LOCATIONAL MINIMUM INSTALLED CAPACITY REQUIREMENTS STUDY

For the 2022–2023 Capability Year

Approved by NYISO OC, January 13, 2022

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 2022–2023 Capability Year beginning May 1, 2022.

The New York State Reliability Council ("NYSRC") approved the 2022–2023 Installed Reserve Margin ("IRM") at 19.6% on December 10, 2021. The NYISO then determined the LCRs using the same database that was used to determine the approved IRM.

Based on the NYSRC IRM base case for the 2022–2023 Capability Year, and the changes identified above, the NYISO's calculations result in a New York City LCR of 81.2%, a Long Island LCR of 99.5%, and a G-J Locality LCR of 89.2%.

IRM	J LCR	K LCR	G-J LCR
19.6%	81.2%	99.5%	89.2%

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 2021 IRM Study base case maintains the Loss of Load Expectation ("LOLE") criterion at not more than 0.1 days/year with a statewide reserve margin of 19.6% and corresponding preliminary locational requirements of 80.7% and 99.8% 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]

III. Changes from Previous (1/14/2021) LCR report

Notable changes between the previous study inputs include an extended outage of the Neptune Cable, which results in a derated value of 375 MWs as opposed to the typically 660 MWs of transfer

1 http://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

capability. There are also numerous updates to the Western New York transfer and import limits. The Load Forecast Uncertainty (LFU) was also studied and updated this year. Based on the results, this study slightly alters the LFU distribution to better reflect the temperature probability distribution.[3]

On top of these data changes, two processes are updated from the prior LCR study. The first update is the load forecast used in the study. Historically, the ICAP Load Forecast was used, but this year the IRM Fall Load Forecast is used as the final forecast to set the LCRs. This process was updated and presented at the May 4, 2021 ICAP Working Group.[4] The NYISO also updated the Transmission Security Limit process, which was outlined at the September 9, 2021 ICAP Working Group.[5] This update removed the consideration of zonal generator outage rates in the TSL process and expanded the set of contingencies evaluated to include supply side resources..

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[6] , as shown in the cost curve table below.

[3] May 5th ICS presentation:
https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20246/AI%209.4%20-%20Sensitivity%20on%20LFU%20Midpoints.pdf

[4] May 4th ICAPWG presentation:
https://www.nyiso.com/documents/20142/21189817/LCR_Process_Updates_ICAPWG.pdf/906476a5-f38d-6cf7-dfc1-f2ab04a24101

[5] September 9th ICAPWG presentation:
https://www.nyiso.com/documents/20142/24415247/Transmission%20Security%20Limit%20Method_Final.pdf/926bd2bd-ae0c-9f5f-1f42-f66c942e23d9

[6] 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.

2022-2023 Net CONE Curves		
Location	LCR (%)	Net CONE ($/kW-yr)
NYCA	112.9	82.62
	115.9	84.25
	118.9	85.63
	121.9	86.94
	124.9	87.49
G-J	84.0	110.17
	87.0	112.33
	90.0	113.90
	93.0	115.34
	96.0	116.03
Zone J	80.6	157.48
	83.6	162.36
	86.6	164.34
	89.6	165.90
	92.6	167.01
Zone K	97.4	76.97
	100.4	86.44
	103.4	92.28
	106.4	95.23
	109.4	97.78

Using this methodology, the NYSRC's 0.1 days/year 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 New York City Locality, Long Island and G-J Locality LCRs each exceed their respective Transmission Security Limits.

Transmission Security Limit Calculation	Formula	G-J	NYC	LI	Source
Load Forecast (MW)	[A] = Given	15,171	10,944	5,159	[1]
Transmission Security Limit (MW)	[B] = Studied	3,425	2,900	325	[2]
Resource Unavailibility (MW)	[C] = Given	492	407	37	[3]
ICAP Requirement (MW)	[D] = [A]-[B]+[C]	12,238	8,451	4,871	
ICAP Requirement Floor (%)	[E] = ROUND([D]/[A],1)	80.70%	77.20%	94.40%	

[1] Final Fall Forecast: https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20252/AI%209.0%20-%202021_NYSRC_IRM_Forecast_ICS_V2.pdf

[2]2022-23 TSL Report: https://www.nyiso.com/documents/20142/27428389/Summer-2022-N-1-1.pdf/d708ac68-e7b0-24c2-2384-f4502a9bdee3

[3] Final SCR Values: https://www.nysrc.org/PDF/MeetingMaterial/ICSMeetingMaterial/ICS%20Agenda%20249/AI%207.2%20-%20Final%20SCR%20Model%20Values%20&%20SCR%20Performance%20Analysis.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 19.6%.

Based on the NYSRC's final IRM base case for the 2022–2023 Capability Year, the LOLE criterion of 0.1 days/year is met with an LCR of 81.2% for the New York City Locality, an LCR of 99.5% for the Long Island Locality, and an LCR of 89.2% for the G-J Locality.