

Approved by the RCC – November 29, 2011

NYISO 2011 Interim Review

of

Resource Adequacy

Covering the New York Balancing Authority

For the period 2012 to 2014

Final Report

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EXECUTIVE SUMMARY

This report is the New York Independent System Operator's (NYISO) 2nd Annual Interim Assessment of its 2009 Comprehensive Review of Resource Adequacy which covered the time period of 2009 through 2014. 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 D¹

The 2011 Interim Report demonstrates that New York will meet the NPCC resource adequacy criterion of not more than one unplanned disconnection of firm load in ten years or 0.1 days/year on average under both the Base Case peak demand and high growth demand forecasts.

¹ <http://www.npcc.org/documents/regStandards/Directories.aspx>

1. Introduction

This is the second update of NYISO’s 2009 Comprehensive Review of Resource Adequacy which was approved by NPCC in March 2010. Since the approval of the 2009 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 Control Area. 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

Table 2-1 compares the peak demand forecasts³ from the 2009 Comprehensive Review with the 2011 Gold Book peak demand forecasts for this Interim Review. Two factors contribute to peak demand. First, the 2009 recession continues to dampen short term growth. Second, the statewide energy efficiency programs are also reducing energy usage and peak demand. The 2011 Interim Review Base Case peak demand forecast includes 1,477 MW of energy efficiency programs for 2014.

Table 2-1 Comparison of Peak Demand Forecasts

Comparison of Peak Demand Forecasts (MW)						
	Baseline			90 th percentile ⁴		
Year	2009 Comprehensive Review	2011 Interim Review	Delta	2009 Comprehensive Review	2011 Interim Review	Delta
2012	33,906	33,182	-724	35,737	35,213	-524
2013	34,080	33,433	-647	35,931	35,479	-452
2014	34,309	33,609	-700	36,183	35,666	-517

2.2. Resources

For this review, resource assumptions are based upon the 2011 summer capability ratings of generation resources in the New York Balancing Authority as reported in the 2011 Load and Capacity Data Report. Capacity values in Table 2-2 include resources electrically internal to the New York Balancing Authority, additions, re-ratings, retirements, purchases, sales, UDRs (UCAP Deliverability Rights) with firm capacity, and SCRs (Special Case Resources).

² http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf

³

http://www.nyiso.com/public/webdocs/services/planning/planning_data_reference_documents/2010_GoldBook_Public_Final_033110.pdf

⁴ The NYISO’s 90/10 forecast is based upon extreme weather assumptions.

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The generation resource totals include retirements of 689 MW (306 MW that occurred before the end of 2010 and 383 MW that will retire by summer 2012). Two significant new units included, are Astoria Energy II (512 MW), which came on-line May 2011, and Bayonne Energy Center (500 MW), which will be on-line May 2012. A significant change to the methodology for assessing the capacity ratings of SCRs was implemented in 2011. This resulted in a decrease of 198 MW of forecasted enrollment between the 2010 and 2011 Gold Book estimates. The new methodology is expected to improve the performance factor for these resources; an estimate of the performance improvement is incorporated in the 2011 IRM Study. The NYISO uses an historical growth rate based on the average change of MW enrollment in reliability programs over the past 3 years and does not project a growth factor for SCR resources in the Load and Capacity Data Report.

Table 2-2 Comparison of Resource Assumptions (summer MW ratings)

Year	2009 Comprehensive Review	2011 Interim Review ⁵	Delta
2012	42,580	42,659	79
2013	42,586	42,652	66
2014	42,586	42,655	69

2.3. Transmission

Con Edison's M29 project began commercial operation in early 2011. This project consists of a 345 kV cable from Sprainbrook to Sherman Creek across the Dunwoodie South interface. Con Edison also increased the rating of two 345 kV cable circuits between Farragut and East 13th St. by installing refrigerated cooling in 2011. Additional local transmission owner plans included reinforcement of the sub-transmission system by Rochester Gas & Electric and Orange & Rockland Utilities.

The Hudson Transmission Project (HTP), a 660 MW HVdc line, will create another new controllable tie line. It will be located between the Bergen 230 kV substation in New Jersey and the West 49th Street 345 kV substation in New York City. This project is scheduled to be on-line for summer 2013. It is expected that there will be a firm 320 MW contract in place with the remaining transmission capability available for emergency assistance.

Transfer limits for key interfaces were updated to reflect transmission system upgrades as shown in Table 2.3

⁵ Note: Existing wind units are listed at their seasonal capability rating.

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Table 2-3 Emergency thermal transfer limits (MW) for key interfaces

Interface	2009 Comprehensive Review			2011 Interim Review		
	2012	2013	2014	2012	2013	2014
Central East less PV-20 plus Fraser-Gilboa	3075	3075	3075	3250	3250	3250
Dysinger East	2925	3075	3075	2725	2725	2725
F to G	3475	3450	3450	3450	3450	3450
I to J	4400	4400	4400	4350	4350	4350
I to K	1290	1290	1290	1290	1290	1290
UPNY-SENY less Ramapo 500 kV Tie	5150	5150	5150	5250	5250	5250
West Central	1800	1800	1825	1770	1770	1770

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 Authority included in this Interim Review to the EFORD values used in the 2009 Comprehensive Review. The EFORD for thermal units and large hydro units is calculated from NERC GADS data submitted by the generator owners. Run of River Hydro units and wind units are given a 45% and 90% summer capacity derate factor, respectively, for modeling purposes. A performance factor for SCRs is determined based upon their actual load reduction in either required system tests or their capability to reduce load or actual Demand Response activation calls.

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

Unit Type	2009 Comprehensive Review	2011 Interim Review
Coal	6.0	6.0
Oil	6.5	9.0
Gas	11.7	12.2
Nuclear	1.6	1.9
Combustion Turbines	8.6	16.6
Jet Engine	7.3	12.4
Combined Cycle	5.8	4.0 Block/3.7 Individual
All Thermal Units (5-Year EFORD)	---	7.4
All units including Hydro, Wind, and SCRs		11.0

2.5. Fuel Diversity

The NYISO benefits from a diverse fuel supply. New resources in the review period are projected to be fueled primarily by renewable resources (e.g. wind and solar) and natural gas.

Natural gas-fired generators in NYCA are supplied by various networks of major gas pipelines (e.g., Dominion, Columbia Gas Transmission, CNG Transmission, National Fuel Gas, Tennessee Gas Pipeline, and Iroquois Gas Transmission). In addition, NYCA generation capacity has a balance of fuel mix which provides operational flexibility and reliability. Natural gas-fired

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generators comprise 17% of the NYCA capability while 38% of the NYCA capability has dual fuel capability.

New York City and Long Island are required by the NYSRC Local Reliability Rules I-R3 and I-R5 to be operated so that the loss of a single gas facility does not result in the loss of electric load on their respective systems. Since the NYCA is a summer peaking Area with adequate gas supply during the summer months, the NYISO does not anticipate that fuel shortages or potential interruptions will be problematic over this study period. For the winter capability periods, the NYISO has a gas-electric coordination protocol that streamlines communications to avoid loss of electric system capacity due to a wintertime loss of gas event.⁶ Recent loss of gas/minimum oil burn (LOG-MOB) studies, indicate compliance with the current rules. A review of the nature of the network of gas supplies and fuel diversity in the rest of New York State indicated no significant changes from the previous Comprehensive Review.

In the 2009 Comprehensive Review, wind resources totaled 1,275 MW at nameplate rating. For 2011, the wind resources have grown to 1,348 MW at nameplate with an additional 300 MW scheduled to come on-line in 2012. Additional wind projects are in the NYISO Interconnection Queue at various stages of development/study.

2.6. Environmental Initiatives

There are numerous environmental initiatives that may impact the manner in which the existing generating fleet operates, or that may require retrofitting environmental control technologies in order to comply with the new requirements. Several final rules will require fuel-switching or significant capital investments from numbers of New York generators in order to achieve the new standards.

The United States Environmental Protection Agency has issued a final rule with respect to greenhouse gas emissions from newly constructed power plants or power plants undergoing modifications, but only if they are subject to controls for other criteria pollutants and only if their increased CO₂ emissions are significant. USEPA Proposed Clean Air Transport Rule (CATR) has been replaced by the Cross State Air Pollution Rule (CSAPR). This final rule provides for limited interstate trading of emission allowances. Reductions for SO₂ and NO_x are significantly greater than the reductions required under CAIR (Clean Air Interstate Rule) and the CATR proposal. A preliminary analysis indicates that fuel switching, additional and more frequent use of existing control technology, and/or retirements of about 900 MW of capacity in New York would bring New York into compliance.

USEPA issued a proposal in March 2011 to better control hazardous air pollutants from coal and oil fired facilities. Emissions from coal units will be limited for particulate matter, hydrochloric acid, and mercury although it is unclear at this time what emission controls will be required for coal units to comply with these rules. Emissions from heavy oil-fired electric power generation will be limited for total metals, hydrochloric acid, and hydrogen fluoride.

⁶ See New York State Gas-Electric Coordination Protocol, NYISO Open Access Transmission Tariff, Attachment BB; http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_bb.pdf.

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Compliance may be possible with fuel blending and switching. Compliance may be required by November 2014.

New York State Department of Environment Conservation (NYSDEC) finalized the BTA (Best Available Technology) rule for power plant cooling water intake structures on July 20, 2011. For facilities that use water in amounts greater than 20 MGD (million gallons per day), the required performance goal is a reduction in impingement that is equivalent to 90% of what would be achieved with the installation of a closed cycle cooling system. New and renewed water quality permits for New York generating facilities issued after July 21, 2011 will require the unit to meet these requirements, as well as the rules set for cooling water intake structures set forth by the USEPA.

NYSDEC promulgated revised regulations for the control of Nitrogen Oxides emissions from fossil fueled electric generating units. These regulations are known as NOx RACT (Reasonably Available Control Technology for Oxides of Nitrogen). Emission reductions required by these revised regulations must be in place by July 2014. Generators must file compliance plans in January 2012.

The Clean Air Act requires continuing reductions of emissions from a class of units that affect visibility in National Parks. That class of units was under construction between 1967 and 1977. Owners of these units are required to conduct visibility impact analyses and prepare plans for reductions of particulate matter, Nitrogen Oxides and Sulfur Dioxides. These plans for emission reductions are currently under review by NYSDEC and federal agency officials.

3. Results

The power system implications of the final environmental initiatives listed above have not been included in this evaluation as generators are still preparing their compliance plans.

Table 3-1 summarizes the Loss of Load Expectation (LOLE) results comparing the 2009 Comprehensive Review results with the 2011 Interim Review for the Base Case and 90/10 Forecast Case results.

Table 3-1 LOLE Results

Year	Base Case Forecast		90 th percentile	
	2009 Comprehensive Review	2011 Interim Review	2009 Comprehensive Review	2011 Interim Review
2012	<0.01	<0.01	0.04	<0.01
2013	<0.01	<0.01	0.06	<0.01
2014	<0.01	<0.01	0.09	<0.01

4. Conclusion

This Interim Review finds that the New York Balancing Authority will comply with the NPCC resource adequacy criterion under both the Base Case peak demand forecast and the high peak demand forecast. 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. If not, the NYISO will address any newly identified Reliability Need in the subsequent RNA or, if necessary, issue a request for an interim, or “Gap” solution, to maintain bulk power system reliability.