New York ISO
Independent System Operator

2021 Interim Area Transmission Review of the New York State Bulk Power Transmission System

(Study Year 2026)

A Report by the
New York Independent System Operator

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Introduction

The New York Independent System Operator (NYISO) conducts an annual Area Transmission Review (ATR) of the New York State Bulk Power System (BPS) as required by the Northeast Power Coordinating Council (NPCC) [1] and the New York State Reliability Council (NYSRC) [2]. The Bulk Power Transmission Facilities (BPTF), as defined in this review, include all of the facilities designated by the NYISO to be part of the BPS as defined by NPCC and the NYSRC. Additional non-BPS facilities are also included in the BPTF. The purpose of this assessment is to demonstrate conformance with the applicable NPCC Transmission Design Criteria and NYSRC Reliability Rules.

The ATR is prepared in accordance with NPCC and NYSRC procedures that require the assessment to be performed annually, with a Comprehensive Area Transmission Review (CATR) performed at least every five years. Either an Interim or Intermediate Review can be conducted between CATRs, as appropriate. In an Interim Review, the planning coordinator summarizes the changes in planned facilities and forecasted system conditions since the last CATR and assesses the impact of those changes. No new analyses are required for an Interim Review. An Intermediate Review covers all the elements of a Comprehensive Review, but the analysis may be limited to addressing only significant issues, considering the extent of the system changes. The most recent NYISO CATR (2020) [3] was approved by the NPCC Reliability Coordinating Council (RCC) in May 2021 and the NYSRC in June 2021. This report comprises the first Interim ATR submitted by NYISO since the 2020 NYISO CATR [3].

This assessment is conducted in accordance with the requirements for an Interim Review as described in the NPCC Directory #1 [1] - Appendix B "Guidelines and Procedures for NPCC Transmission Reviews" and the NYSRC "Procedure for New York Control Area Transmission Reviews" [2]. The 2021 Interim ATR assesses the reliability impacts of changes in forecasted system conditions and planned New York State BPTF since the 2020 NYISO CATR [3], and is conducted for the year 2026.

Forecasted System Conditions and Planned Facilities

The forecasted system conditions and planned generation and transmission facilities assessed in the NYISO 2020 CATR [3] were based on the 2020 NYISO Load and Capacity Data Report ("Gold Book") for the year 2025. This Interim Review is based on the forecasted conditions and planned facilities from the 2021 Gold Book [4] for the year 2026. Figures 1-4 summarize the forecasted conditions and planned facilities included in this Interim ATR and compares these assumptions with those used for the 2020 CATR [3]. Additional changes to transmission plans, generation additions/up-rates, or deactivations/re-ratings that

occurred following the publication of the NYISO 2021 Gold Book [4] will be captured in future reviews.

Load & Capacity Forecast

Figure 1 provides a comparison between the statewide load and capacity forecasts in the 2021 Interim ATR (study year 2026) and 2020 CATR [3] (study year 2025). The 2021 statewide coincident peak load forecast for summer 2026 for the New York Control Area (NYCA) is 31,326 MW, which is 385 MW less than the summer 2020 forecast of 31,711 MW used in the NYISO 2020 CATR [3]. The corresponding installed capacity for summer 2026 is 37,818 MW, which includes Special Case Resources (SCR, or demand response) of 1,195 MW. The installed capacity used in the NYISO 2020 CATR [3] was 37,902 MW. Comparing the 2021 Interim ATR installed capacity to that used in the 2020 CATR [3] installed capacity decreased 84 MW.

Figure 1: Load and Capacity Forecast

	Comprehensive Review	Interim Review	Change from Previous CATR
	2020 Forecast for Summer 2025	2021 Forecast for Summer 2026	
Peak Load (MW)	31,711	31,326	-385
Total Capacity (MW)	37,902 (1)	37,818 (2)	-84
Reserve Margin	20%	21%	1%

Notes:

1. This amount is derived from the NYISO 2020 Gold Book and represents the 2025 Total Resource Capability from Table V-2a plus changes in generation facilities changed included in this review.
2. This amount is derived from the NYISO 2021 Gold Book and represents the 2026 Total Resource Capability from Table V-2a plus changes in generation facilities changes included in this review.

Generation Facilities

Proposed future generation projects and up-rates to existing generating facilities are listed in Figure 2. Figure 3 provides a summary of the shutdowns/de-rates in generation. There are no changes in future generation projects and up-rates or shutdowns/de-rates as compared to the 2020 CATR.

In 2019, the New York State Department of Environmental Conservation adopted a regulation to limit nitrogen oxides (NOx) emissions from simple-cycle combustion turbines (referred to as the "Peaker Rule[1]"). Combustion turbines known as "peakers" typically operate to maintain bulk power system reliability during the most stressful operating conditions, such as periods of peak electricity demand. Many of these units also maintain transmission security by supplying energy within certain constrained areas of New York City and Long Island – known as load pockets. The Peaker Rule, which phases in

[1] https://www.dec.ny.gov/regulations/116131.html

compliance obligations between 2023 and 2025, will impact turbines located mainly in the lower Hudson Valley, New York City, and Long Island. The Peaker Rule required all impacted plant owners to file compliance plans by March 2, 2020. The plans indicate approximately 1,500 MW of peaker capability would be unavailable during the summer by 2025 to comply with the emissions requirements. Figure 4 provides a summary of the peaker units that are unavailable during the summer capability period. These changes were captured in the 2020 CATR.

Additional changes to generation additions/up-rates or shutdowns/de-ratings that occurred following the publication of the NYISO 2021 Gold Book [4] will be captured in future reviews.

Figure 2: Additions/Up-rates in Generation Facilities (1)

Additions/Up-rates	Queue	Size (MW)	2020 Comprehensive ATR Included/IS Date	2021 Interim ATR Included/IS Date
Cassadaga Wind	387	127	Y/2021-12	Y/2021-12
Baron Wind	396	238	Y/2021-12	Y/2021-12
Eight Point Wind	422	102	Y/2021-12	Y/2021-12
Ball Hill Wind	505	100	Y/2022-12	Y/2022-12
Roaring Brook Wind	546	80	Y/2021-12	Y/2021-12
Calverton Solar Energy Center	678	23	Y/2021-12	Y/2021-12

Notes:
1. The values noted in this figure are from 2021 Gold Book Section IV.

Figure 3: Shutdowns/De-ratings in Generation Facilities (1)

Shutdowns/De-ratings	Size (MW)	2020 Comprehensive ATR Included/OS Date	2021 Interim ATR Included/OS Date
Indian Point 3	1,036.4	2021-04	Out-of-Service

Notes:
1. The values noted in this figure are from 2021 Gold Book Section IV.

Figure 4: Proposed Status Change to Comply with DEC Peaker Rule

Owner/Operator	Station (3)	Zone	Nameplate (MW)	Capability (MW) (1)		Status Change Date (2)
				Summer	Winter	
Central Hudson Gas & Elec. Corp.	Coxsackie GT	G	21.6	19.3	24.8	5/1/2023
Central Hudson Gas & Elec. Corp.	South Cairo	G	21.6	18.4	22.9	5/1/2023
Consolidated Edison Co. of NY, Inc.	74 St. GT 1 & 2	J	37.0	39.3	42.4	5/1/2023
NRG Power Marketing, LLC	Astoria GT 2-1, 2-2, 2-3, 2-4	J	186.0	140.4	181.7	5/1/2023
NRG Power Marketing, LLC	Astoria GT 3-1, 3-2, 3-3, 3-4	J	186.0	142.3	180.8	5/1/2023
NRG Power Marketing, LLC	Astoria GT 4-1, 4-2, 4-3, 4-4	J	186.0	133.7	178.4	5/1/2023
Astoria Generating Company, L.P.	Gowanus 1-1 through 1-7	J	140.0	124.7	159.7	5/1/2023
Astoria Generating Company, L.P.	Gowanus 1-8	J	20.0	16.0	21.0	2/1/2021 (IIFO)
Astoria Generating Company, L.P.	Gowanus 4-1 through 4-8	J	160.0	142.5	184.5	5/1/2023
Consolidated Edison Co. of NY, Inc.	Hudson Ave 3	J	16.3	16.6	19.5	5/1/2023
Consolidated Edison Co. of NY, Inc.	Hudson Ave 5	J	16.3	14.2	18.5	5/1/2023
Helix Ravenswood, LLC	Ravenswood 01	J	18.6	7.7	9.4	5/1/2023
Helix Ravenswood, LLC	Ravenswood 10	J	25.0	16.0	21.8	5/1/2023
Helix Ravenswood, LLC	Ravenswood 11	J	25.0	16.1	22.2	5/1/2023
National Grid	Glenwood GT 01	K	16.0	13.0	15.3	2/28/2021 (R)
National Grid	Northport GT	K	16.0	11.9	15.6	5/1/2023
National Grid	Port Jefferson GT 01	K	16.0	12.7	17.5	5/1/2023
Consolidated Edison Co. of NY, Inc.	59 St. GT 1	J	17.1	15.6	19.5	5/1/2025
NRG Power Marketing, LLC	Arthur Kill GT 1	J	20.0	12.2	15.8	5/1/2025
Astoria Generating Company, L.P.	Astoria GT 01	J	16.0	13.6	19.3	5/1/2025
Astoria Generating Company, L.P.	Gowanus 2-1 through 2-8	J	160.0	144.1	185.0	5/1/2025
Astoria Generating Company, L.P.	Gowanus 3-1 through 3-8	J	160.0	136.5	179.4	5/1/2025
Astoria Generating Company, L.P.	Narrows 1-1 through 2-8	J	352.0	291.5	376.2	5/1/2025
	2023 Total		1,107.4	884.8	1,136.0	
	2025 Total		725.1	613.5	795.2	
	Total		1,832.5	1,498.3	1,931.2	

Notes

1. MW values are from the 2021 Load and Capacity Data Report
2. Dates identified by generators in their DEC Peaker Rule compliance plan submittals for transitioning the facility to Retired, Blackstart, or will be out-of-service in the summer ozone season or the date in which the generator entered (or proposed to enter) Retired (R) or Mothball Outage (MO) or the date on which the generator entered ICAP Ineligible Forced Outage (IIFO)
3. Units listed have not provided a notice to the NYSPSC or completed a Generator Deactivation Notice with the NYISO

Transmission Facilities

The transmission plans shown in Figure 5 reflect changes to the BPTF since the NYISO 2020 CATR [3]. All but one of these changes are simply a change to the in-service dates. Additional changes to transmission that occurred following the publication of the NYISO 2021 Gold Book [4] will be captured in future reviews.

Figure 5: Changes in the Bulk Power Transmission Facilities

Transmission Owner	Bulk Transmission	2020 Comprehensive ATR Included/IS Date	2021 Interim ATR Included/IS Date (1)
Central Hudson	Leeds-Hurley Series Compensation SDU	Y/2021S	Y/2022S
Con Edison	B3402 and C3403 Cables	Out-of-Service	Out-of-Service
Con Edison	Rainey-Corona 345/138 kV xfmr/PAR/feeder	N/A	Y/2023S
Con Edison	Gowanus-Greenwood 345/138 kV xfmr/PAR/feeder	N/A	Y/2025S
Con Edison	Goethals-Fox Hills 345/138 kV xfmr/PAR/feeder	N/A	Y/2025S
LS Power	(Q#556) Segment A Double Circuit (2)	Y/2023W	Y/2023W
National Grid	Clay – Dewitt 115 kV reconductoring	Y/2021S	Y/2021S
National Grid	N. Grid Clay – Teall 115 kV reconductoring	Y/2021S	Y/2021S
NextEra	Empire State Line Project (Q#545A)	Y/2022S	Y/2022S
NY Transco	(Q#543) Segment B	Y/2023W	Y/2023W
NYSEG	Watercure 345/230 kV xfmr	Y/2020W	In-Service
NYSEG	Gardenville 230/115 kV xfmr	Y/2023W	Y/2026S
NYSEG	Oakdale 345/115/34.5 xfmr	N/2027S	N/2027S
NYSEG	South Perry 230/115 kV xfmr	Y/2022W	N/2027S
NYSEG	Coopers Corners 345/115 xfmr	N/2025W	N/2031S
NYSEG	Wood St. 345/115 xfmr	Y/2023W	Y/2022W
NYSEG	Fraser 345/115 xfmr	Y/2022W	Y/2024S
O&R	Lovett 345 kV (New Station)	Y/2021S	Y/2023S
PSEG-LI	Riverhead-Wildwood 69 kV to 138 kV conversion	N/A	Y/2021S
RG&E	Rochester Transmission Reinforcement 345 kV Substation (Q#339)	Y/2020W	In-Service

Notes:
1. Dates from 2021 Gold Book Sectin VII
2. This project has several in-service dates identified in the 2021 Gold Book Section VII. Summer 2023 is selected as the date provided in this report as several key substations planned to be in-service by summer 2023.

Impact Assessments

Steady State, Stability, and Fault Current Assessments

The 2020 CATR [3] assessed and evaluated thermal, voltage, fault current, and stability performance of the New York State BPTF for design and extreme contingencies as required by NPCC Directory #1 [1] and NYSRC Reliability Rules [2]. The NYISO studied the system changes noted in Figures 2, 3, 4 and 5 in either the 2020 CATR [3] or pursuant to the NYISO Short-Term Reliability Process (STRP) and found no adverse impact on the reliability of the BPTF.[2] In consideration of the Corrective Action Plans identified in the 2020 CATR [3], this assessment confirms that that the planned system continues to conform to the applicable criteria. As such, no additional Corrective Action Plans to address BPTF issues are required at this time.

In the 2020 CATR [3] the NYISO identified dynamics stability issues under extreme peak load conditions resulting from extreme weather within the Con Edison service territory as well as extreme contingency concerns. As reflected in Figure 5, Con Edison presented Local Transmission Owner Plan

[2] https://www.nyiso.com/short-term-reliability-process

(LTPs) updates at a NYISO working group meeting, comprised of the following facilities and in-service dates (ISD):

- A new 345/138 kV PAR controlled 138 kV Rainey – Corona feeder (ISD 2023)
- A new 345/138 kV PAR controlled 138 kV Gowanus – Greenwood feeder (ISD 2025)
- A new 345/138 kV PAR controlled 138 kV Goethals – Fox Hills feeder (ISD 2025)

The Short Term Reliability Planning (STRP) solution for addressing the 2023 short-term need identified in the Q3 STAR consists of changes in the planned operating status of existing series reactors, starting summer 2023 through 2030, as follows:

- In-service: series reactors on the following 345 kV cables: 71, 72, M51, M52
- Bypass: series reactors on the following 345 kV cables: 41, 42, Y49

The transient voltage response issues were observed on Con Edison's non-BPTF system from 2025 through 2030, while the BPTF violations were observed starting in 2029. Con Edison will address the non-BPTF violations with a Corrective Action Plan as required by NERC Standard TPL-001-4. When the non-BPTF violations are addressed, the BPTF violations are no longer observed.

Ultimately, the solutions to address all transmission security issues within Con Edison (including non-BPTF which was not provided by the start of the ATR) may also impact the conclusions of the extreme peak load and extreme contingency analysis. After Con Edison finalizes their solutions to address their local non-BPTF needs, the next NYISO ATR will re-evaluate the impact of these solutions under extreme peak load conditions resulting from extreme weather within the Con Edison service territory as well as extreme contingency conditions.

Special Protection Systems/Remedial Action Schemes

Since the 2020 CATR [3] there has been no changes to Special Protection Systems/Remedial Action Schemes.

Review of Exclusions from NPCC Basic Criteria

NPCC Directory #1 [1] contains a provision that allows a member to request an exclusion from criteria contingencies that are simultaneous permanent phase to ground faults on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with normal fault clearing. Given that the NYCA does not have any such exclusion at this time, none were reviewed. Furthermore, no requests for exclusions are anticipated in the near future.

System Restoration Assessment

NYSRC Reliability Rules B.2 R1.3 [2] requires the NYISO to evaluate the impact of system expansion or configuration facility plans on the NYCA System Restoration Plan. The list below outlines planned system expansion facilities which will have an impact on the NYCA System Restoration Plan:

- The Empire State Line Western New York Project is a new 345 kV transmission facility planned to connect into the Niagara – Kintigh – Rochester 345 kV path. This transmission project includes a new Dysinger 345 kV substation, a new East Stolle 345 kV switchyard, and PAR.
- The NYSEG South Perry 230/115 kV transformer is an addition to the existing South Perry facility.
- The NYSEG Watercure 345/230 kV transformer is an addition to the existing Watercure facility. Additionally, the Watercure 345 kV substation has reconfiguration plans.
- The NYSEG Gardenville 230/115 kV transformer is an addition to the Gardenville facility. Additionally, the Gardenville 230/115 kV substation has reconfiguration plans and existing Gardenville 230/115 kV transformers TB#3 and TB#4 will be replaced.
- The NYSEG Oakdale 345/115/34.5 kV transformer is an addition to the exiting Oakdale facility. The Oakdale 345 kV substation has reconfiguration plans.
- The NYSEG Coopers Corners 345/115 kV transformer is an addition to the existing Coopers Corners facility. The Coopers Corners 345 kV substation has reconfiguration plans.
- The NYSEG Fraser 345/115 kV transformer is an addition to the existing Fraser facility. Additionally, the Fraser 345 kV substation has reconfiguration plans.
- The LS Power Grid New York/NYPA Segment A double circuit project (Q#556) includes: retiring two Porter – Rotterdam 230 kV Lines #30 and #31; building two new 345 kV transmission lines from Edic 345 KV to New Scotland 345 kV; constructing a new Rotterdam 345 kV substation which loops in the existing Edic to New Scotland 345 kV transmission line; constructing a new Princetown 345 kV switchyard interconnecting the Rotterdam to New Scotland, and Edic to New Scotland 345 kV AC transmission lines.
- The NY Transco Segment B project (Q#543) includes: (i) a new Knickerbocker 345 kV substation between New Scotland 345 kV and new Alps 345 kV stations; (ii) a new 345 kV line between Knickerbocker and Pleasant Valley; (iii) new series compensation capacitor bank with bypass switching provision on the new Knickerbocker – Pleasant Valley 345 kV line at the proposed Knickerbocker 345 kV Switching Station; and (iv) a new Van Wagner 345 kV substation between Athens, Leeds, and Pleasant Valley 345 kV substations.
- The New York Power Authority (NYPA) Moses – Adirondack 230 kV project is a replacement of approximately 78 miles of the Moses to Adirondack 230 kV circuits 1 and 2.

The potential impacts of the system expansion plans listed above have been communicated to NYISO Operations Engineering for consideration in the annual review and update of the NYCA System Restoration Plan.

Local Rules Consideration of G.1 through G.3 (B.2 R1.2)

The NYSRC has adopted Local Reliability Rules that apply to New York City and Long Island zones to protect the reliable delivery of electricity for specific electric system and load characteristics relative to these zones. The NYISO requests information from the local Transmission Owners on changes in local system conditions that would impact the New York State BPS at the beginning of every year. The base conditions are described earlier in this report, and summaries are included in the appendices, which illustrate the application of the following local rules to the system models used for this year's assessments:

- *G.1(R1)*
  - The Con Edison BPTFs required to be planned and operated for the occurrence of a second contingency were evaluated in the 2020 CATR [3].
- *G.1(R2) Operating Reserves/Unit Commitment, G.1(R3) Locational Reserves (New York City)*
  - Local Operating Reserve rules are considered in the development of the base case used for all reliability assessments.
- *G.1(R4) Thunderstorm Watch (New York City)*
  - Proposed facilities [4] included in this assessment may impact the Thunderstorm Watch contingency list due to substation reconfiguration and facility additions. The contingencies impacted by system facility changes will be evaluated before the proposed facilities are in-service.
- *G.2 Loss of Generator Gas Supply (New York City), G.3 Loss of Generator Gas Supply (Long Island)*
  - Specific loss of generator gas supply studies are performed by Con Edison and PSEG-Long Island and are reviewed by the NYISO. The planned system is expected to be compatible with local rules regarding loss of generator gas supply.

Conclusion

The annual assessment performed in this Interim ATR of the changes in forecasted NYCA system conditions and planned facilities indicate that the New York State BPTF, as planned through the year 2026, conform to the reliability criteria listed in NPCC Directory #1 [1] and the NYSRC Reliability Rules [2].

References

1. Northeast Power Coordinating Council, “NPCC Regional Reliability Reference Directory #1, Design and Operation of the Bulk Power System”, Version 3, dated September 9, 2020.
2. New York State Reliability Council, “Reliability Rules and Compliance Manual”, Version 45, dated July 17, 2020.
3. New York Independent System Operator, 2020 Comprehensive Area Transmission Review of the New York State Bulk Power Transmission System (Study Year 2025), dated June 2021
4. New York Independent System Operator, 2021 Load and Capacity Data Report, dated April 2021