

1. MARS Base Case Model Assumptions

1.1 Load Parameters

Parameter	2014 IRM Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Peak Load	October 1 , 2013 forecast NYCA: 33,655 MW NYC: 11,740 MW Long Island 5,461 MW	Forecast based on examination of 2013 weather normalized peaks. Top three external Area peak days aligned with NYCA	Update For 2014 Gold Book, <u>NYCA</u> loads similar to Oct 2013 forecast, NYC and LI lower
Load Shape	Multiple Load Shapes Model using years 2002, 2006, and 2007	See white paper	Same <u>Same, Multiple Load Shapes Model using years 2002, 2006, and 2007</u>
Load Forecast Uncertainty	Zonal model updated to reflect current data	Based on collected data and input from LIPA, Con Ed, and NYISO. (See attachment A)	Same

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.2 Capacity Parameters - Generation

Parameter	2014 IRM Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Existing Generating Unit Capacities	2013 Gold Book values. Use min (DMNC vs. CRIS) capacity value	2013 Gold Book publication	<u>Same 2014 Gold Book, capacity similar to 2013 Gold Book</u>
Proposed New Non-Wind Units	76.9 MW of capacity was repowered or returned to service (see Attachment B)	Units built since the 2013 Gold Book and those non-renewable units with Interconnection Agreements signed by August 1.	<u>2014 Gold Book Section IV* Consistent with Inclusion Rules, capacity repowered or returned to service plus Taylor Biomass included in the base case</u>
<u>Retirements Retirement Units**</u>	164 MW retirements reported See Attachment B3	Policy 5 guidelines on retirement disposition in IRM studies	2014 Gold Book Section IV**, <u>not modeled in the base case</u>
<u>Mothball Units**</u>			<u>2014 Gold Book Section IV*, Cayuga modeled 2015 and 2016 only. Not modeled in the base case: Dunkirk 1, 2, 3, and 4, 9/10/2012 TC Ravenswood GT 7, 3/13/2014 Selkirk I & II, 9/1/2014</u>
<u>ICAP Ineligible Forced Outage Units</u>			N/A
<u>Forced Outage Units</u>			<u>Modeled in the base case with EFOR reflecting the outage</u>
Forced and Partial Outage Rates	Five-year (2008-2012) GADS data for each unit represented. Those units with less than five years – use representative data. See attachments C and C1	T. Rates representing the Equivalent Forced Outage Rates (EFORd) during demand periods over the most recent five-year period (2008-2012)	Update for most recent five year period, <u>2009-2013</u>

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.2 Capacity Parameters – Generation (continued)

Parameter	2014 IRM Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Planned Outages	Based on schedules received by the NYISO and adjusted for history	Updated schedules <i>Currently, data from last year is being used</i>	Same
Summer Maintenance	Nominal 50 MWs – divided equally between upstate and downstate	Review of most recent data	Same
Combustion Turbine Derates	Derate based on temperature correction curves provided	Operational history indicates the derates are in-line with manufacturer’s curves	Same
Proposed New Wind Units	No new wind See Attachment B1	Renewable units based on RPS agreements, interconnection Queue and ICS input	2014 Gold Book IV**, <u>no new wind units</u>
Wind Resources	Wind Capacity – 1366.6 MWs	Number decrease due to a (2013 IRM) forecast not participating in NY Capacity market (Marble River Wind).	2014 Gold Book Section III* and IV*
Wind Shape	Actual hourly plant output of the 2012 calendar year. Summer Peak Hour availability of 17%	Testing results and White Paper	Same
Solar Resources	Solar Capacity of 31.5 MW plus 12.5 MW of new units. See Attachment B-2	Based on collected hourly solar data Summer Peak Hour capacity factor based on June 1 – Aug 31, hours HB14 – HB18	2014 Gold Book, <u>embedded as reflected</u> in Load Forecast

2014 RNA Assumption Matrix

3/~~11~~27/2014 ESPWG

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

Non-NYPA Hydro Resources	Derate by 45%	Review of unit production and hydrological conditions including recognized forecasts (i.e. NOAA)	Same
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1.3 Capacity Parameters – Import and Exports

Parameter	2014 IRM Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Capacity Purchases	Grandfathered amounts: PJM – 1080 MW HQ – 1090 MW All contracts model as equivalent contracts	Grandfathered Rights, ETCNL, and other FERC identified rights	Modeled <u>same</u> as in 2012 RNA
Capacity Sales	Long Term firm sales (279 MW)	These are long term federally monitored contracts	Modeled fully
New UDRs	No new UDRs		Same <u>Updated to most current UDRs</u>

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.4 Topology Parameters

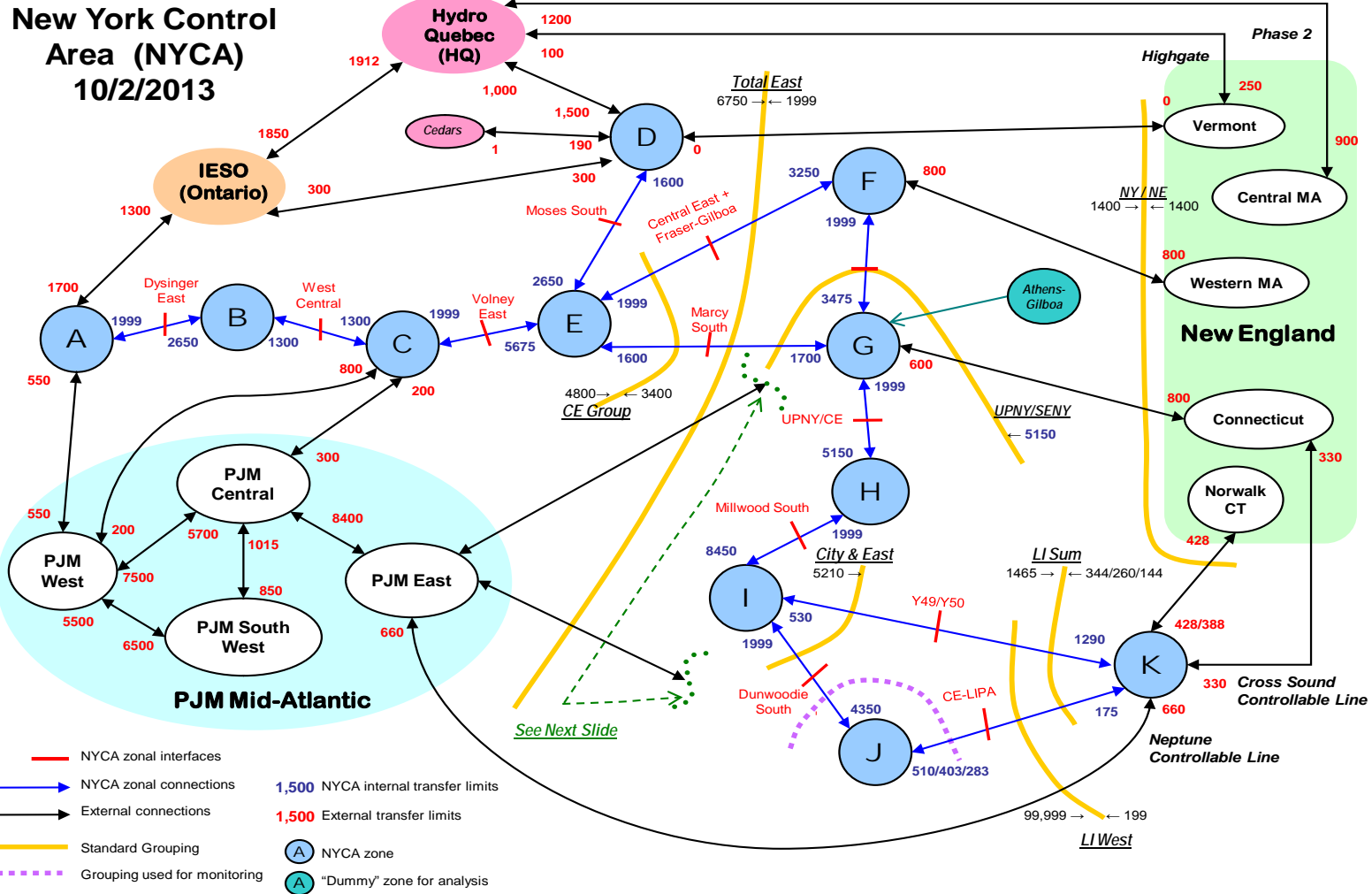
Parameter	2014 IRM Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Interface Limits	All changes reviewed and commented on by TPAS See Attachment E	Based on 2013 Operating Study, 2013 Operations Engineering Voltage Studies, 2013 Comprehensive Planning Process, and additional analysis including interregional planning initiatives	updated analysis extended for ten years
New Transmission	None Identified	Based on TO provided models and NYISO review	2014 Gold Book Section VII <u>2014 Gold Book Section VII that are consistent with the inclusion rules Firm projects in-service within three years are modeled, such as TOTS (2016), Five Mile Road (2015), Mainesburg (2015), Farmers Valley (2016), etc.</u>
Cable Forced Outage Rates	All existing Cable EFORs updated for NYC and LI to reflect most recent five-year history	Based on TO analysis	Same transition rate as provided by TO and held constant over ten years

2014 RNA Assumption Matrix

3/11/27/2014 ESPWG

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

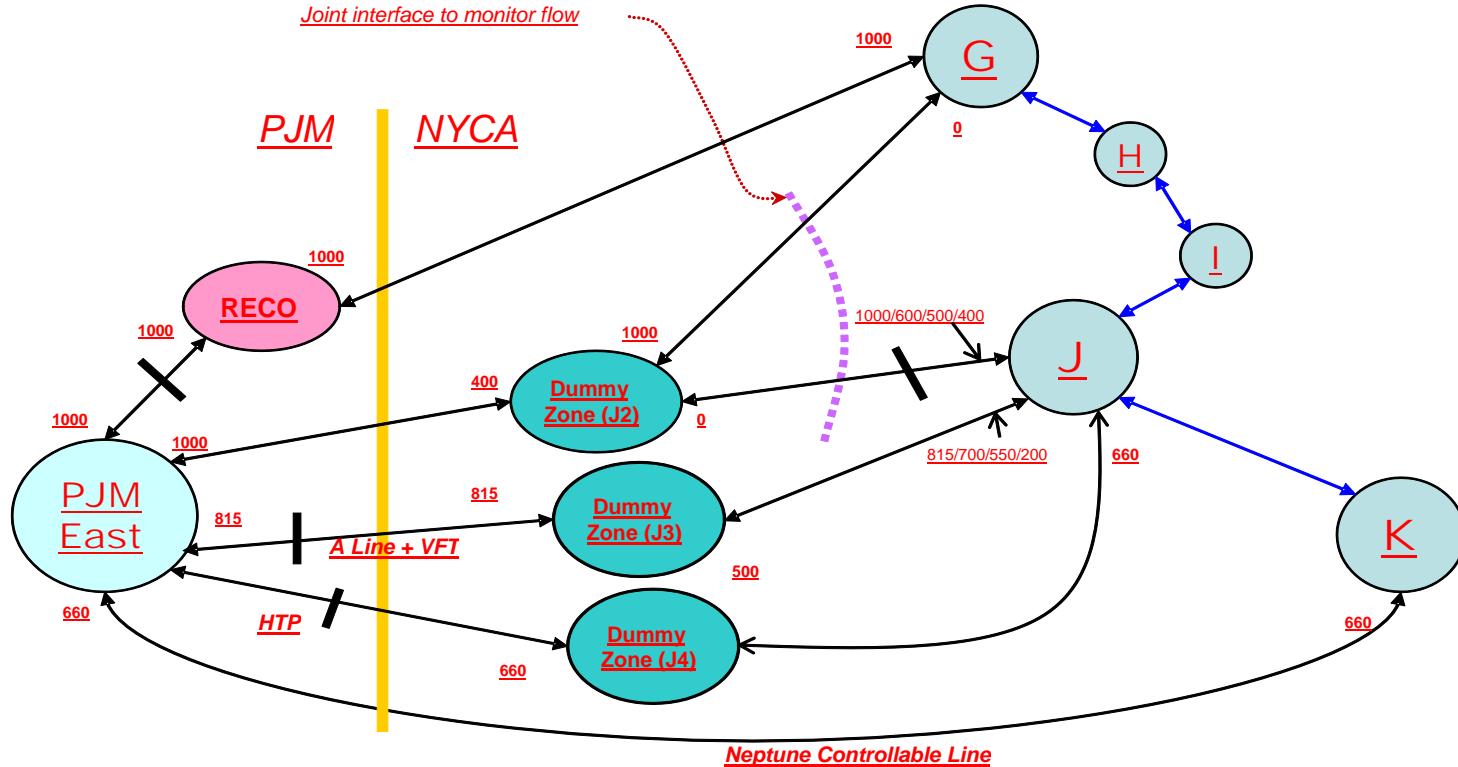
Transmission System Representation 2014 IRM Study - Summer Emergency Ratings (MW)



RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

Transmission System Representation **2014 IRM Study** - Summer Emergency Ratings (MW)

PJM -SENY MARS Model
10/2/2013



$(PJM\ East\ to\ RECO) + (J2\ to\ J) + (PJM\ East\ to\ J3) + (PJM\ East\ to\ J4) = 2000\ MW$. The reverse limit is 1500 MW

Based on the delays in supporting transmission projects, the 2000 MW Limit is maintained. This interface grouping contains the Bold hash mark. MARS will distribute this flow accordingly. This limit will change to 2320 MW when additional transmission comes into service in 2016.

these interfaces with generation

2014 RNA Assumption Matrix

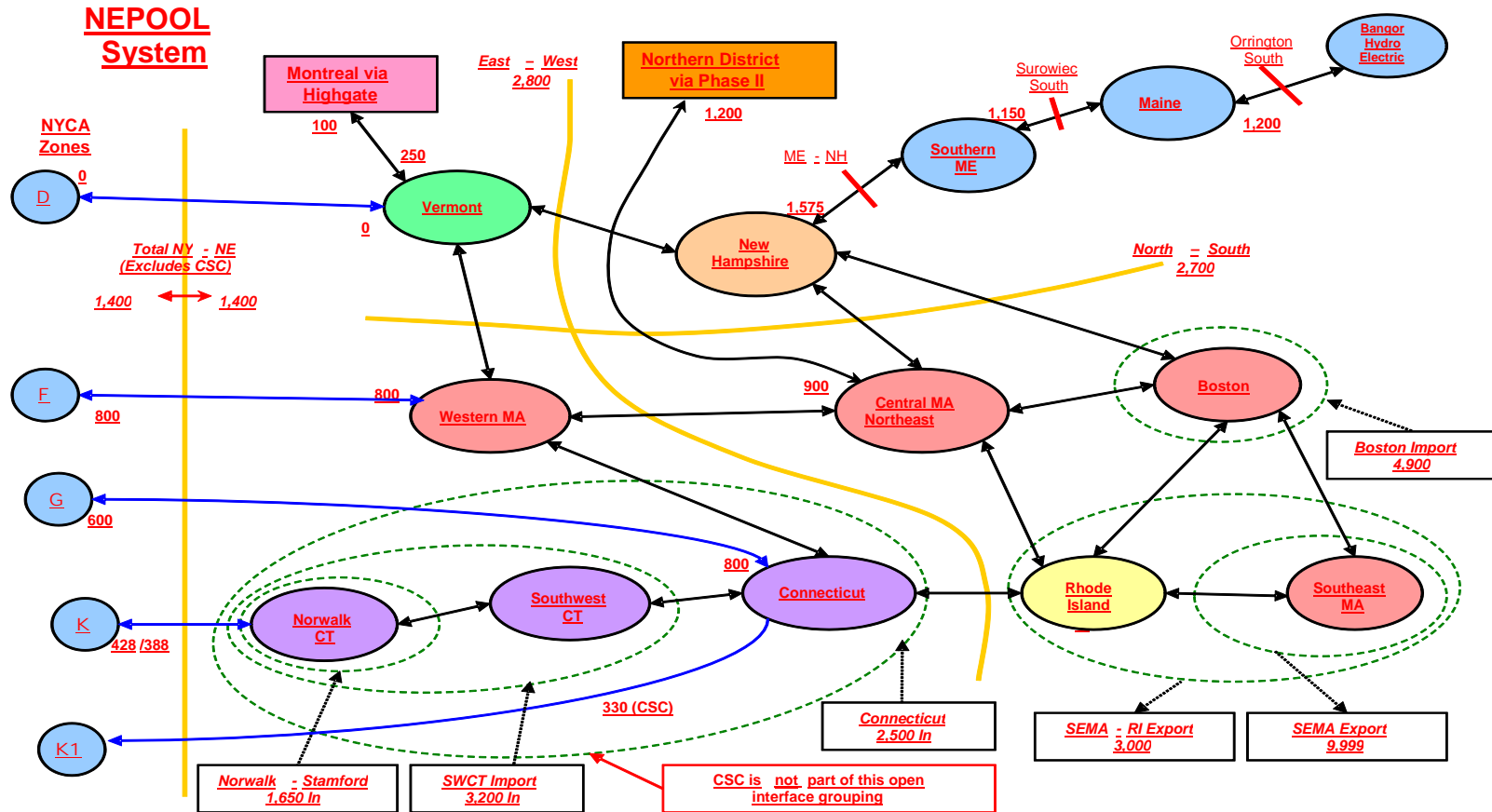
3/11/27/2014 ESPWG

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

Transmission System Representation

2014 IRM Study - Summer Emergency Ratings (MW)

= August 1, 2013



RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.5 Emergency Operating Procedure Parameters

Parameter	2014 Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
Special Case Resources	July 2014 – 1195 MW based on registrations and modeled as 758 MW of effective capacity. Monthly variation based on historical experience (no Limit on number of calls)	Those sold for the program discounted to historic availability. Summer values calculated from July 2013 registrations (see attachment F).	Updated as available <u>2014 Gold Book, registration ICAP is similar to IRM but UCAP is higher</u>
EDRP Resources	July 2013 – 93.9 MW registered model as 12.8 MW in July and proportional to monthly peak load in other months. Limit to five calls per month	Those sold for the program discounted to historic availability. Summer values calculated from July 2013 registrations and forecast growth.	Updated as available <u>2014 Gold Book, registration ICAP and UCAP are both similar to IRM</u>
Other EOPs	721 MW of non-SCR/non-EDRP resources See Attachment D	Based on TO information, measured data, and NYISO forecasts	Updated as available

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.6 External Control Areas Parameters

Parameter	2014 Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
PJM	Load and Capacity data provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	LOLE adjusted to between 0.1 and 0.15 For every year of ten year period
ISONE	Load and Capacity data provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	LOLE adjusted to between 0.1 and 0.15 For every year of ten year period
HQ	Load and Capacity data provided by HQ/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	LOLE adjusted to between 0.1 and 0.15 For every year of ten year period
IESO	Load and Capacity data provided by IESO/NPCC CP-8 data may be adjusted per NYSRC Policy 5 See Attachment E	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	LOLE adjusted to between 0.1 and 0.15 For every year of ten year period
Reserve Sharing	All NPCC Control Areas and PJM interconnection indicate that they will share reserves equally among all members	Per NPCC CP-8 WG	Same

RNA Assumption Matrix patterned off of the base assumptions used for the IRM and LCR studies as of 10/11/2013

1.7 Miscellaneous Parameters

Parameter	2014 Model Assumptions Recommended	Basis for IRM Recommendation	2014 RNA Model Change
MARS Model Version	Version 3.16.5	Per benchmark testing and ICS recommendation	Updated to most recent available <u>Version 3.18</u>
Environmental Initiatives	No estimated impacts based on review of existing rules and retirement trends	An analysis of generator plans to comply with new regulations in 2014	Same <u>Updated to most recent NYSDEC BTA determination</u>

* Detailed back-up information will be presented in 2014 RNA Report in the same manner as presented in the 2012 RNA Report

**Treatment of Retired/Mothballed/Protectively Laid up units for purposes of RNA modeling: Any generating units that, pursuant to the PSC Orders in Case 05-E-0889, have provided a notice of Retirement, Mothball, protective layup, etc., by the study lock-down date, will be assumed to not be available for the period of the RNA study beginning once the applicable PSC notice period runs.

Note: If a Reliability Need is identified, a noticed generating unit can be offered as a market-based or alternate regulated solution, or as a TO GAP solution, in the CRP process, and its prospective return to service would be subject to tracking by NYISO Planning.

2. TRANSMISSION SECURITY / FAULT CURRENT**

Parameter	Modeling Assumptions	Source
Peak Load	NYCA baseline coincident summer peak forecast	2014 Goldbook
Load model	ConEd: voltage varying Rest of NYCA: constant power	2014 FERC 715 filing
System representation	Per updates received through Databank process (Subject to RNA base case inclusion rules)	NYISO RAD Manual, 2014 FERC 715 filing
Inter-area interchange schedules	Consistent with ERAG MMWG interchange schedule	2014 FERC 715 filing, MMWG
Inter-area controllable tie schedules	Consistent with applicable tariffs and known firm contracts or rights	2014 FERC 715 filing
In-city series reactors	Consistent with ConEdison operating protocol (All series reactors in-service for summer)	2014 FERC 715 filing, ConEd protocol
SVCs, FACTS	Set at zero pre-contingency; allowed to adjust post-contingency	NYISO T&D Manual
Transformer & PAR taps	Taps allowed to adjust pre-contingency; fixed post-contingency	2014 FERC 715 filing
Switched shunts	Allowed to adjust pre-contingency; fixed post-contingency	2014 FERC 715 filing
Fault current analysis settings	Per Fault Current Assessment Guideline	NYISO Fault Current Assessment Guideline
Model Version	Powerflow: PSS/E v32.12.1, PSS/MUST v11.40, TARA v735 v765c Dynamics: PSS/E v30.3.3 v32.2.1 Short Circuit: ASPEN v11.8 v12.2	

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