NYISO's Compliance Submittal for NYSRC Rule A.3 (R1)

Next Capability Year Resource Adequacy Assessment

**A Report by the
New York Independent System Operator**

Presented to the Reliability Compliance Monitoring Subcommittee
of the New York State Reliability Council

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Statement of NYSRC Rule A.3 R1

The NYSRC Reliability Rule A.3 R1 has the following requirements:

"**R1.** The NYISO shall conduct a NYCA resource adequacy assessment for the next Capability Period for demonstrating that proposed NYCA resources meet statewide IRM and locational capacity requirements in accordance with Reliability Rules A.1: R1.1 and A.2: R1. The assessment shall be documented in a report, covering at a minimum, the evaluations and information below:

R1.1 The Resource Adequacy assessment shall evaluate a base case assuming proposed resources and the most likely load forecast, as well as alternate scenarios approved by RCMS.

R1.2 The Resource Adequacy assessment shall address any potential base case resource adequacy needs and possible corrective actions.

R1.3 The Resource Adequacy assessment report shall include key findings, assumptions, and other factors considered in the assessment."

The following compliance measure serves to fulfill the NYSRC Reliability Rule A.3 requirement R1. This measure states that:

"**M1.** The NYISO submitted a NYCA Next Capability Period Year Resource Adequacy Assessment Report covering the next Capability Period to the NYSRC in accordance with R1 requirements."

Establishment of the Installed Reserve Margin (IRM)

The Installed Capacity Subcommittee (ICS) of the New York State Reliability Council conducted a technical resource reliability study in 2021 to determine the IRM for the 2022-2023 Capability Year. The Executive Committee of the NYSRC approved the Capability Year 2022–2023 IRM at 19.6% on December 10, 2021[1] that met the required Loss of Load Expectation (LOLE) criteria of 0.1 days per year as specified in NYSRC Rule A.1, Requirement R1.1.

Establishment of LCRs

Using the approved IRM, the NYISO determined the minimum Locational Capacity Requirements (LCRs). The NYISO's Operating Committee approved the LCRs on January 13, 2022[2] taking into consideration changes that occurred since the NYSRC approved the IRM base case on December 10,

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[1] https://www.nysrc.org/PDF/Reports/ICS%20Annual%20Reports/Final%20Final%202022%20IRM%20Study%20Technical%20Report%20Body%2012_10_21%20Clean%2012_13_21.pdf

[2] https://www.nyiso.com/documents/20142/27428389/LCR2022-Report.pdf/b6dc8eb8-4cde-224d-2b9b-8aa247cac6fc

2021. The LOLE resource adequacy criterion was maintained throughout this process. Based on these changes, the NYISO's calculations resulted 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%.

Capability Year 2022 Assessment

This assessment builds upon the data models for the 2022 IRM and 2022 LCR studies with a deterministic approach to assess the 2022 Capability Year to determine that resource adequacy is maintained.

Load Forecast Model

The NYISO employs a multi-stage process to develop load forecasts for each of the eleven Zones within the NYCA. In the first stage, baseline energy and peak models are built based on projections of end-use intensities and economic variables. End-use intensities modeled include those for lighting, refrigeration, cooking, heating, cooling, and other plug loads. Appliance end-use intensities are generally defined as the product of saturation levels (average number of units per household or commercial square foot) and efficiency levels (energy usage per unit or a similar measure). End-use intensities specific to New York are estimated from appliance saturation and efficiency levels in both the residential and commercial sectors. These intensities include the projected impacts of energy efficiency programs and of improved building codes & standards. Economic variables considered include Gross Domestic Product ("GDP"), households, population, and commercial and industrial employment. Projected long-term weather trends from the NYISO *Climate Change Impact Study Phase I* [3] are included in the end-use models. In the second stage, the incremental impacts of additional policy-based energy efficiency, behind-the-meter solar PV and distributed generation are deducted from the load forecast. The incremental impacts of electric vehicle usage and other electrification are added to the load forecast. The impacts of net electricity consumption of energy storage units due to charging and discharging are added to the energy forecasts, while the peak-reducing impacts of behind-the-meter energy storage units are deducted from the peak load forecasts. In the final stage, the NYISO aggregates load forecasts by Zone.

The 2022 Capability Year peak load baseline forecast and the 90/10% probability forecast from the 2021 Gold Book are listed in the table below. In the IRM probabilistic study, a Load Forecast Uncertainty ("LFU") model is applied to the baseline peak forecast. The 90th percentile forecast of

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[3] NYISO *Climate Change Impact Study Phase I:* *https://www.nyiso.com/documents/20142/10773574/NYISO-Climate-Impact-Study-Phase1-Report.pdf/01fc1353-38cb-b95d-60c2-af42a78bff50*

peak load provided in the 2021 Gold Book is within one point of the range defined by the LFU model.

Capability Year 2022 50/50 baseline and 90th percentile peak load forecast

	Baseline Peak Load*	90th Percentile Peak Load**	Delta
NYCA	32,178	34,321	2,143
NYC	11,116	11,577	461
LI	5,136	5,530	394
G-J***	15,311	16,046	735

* With impacts for Energy Savings Programs and Behind-the-Meter Generation

** Only coincident peak data available in the Gold Book

*** The G-J forecast is the summation of all the coincident peaks in Zone G through J

Capacity Projections and Margin Levels

The NYCA 2022-2023 Capability Year projections are based upon the 2021 Gold Book as shown below.[4] This projection incorporates capacity additions, re-ratings, and deactivations that are identified in the 2021 Gold Book, and uses the lesser of the summer Capacity Resource Interconnection Service ("CRIS") or summer Dependable Maximum Net Capability ("DMNC") values for each unit. The statewide net purchases[5] and Special Case Resources ("SCRs") are also included based on the information in Tables V-1 and I-14 of the 2021 Gold Book, respectively.

Capability Year 2022 Capacity Model based on 2021 Gold Book

	NYCA	NYC	LI	G-J
2021 Gold Book Summer Capability Ratings	38,670.4	9,618.1	5,236.4	15,496.4
Lesser of Capability Rating or CRIS	38,448.3	9,591.3	5,210.0	15,380.8
SCR Resources	1,164.2	406.5	36.8	491.4
Net Purchases	1,936.1	315.0	660.0	315.0
Total Capability Summer 2021	41,548.6	10,312.8	5,906.8	16,187.2

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[4] The capability ratings in Gold Book Table III-2 are based upon the best information available at the time of publication. The Gold Book inclusion/exclusion rules for Table III-2 may result in a different resource mix than used in this assessment. The capability ratings for both wind and solar resources are shown at their full nameplate rating.

[5] Net purchases are long-term firm purchases less long-term firm sales. Firm purchases include grandfathered imports, external CRIS Rights, and Unforced Capacity Deliverability Rights (UDRs) with firm contracts.

Capability Year 2021 Capacity Margin Values

	Capacity	Baseline Peak Load	Margin	90th Percentile Peak Load	Margin
NYCA	41,548.6	32,178	29.1%	34,321	21.1%
NYC	10,312.8	11,116	92.8%	11,577	89.1%
LI	5,906.8	5,136	115.0%	5,530	106.8%
G-J	16,187.2	15,311	105.7%	16,046	100.9%

The analysis shows that with the baseline forecast of peak load, sufficient capacity is available to meet the 19.6% statewide IRM established by the NYSRC in December 2021 at the baseline peak load. In addition, sufficient capacity is available to meet the NYC LCR of 81.2%, LI LCR of 99.5%, and the G-J LCR of 89.2% under both load forecast conditions.

Conclusion

With the Capacity and Load projections as updated by the 2021 Gold Book, a deterministic assessment demonstrates that the New York Control Area meets the resource adequacy requirements established by the NYSRC and the LCR requirements as set the by the NYISO. Sufficient capacity is available to meet the IRM established by the NYSRC in December 2021 and to meet the LCRs established by the NYISO in January 2022 under the baseline 50/50 forecast of peak load.[6]

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[6] It is important to note that deterministic assessments only provide "what if" information and do not test resource adequacy. Had there been significant changes to the capacity and/or load models where the required IRM or LCRs were not met under the baseline forecast of peak load, the NYISO would implement appropriate corrective actions.