–2024 Capability Year, and the approved IRM identified above, the NYISO's calculations result in a New York City LCR of 81.7%, a Long Island LCR of 105.2%, and a G-J Locality LCR of 85.4%.

IRM	J LCR	K LCR	G-J LCR
20.0%	81.7%	105.2%	85.4%

II. LCR Values

As its starting point, the NYISO LCR study utilized the New York Control Area ("NYCA") IRM study directed by the NYSRC. The IRM study information is available on the NYSRC web site.[1] The final 2023 IRM Study base case maintains the Loss of Load Expectation ("LOLE") criterion at no more than 0.1 Event-Days/year with a statewide reserve margin of 19.9% and corresponding preliminary locational requirements of 78.2% and 107.4% for NYC and LI, respectively.

The NYISO follows the Locational Minimum Installed Capacity Requirements Determination Process to develop the LCRs for Zone J, Zone K, and the G-J Locality.[2] Pursuant to this procedure, the IRM study database is adjusted to the approved IRM (20.0%), and the target LOLE is the lesser of 0.1 Event-Days/year and the LOLE that results from the adjusted database. The adjusted database corresponding to the approved 20.0% IRM resulted in a decrease in the LOLE, leading to the target LOLE for this year's LCR study at 0.098 Event-Days/year.

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[1] https://www.nysrc.org/NYSRC_NYCA_ICR_Reports.html

[2] https://www.nyiso.com/documents/20142/21537892/LCR-determination-process-2021.pdf/1bac4189-7bc1-5aa5-a00d-4f178074b5e8

III. Changes from Previous (1/13/2022) LCR report

Three major modeling and assumption changes were implemented in the base case of this year's IRM study: the adoption of the GE ELR functionality[3], reserving 350 MW of Operating Reserve for load shedding[4], and updating the underlying load shapes in the IRM model[5]. On top of these modeling and assumption changes, this year's LCR study base case also reflects the deactivation of 1,205.2 MW of thermal units largely due to the New York State Department of Environmental Conservation (DEC) "Peaker Rule", as well as the addition of 539.3 MW of new wind capacity[6].

In addition to the changes in the base case, this year's Transmission Security Limit ("TSL") methodology was also updated to include generator outage rates as an input to the calculation, to be aligned with the Transmission Security Margin methodology in NYISO's planning study.[7]

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[3] May 4th ICS Presentation:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20260/A.I.%207.1%20-%20ELR%20Modeling%20_ICS[4803].pdf

[4] March 29th ICS Presentation:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20259/A.I.9-Operating_Reserve_Study_Results_ICS03292022_V4[4097].pdf

[5] September 14th ICS Presentation:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20266/IRM23_New_Load_Shape_Sensitivity_ICS_09142022[7888].pdf

[6] Final IRM Assumptions Matrix:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20267/FINAL_Assumptions%20Matrix_FBC[9060].pdf

[7] October 4th ICAPWG Presentation:
https://www.nyiso.com/documents/20142/33562316/22_10_04_ICAPWG_Transmission_Security_Limit_Calculation.pdf/9c994999-4127-616e-9927-bacb2dbe0f30

IV. LCR Determination Process

The LCR calculation methodology utilizes an economic optimization algorithm to minimize the total cost of capacity for the NYCA, taking into account the cost curves established accounting for the net Energy and Ancillary Services revenue offset[8], as shown in the cost curve table below.

2023-2024 Net CONE Curves		
Location	LCR (%)	Net CONE ($/kW-yr)
NYCA	112.9	71.12
	115.9	72.75
	118.9	74.13
	121.9	75.44
	124.9	75.99
G-J	84.0	80.41
	87.0	82.57
	90.0	84.14
	93.0	85.58
	96.0	86.27
Zone J	80.6	147.67
	83.6	152.55
	86.6	154.53
	89.6	156.09
	92.6	157.20
Zone K	97.4	50.95
	100.4	60.42
	103.4	66.26
	106.4	69.21
	109.4	71.76

Using this methodology, the NYSRC's LOLE reliability standard will be met while utilizing the NYSRC-approved IRM and maintaining capacity requirements greater than or equal to the applicable Transmission Security Limits, as shown in the TSL table below. The TSLs for both New York City Locality and G-J Locality were both binding.

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[8] The term 'net Energy and Ancillary Services revenue offset' is defined in Section 5.14.1.2.2 of the NYISO Market Administration and Control Area Services Tariff.

Transmission Security Limit Calculation	Formula	G-J	NYC	LI	Notes
Load Forecast (MW)	[A] = Given	15,407	11,285	5,133	[1]
Transmission Security Limit (MW)	[B] = Studied	3,425	2,875	325	[2]
UCAP Requirement (MW)	[C] = [A]-[B]	11,982	8,410	4,808	
UCAP Requirement Floor	[D] = [C]/[A]	77.8%	74.5%	93.7%	
5-Year Derating Factor	[E] = Given	5.4%	4.5%	6.3%	[3]
Special Case Resources (MW)	[F] = Given	496.6	417.5	33.7	[4]
ICAP Requirement (MW)	[G] = ([C]/(1-[E]))+[F]	13,162	9,224	5,165	
ICAP Requirement Floor (%)	[H] = [G]/[A]	85.4%	81.7%	100.6%	

[1] Final Fall Forecast:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20267/2023_NYSRC_IRM_Fcast_ICS_V04.pdf

[2]2023-24 TSL Report:
https://www.nyiso.com/documents/20142/34388803/Summer2023_N-1-1_Analysis_FINAL_DRAFT_20221018.pdf/08d25de2-4057-875e-5dfc-b6af53f035f2

[3] 5-Year Derating Factor:
5-year Market EFORd based on the generation mix in the 2023-2024 IRM study

[4] Final SCR Values:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20263/2022%20August%203%20ICS%20Final%20SCR%20Model%20Values%20-%20REPOST.pdf

V. Summary of Study

The calculations and analysis in this study utilize the NYISO process for setting the LCRs with the NYSRC-approved statewide IRM of 20.0%.

Based on the NYSRC's final IRM base case for the 2023–2024 Capability Year, the LOLE criterion is met with an LCR of 81.7% for the New York City Locality, an LCR of 105.2% for the Long Island Locality, and an LCR of 85.4% for the G-J Locality.