

NYISO 2017 Interim Review

of

Resource Adequacy

Covering the New York Balancing Authority

For the period 2018 to 2020

NPCC RCC

Approved by the RCC on

December 5, 2017

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EXECUTIVE SUMMARY

This report provides the results of the New York Independent System Operator's (NYISO) 2017 Interim Review of Resource Adequacy covering the period from 2018 to 2020. It is the NYISO's second Annual Interim Assessment of its 2015 Comprehensive Review of Resource Adequacy, which covered the time period of 2016 through 2020. This assessment is conducted to comply with the Reliability Assessment Program established by the Northeast Power Coordinating Council (NPCC). This assessment follows the resource adequacy guidelines outlined in NPCC's Regional Reliability Reference Directory #1, Appendix D.¹

The 2017 Interim Review Report demonstrates that New York will meet the NPCC resource adequacy criterion that the probability of disconnecting load due to resource deficiencies, which is known as the loss of load expectation (LOLE) criterion, shall be, on average, no more than 0.1 days per year for the Base Case covering the period from 2018 to 2020.

¹ <https://www.npcc.org/Standards/Directories/Forms/Public%20List.aspx>

1. Introduction

The 2017 Interim Review provides the second update of the NYISO’s 2015 Comprehensive Review of Resource Adequacy, which was approved by NPCC in December 2015. Since the approval of the 2015 Comprehensive Review, the NYISO has conducted additional resource adequacy assessments as part of the Comprehensive System Planning Process (CSPP)² and additional annual studies to determine the Installed Capacity Requirements for the New York Balancing Area (NYBA). The major assumptions of this interim review are consistent with those studies with revisions to incorporate updated data that have met Base Case inclusion rules as defined by the CSPP.

2. Assumption Changes

2.1. Load Model

Tables 2-1 and 2-3 compare the peak demand forecasts from the 2015 Comprehensive Review with the 2017 Load and Capacity Data Report³ (Gold Book) baseline and high load peak demand forecasts for this Interim Review. Table 2-2 details the amounts of Energy Efficiency (EE), Behind-the-Meter (BTM) Solar PV, and BTM Distributed Generation represented in the baseline forecast at the time of summer peak demand. The high load forecast is the econometric forecast and does not include the reduction effects of these resources. This baseline forecast represents an annual average growth rate of 0.07 percent over the Gold Book’s ten-year horizon. This compares to a growth rate of 0.83 percent from the rate of growth reported in the 2015 Comprehensive Review and a 0.21 percent growth rate reported in the 2016 Interim Review. There were no changes to the multiple load shape model from the 2015 Comprehensive Review, using the same years (2006, 2002, and 2007).

The BTM Solar PV is modeled with an hourly profile by zone, and the zonal load forecasts were adjusted accordingly so that the baseline forecast was observed.

Table 2-1 Comparison of Baseline Peak Demand Forecasts

Baseline Forecast (MW)			
Year	2015 Review	2017 Review	Delta
	Includes EE/Solar PV	Includes EE/BTM	
2018	35,111	33,078	(2,033)
2019	35,454	33,035	(2,419)
2020	35,656	32,993	(2,663)

² See Attachment Y of the OATT, available at https://nyisoviewer.etariff.biz/ViewerDocLibrary//MasterTariffs/9TariffSections/OATT%2031.1%20FID1144%20wo1065%201009_16289.pdf

³ http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Documents_and_Resources/Planning_Data_and_Reference_Docs/Data_and_Reference_Docs/2017_Load_Capacity_Data_Report.pdf

Table 2-2 Energy Efficiency and BTM Solar PV Represented in the Baseline Forecast

Energy Efficiency (EE); Solar PV; and BTM Represented in Baseline forecast (Values at time of peak demand)			
Year	Energy Efficiency	BTM Solar PV	Distributed Generation
2018	429	630	250
2019	618	738	277
2020	791	838	294

2-3 Comparison of High Load Peak Demand Forecasts

High Load Forecast (MW)			
Year	2015 Review	2017 Review	Delta
2018	36,202	34,387	(1,815)
2019	36,697	34,668	(2,029)
2020	37,057	34,916	(2,141)

2.2. Resources

For this review, resource assumptions are based upon the 2017 summer capability ratings of generation resources in the New York as reported in the 2017 Gold Book. Capacity values in Table 2-4 include resources electrically internal to New York, additions, re-ratings, retirements, purchases, sales, UDRs (UCAP Deliverability Rights) with firm capacity, and SCRs (Special Case Resources).

The 2017 Gold Book reported generator deactivations of 654 MW of summer capability in 2016. The 2017 Gold Book also reported notices of proposed generator deactivations of 1,857 MW of summer capability in 2017. The list of generator deactivations included two nuclear units (FitzPatrick @ 838 MW and Ginna @ 582 MW), which announced their intent to deactivate in 2016 and were not included in the NYISO's 2016 Interim review. These units have since rescinded those notices or indicated that they will remain in operation, and therefore are included in 2017 Interim Review. The remaining five (5) units in the list representing 440 MW of summer capability also rescinded their notices of intent to deactivate or have notified the NYISO that they will remain in operation beyond their proposed deactivation date, and accordingly are also included in the 2017 Interim Review.

A total of 2,509 MW of new or additional generation (896 MW in 2018, 286 MW in 2019, and 1,146 MW in 2020), and 181 MW of generation rerates, will be in service over the assessment period. These resources include 2,078 MW of fossil generation, 387 MW of wind generation, 25 MW of solar PV generation, and 19 MW of biomass generation.

Table 2-4 Comparison of Resource Assumptions (Summer MW ratings)

Capacity Resources (MW)			
Year	2015 Review	2017 Review	Delta
2018	42,507	42,524	17
2019	42,507	42,665	158
2020	42,507	43,948	1441

2.3. Transmission

Compared to the 2016 NPCC Comprehensive Review, four significant changes have occurred:

(1) Cancellation of the Con Ed/PSEG 1,000 MW wheeling agreement effective summer 2017. The impact of this change was reflected as a 100 MW decrease (5600 to 5500 MW) in the UPNY-SENY emergency transfer limit and the UPNY-Con Ed transfer limit was increased by 390 MW (5,210 to 5,600 MW). The elimination of the 1,000 MW withdrawal of power from Zone G to supply the wheel reduced the power losses in SENY and increased voltage constrained transfer limits in that area;

(2) the projected installation of the CPV generating unit in 2018 has an effect of further increasing the UPNY-ConEdison emergency transfer limit from 5,600 MW to 5,750 MW;

(3) LIPA revised its methodology used to calculate its facility ratings. This resulted in reductions of ratings of the limiting facilities which impacted the J to K, LI Sum, I to K, and LI West interface limits; Also, a system deliverability upgrade identified as needed would add 100 MW on the UPNY-SENY limit used for the study; and

(4) The New York State Reliability Council (NYSRC), in conducting the 2018 Installed Reserve Margin study (in progress as of the date of this report) determined that emergency assistance entering into New York from external control areas should be limited. Based upon NYSRC's review and NYISO's recommendation, the emergency assistance level has been set at a total of 3,500 MW to New York in NYISO's reliability planning models.

2.4. Unit Availability

Table 2-4 compares the 5-year weighted EFORD (Equivalent Demand Forced Outage Rate) values for generation units in the New York Balancing Area ("NYBA"), which were included in this

Interim Review, to the EFORD values used in the 2015 Comprehensive Review. The EFORD values for thermal units and large hydro units are calculated from NERC GADS data submitted by the generator owners.

Production data for wind, solar and run-of-river hydro units are used to determine the summer and winter capacity factors for these resources. Wind capacity factors are ~14% and ~30%, respectively. Run-of-river capacity factors are ~45% and 63% respectively. Solar capacity factors are ~50% and ~ 0% respectively. The performance factor for SCRs is determined based upon those resources' actual load reductions in either required system tests of their capability to reduce load or in actual demand response activation calls.

Table 2-4 5-Year Weighted EFORD values (%)

Fuel or Unit Type	Summer DMNC Rating (MW) ⁴	2015 Comprehensive Review (%)	2017 Interim Review (%)
Coal	1,011	4.3	6.5
Oil	816	7.8	8.8
Gas Only Units	3,694	N/A	5.2
All Dual Fuel Units	19,212	N/A	7.7
Nuclear	5,375	2.7	3.7
Combustion Turbines	2,639	11.4	20.4
Jet Engine	2,129	11.2	11.8
Combined Cycle	9,942	3.7	3.8
Large Hydro	3,291	N/A	0.2

3. Gas Infrastructure

The NYBA continues to rely natural gas as the primary fuel for electric generation. Accordingly, the NYISO actively monitors the status of the natural gas system, and is involved in natural gas/electric coordination efforts with New York State and federal regulators, pipeline owners, generator owners, local distribution companies, and neighboring ISOs and Regional Transmission Operators (“RTOs Moreover, FERC Order No. 809 has addressed gas nomination changes and Day- Ahead Electric schedule deadlines, and Order No. 787 allows RTOs to

⁴ Note DMNC ratings are not additive as units may be included in both fuel and unit type classifications.

communicate non-public information to pipelines and gas local distribution companies (LDCs) in order to maintain system reliability.

In addition to the above - referenced FERC orders, the NYISO's efforts with respect to gas supply assurance focus on: (i) improving communication and coordination between the gas and electric sectors; (ii) annual, weekly and, when conditions warrant, *ad hoc* generator surveys of gas system and gas market participants to enhance awareness in the control room and provide electric system reliability benefits; and (iii) addressing the electric system reliability impact of the sudden catastrophic loss of gas.

4. Environmental Initiatives

The federal Environmental Protection Agency has announced its intent to repeal the Clean Power Plan which was aimed at reducing CO₂ and other emissions. The NYPSC continues to implement the New York State Clean Energy Standard (CES). The CES program is intended to increase the quantity of qualifying RECs required to be purchased until 50% of load is served by renewable energy resources in 2030. The New York State Energy Plan also calls for a 40% economy-wide reduction in CO₂ emissions. Such reductions require shifting some portion of fuel consumption from the transportation and heating sectors to the bulk electric power system, potentially increasing electrical load requirements.

A primary element of the CES is the establishment of a long - term requirement for Load Serving Entities (LSEs) to purchase Zero Emission Credits (ZECs) generated by eligible nuclear facilities that elect to participate in the program. For the first tranche of the program, beginning in April 2017, four nuclear facilities were identified as eligible. Further, the CES sets initial and overall levels of Renewable Energy Credit (REC) purchase requirements for LSEs from new renewable energy resources. The regulatory programs with the most significant potential impacts on the availability of resources needed to maintain reliability are: (i) facility-specific operational limitations; (ii) the revised Ozone National Ambient Air Quality Standard (NAAQS); (iii) the Clean Energy Standard; (iv) the CO₂ emission cap set through the periodic Regional Greenhouse Gas Initiative (RGGI) Program Review Process; and (v) initiatives to phase out the use of fuel oil distillates #4 and #6 for electric generation in New York City.

5. Results

General Electric's Multi-Area Reliability Simulation (GE-MARS) is the computer software program used for probabilistic analysis by the NYISO. Table 5-1 summarizes the Loss of Load Expectation (LOLE) results produced by the GE-MARS program comparing the 2015 Comprehensive Review results with the 2016 Interim Review for the Base Case and the high load forecast case results.

Table 5-1 LOLE Results

Year	Base Case Forecast		High Load Forecast	
	2015 Comprehensive Review	2017 Interim Review	2015 Comprehensive Review	2017 Interim Review
2018	0.04	0.01	0.08	0.03
2019	0.05	0.01	0.10	0.04
2020	0.05	0.00	0.14	0.03

6. Conclusion

This Interim Review finds that the New York Balancing Authority will comply with the NPCC resource adequacy criterion under the Base Case peak demand forecast. The primary drivers of the decrease in LOLE are the decrease in the summer peak baseline load forecast and the continued operation of units that have rescinded their Notices of Intent to Deactivate. The NYISO will continue to monitor and evaluate progress on pending environmental initiatives and the implications of generator compliance with final initiatives to understand their impact, if any, on capacity availability and retirements. Should the NYISO determine that conditions have significantly changed during or outside of the normal planning cycle, it will determine whether market-based solutions that are currently progressing are sufficient to meet the resource adequacy and system security needs of the New York power grid or not. If not, the NYISO will address any newly identified Reliability Need in the subsequent RNA and Comprehensive Reliability Plan. If a Generator provides a deactivation notice, the NYISO will determine in its Generator Deactivation Process whether a Reliability Need will arise. If so, the NYISO may procure a solution through that process, including a Reliability Must Run agreement with the Generator or another resource pending a long term solution or the next reliability planning process. If necessary to address an imminent threat to reliability arising from a driver other than a Generator deactivation, the NYISO may obtain an interim, or “Gap,” solution from the responsible Transmission Owner(s) to maintain reliability of the Bulk Power System in the NYBA.