2013 and 2015 CARIS Base Case Assumptions Matrix Comparison
For Discussion at the May 4, 2015 ESPWG

Parameter	Modeling for 2013 CARIS Base Cases	Modeling for 2015 CARIS Base Cases
Peak Load	Based on 2013 Load & Capacity Data Report ("Gold Book") Baseline Forecast of Non-Coincident Peak Demand, including impacts of statewide Energy Efficiency programs (Table 1-2b)	Based on 2015 Load & Capacity Data Report ("Gold Book") Baseline Forecast of Non-Coincident Peak Demand , including Energy Efficiency, Distributed Generation, and Other Behind-the-Meter Impacts (Table I-2b)
Load Shape Model Energy Forecast	2002 Load Shape. Energy Forecast Baseline Forecast of Annual Energy, including impacts of statewide Energy Efficiency programs (Table 1-2a)	2002 Load Shape. Energy Forecast Baseline Forecast of Annual Energy, including Energy Efficiency, Distributed Generation, and Other Behind-the-Meter Impacts (Table I-2a)
Load Uncertainty Model	Only Base Level Forecast utilized; the impact of energy or peak forecasts may be utilized in scenarios	Only Base Level Forecast utilized; the impact of energy or peak forecasts may be utilized in scenarios
Generating Unit Capacities	Updated to reflect 2013 Gold Book winter and summer DMNC values	Updated to reflect 2015 Gold Book winter and summer DMNC values
New Units	Updated as per 2013 Gold Book (Application of inclusion rules identified in CRPP Manual, Section 4.1 and procedures)	Updated as per 2015 Gold Book (Application of inclusion rules identified in Reliability Planning Process Manual, Section 3.1.1 and procedures)

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Wind Resource Modeling	Units and capacities updated as per 2013 Gold Book. Wind resources are modeled based on unit capacities and synthesized wind shapes developed as part of 2010 Wind Study.	Units and capacities updated as per 2015 Gold Book. Wind resources are modeled based on unit capacities and synthesized wind shapes developed as part of 2010 Wind Study.
Non-NYPA Hydro Capacity Modeling	Updated as per 2013 Gold Book; unit output is modeled consistent with historic levels.	Updated as per 2015 Gold Book; unit output is modeled consistent with historic levels.
Special Case Resources	Not utilized in MAPS production cost modeling; incorporated in ICAP Metric calculation	Not utilized in MAPS production cost modeling; incorporated in ICAP Metric calculation
EDRP Resources	N/A for production cost modeling	N/A for production cost modeling
External Capacity – Purchases and Wheel-Throughs	Flows across schedulable and non-schedulable transmission lines are based on economics.	Flows across schedulable and non-schedulable transmission lines are based on economics.
Retirements	Updated as per 2013 Gold Book (Application of inclusion rules; specific assumptions concerning mothball announcement post-CRP; units with completed studies indicating that the unit is required for reliability are retained in the Base Case; units whose studies are pending are retained in the Base Case; others are excluded from the Base Case)	Updated as per 2015 Gold Book (Application of inclusion rules; specific assumptions concerning mothball announcement post-CRP; units with completed studies indicating that the unit is required for reliability are retained in the Base Case; units whose studies are pending are retained in the Base Case; others are excluded from the Base Case)

Parameter	Modeling for 2013 CARIS Base Cases	Modeling for 2015 CARIS Base Cases
Generator Outages	Scheduled to levelize reserves; as per the maintenance schedules in long term adequacy studies.	Same
Gas Turbines Ambient Derate	Modeling utilizes summer and winter DMNC ratings for all units.	Same.
Environmental Modeling Externalities Allowances	Allowance costs based on projected RGGI costs. SO_2 and NO_x consistent with 2011 CARIS2 Assumptions. SO_2 based on the CAIR price ($2.50 / Ton) escalated until 2016, at which point EPA-forecasted CSAPR prices were assumed to take effect as a proxy for MATS. NO_x based on the CAIR price ($60/Ton) escalated at rate consistent with natural gas price forecast.	Allowance costs based on projected RGGI costs. SO_2 and NO_x Allowance Prices reflect new CSAPR markets. SO_2 based on CSAPR price ($100 / Ton) decreased 10% until 2017, at which point Phase II will increase price by 25% and decrease thereafter at 20% per annum. Annual ($100 / Ton) and Ozone Season NO_x ($125 / Ton) follow same trend as SO_2 Allowance Prices. Detailed allowance costs are provided in the 5/4/15 ESPWG meeting materials.
Commitment and Dispatch Options Operating Reserves	Each Balancing Authority commits to serve its own load, firm transactions, and potential transfers Hurdle rates – flat Operating Reserves as per NYCA requirements.	Same Same. As presented on 5/4/15 to ESPWG. Same

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Fuel Price Forecast	Bases updated to more heavily weight recent trends (2008-0.075, 2009-0.12, 2010-0.175, 2011-0.255, 2012-0.375); a third natural gas region added, encompassing zones F – I. The natural gas price forecast reflects near-term supply infusions into downstate region associated with the Spectra pipeline. Fuel oil and coal price forecasts are developed utilizing the EIA's annual forecast of national delivered prices. Regional bases are derived using EIA Form 923 data. The seasonality for fuel oils is based on analysis of daily prices provided by MMA. Coal has no seasonality.	Annual bases updated to more heavily weight recent trends (2012-0.100, 2013-0.325, 2014-0.575). Seasonality and spikes based on five-year history (2010-2014). Fuel oil and coal price forecasts are developed utilizing the EIA's annual forecast of national delivered prices. Regional bases are derived using EIA Form 923 data. The seasonality for fuel oils is based on an analysis of New York Harbor Ultra-Low Sulfur Diesel (ULSD) prices. Coal has no seasonality. Illustrative fuel costs are presented in the 5/4/15 ESPWG meeting materials.

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Cost Curve Development (including heat rates and emission rates)	CO2 Allowance costs based on projected RGGI costs with 2.5% annual growth beyond 2020. Utilizing SO2 and NOx allowance costs developed for 2011 CARIS 2 database. Current values are escalated based on forecasted natural gas price increases. Unit heat rates developed from vendor supplied data and fuel input data matched with MWh data for NYCA.	Unit heat rates (and emission rates) developed from vendor supplied data, USEPA CAMD fuel input and emissions data matched with NYISO production data for NYCA and USEIA production data for non NYCA units.
Local Reliability Rules	List and develop appropriate nomograms. Fuel burn restrictions, operating restrictions and exceptions, commitment/dispatch limits	Same
Energy Storage Gilboa PSH Lewiston PSH	Scheduling checked to conform to historical operations.	Same
Transmission System Model		
Power Flow Cases	As per CRP.	Same
Interface Limits Monitored/contingency pairs Nomograms Joint, Grouping Unit Sensitive Voltage	Data from the results of internal and external planning studies; vendor-supplied data; operational voltage studies; operational limits; transfer limit analysis for critical interfaces.	Data from the results of internal and external planning studies; vendor-supplied data; operational voltage studies; operational limits; transfer limit analysis for critical interfaces.

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New Transmission Capability	Updated as per 2013 Gold Book (Application of base case inclusion rules)	Updated as per 2015 Gold Book (Application of base case inclusion rules)
Internal Controllable Lines (PARs,DC,VFT)	Optimized in simulation.	Same
Neighboring Systems		
Outside World Area Models Fuel Forecast	Power flow data from CRP, "production" data developed by NYISO with vendor and neighbor input. Fuel forecasts developed utilizing same methodology as NYCA fuel forecasts.	Same
External Capacity And Load Forecast	Neighboring systems modeled consistent with reserve margins in the RNA/CRP analysis. Neighboring systems data reviewed and held at required reserve margin.	Same
System representation in Simulation	HQ modeled as fixed hourly schedule, synchronized with all other external injections. Full Representation/Participation NYISO ISONE IESO PJM Classic & AP,AEP,CE,DLCO, DAY, VP Proxy Bus Injection: HQ-NYISO, HQ-NE-ISO, NB-NEISO, HQ - IESO Transmission Only/Zeroed Out: MECS,FE,SPP, MAR, NIPS,OVEC,TVA, FRCC,SERC,ERCOT,WECC	Same

Parameter	Modeling for 2013 CARIS Base Cases	Modeling for 2015 CARIS Base Cases
External Controllable Lines (PARs,DC,VFT, Radial lines)	A,B,C and J,K "wheel" Both sets set at 1000 (+/- 100) imbalance monitored Ramapo "wheel" modified to reflect updated protocols, tariff and market operations, including NYISO Technical Bulletins and inter-control area operating agreements. Consistent with Technical Bulletin #152, MAPS nomogram schedules 46% (for 2013), 61% (from 2014) respectively of Interchange Schedules across NY-PJM AC ties across Ramapo PARS. These are increases from 40% and reflect the most recent PJM JOA. Norwalk (-200MW, +200MW) L33,34 (-300MW, +300MW) PV20 (0MW, +150MW) Neptune (0MW, +660MW) CSC (0MW, +330MW) CSC and Neptune optimized subject to "cost of use" HTP (0, 660) Linden VFT (-315,315)	Same Ramapo "wheel" reflects current updated protocols, tariff and market operations, including NYISO Technical Bulletins and inter-control area operating agreements. 61% of Interchange Schedules across NY-PJM AC ties flow across Ramapo PARS. In addition, 80% of RECO load is served across Ramapo PARS. Norwalk (-200MW, +200MW) L33,34 (-300MW, +300MW) PV20 (0MW, +150MW) Neptune (0MW, +660MW) CSC (0MW, +330MW) CSC and Neptune optimized subject to "cost of use" HTP (0, 660) Linden VFT (-315,315)