New York ISO
Independent System Operator

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 2019 to determine the IRM for the 2020-2021 Capability Year. The Executive Committee of the NYSRC approved the Capability Year 2020–2021 IRM at 18.9% on December 6, 2019[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

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

(LCRs). The NYISO's Operating Committee approved the LCRs on January 16, 2020[2] taking into consideration changes that occurred since the NYSRC approved the IRM base case on December 6, 2019. The only change for the 2020–2021 Capability Year required was to adjust the IRM base case with the 2020 ICAP/LCR peak load forecast. 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 86.6%, a Long Island LCR of 103.4%, and a G-J Locality LCR of 90.0%.

Capability Year 2020 Assessment

This assessment builds upon the data models for the 2020 IRM and 2020 LCR studies with a deterministic approach to assess the 2020 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,

[2] https://www.nyiso.com/documents/20142/8583126/LCR2020-Report.pdf/4c9309b2-b13e-9b99-606a-7af426d93a47

[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*

the NYISO aggregates load forecasts by Zone.

The 2020 Capability Year peak load baseline forecast and the 90/10% probability forecast from the 2020 Gold Book are listed in the table below. In the IRM probabilistic study, a Load Forecast Uncertainty ("LFU") modal is applied to the baseline peak forecast. The 90th percentile forecast of peak load provided in the 2020 Gold Book is within one point of the range defined by the LFU model.

	Baseline Peak Load*	90th Percentile Peak Load**	Delta
NYCA	32,296	34,211	1,915
NYC	11,477	11,720	243
LI	5,227	5,556	329
G-J	15,695	16,288	593

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

*** Only coincident peak data available in the Gold Book*

Capacity Projections and Margin Levels

The NYCA 2020-2021 Capability Year projections from the 2020 Gold Book are shown below.[4] This projection incorporates capacity additions, re-ratings, and deactivations that are identified in the 2020 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 2019 Gold Book, respectively.

Capability Year 2020 Capacity Model from 2020 Gold Book

	Capacity	Baseline Peak Load	Margin	90th Percentile Peak Load	Margin
NYCA	41206	32,296	27.589%	34,211	20.447%
NYC	10362	11,477	90.285%	11,720	88.413%
LI	6050	5,227	115.745%	5,556	108.891%
G-J	16457	15,695	104.855%	16,288	101.038%

The analysis shows that with the baseline forecast of peak load, sufficient capacity is available to meet the 18.9% statewide IRM established by the NYSRC in December 2019 at both the baseline peak

[4] The capacity values listed include wind units at their full rated value as provided in the 2020 Gold Book under Table III-3a

[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.

load and the 90th percentile peak load forecasts. In addition, sufficient capacity is available to meet the NYC LCR of 86.6%, LI LCR of 103.4%, and the G-J LCR of 90.0% under both load forecast conditions.

Conclusion

With the Capacity and Load projections as updated by the 2020 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 2019 and to meet the LCRs established by the NYISO in January 2020 under both the baseline forecast of peak load and the 90th percentile forecast of peak load.[6]

[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.