

2018-2019 NYCA IRM Requirement Study

IRM Base Case Model Assumptions

Assumption Matrix

January 31, 2017

Draft V0

Load Parameters

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	Peak Load Forecast (Preliminary Base Case – Parametric & Sensitivities)	2016 Gold Book NYCA: 33,363 MW NYC: 11,795 MW LI: 5,422 MW G-J: 16,313 MW	2017 Gold Book NYCA: xx,xxx MW NYC: yy,yyy MW LI: z,zzz MW G-J: aa,aaa MW	Gold Book Forecast is used for Preliminary Base Case parametric study and sensitivity cases	N
2	Peak Load Forecast (Final Base Case)	October 2016 NYCA: 33273 MW NYC: 11670 MW LI: 5450 MW G-J: 16073 MW	October 2017 NYCA: xxxxx MW NYC: yyyyy MW LI: zzzz MW G-J: aaaaa MW	Forecast based on examination of 2017 weather normalized peaks. Top three external Area peak days aligned with NYCA	N
3	Load Shape (Multiple Load Shape)	Bin 1: 2006 Bin 2: 2002 Bins 3-7: 2007	Bin 1: 2006 Bin 2: 2002 Bins 3-7: 2007	ICS Recommendation.	N
4	Load Forecast Uncertainty	Zonal Model to reflect current data with input from Con Ed and LIPA. (Attachment A)	Zonal Model to reflect current data with input from Con Ed and LIPA. (Attachment A)	Based on TO and NYISO data and analyses.	N

Generation Parameters

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	Existing Generating Unit Capacities	2016 Gold Book values. Use min (DMNC vs. CRIS) capacity value	2017 Gold Book values. Use min (DMNC vs. CRIS) capacity value	2017 Gold Book publication	N
2	Proposed New Units (Non-Renewable) and re-ratings	0 MW of new non- wind resources. 66.9 MW of project related re-ratings. (Attachment B1)	xxx MW of new non-wind resources. yyy MW of project related re-ratings. (Attachment B1)	2017 Gold Book publication and generator notifications	N
3	Retirements, Mothballed units, and ICAP ineligible units	260.7MW retirements or mothballs reported or Units in IIFO and IR (Attachment B2)	Zzzz MW retirements or mothballs reported or Units in IIFO and IR ¹ (Attachment B2)	2017 Gold Book publication and generator notifications	N
4	Forced and Partial Outage Rates	Five-year (2011-2015) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachments C and C1)	Five-year (2012-2016) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachments C and C1)	Transition Rates representing the Equivalent Forced Outage Rates (EFORd) during demand periods over the most recent five-year period (2012-2016)	N
5	Planned Outages	Based on schedules received by the NYISO and adjusted for history	Based on schedules received by the NYISO and adjusted for history	Updated schedules	N
6	Summer Maintenance	Nominal 50 MWs – divided equally between zones J and K	Nominal xx MWs – divided equally between zones J and K	Review of most recent data	N

¹ ICAP Ineligible Forced Outage (IIFO) and inactive Reserve (IR)

For Discussion Purposes Only

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
7	Combustion Turbine Derates	Derate based on temperature correction curves provided	Derate based on temperature correction curves provided	Operational history indicates the derates are in-line with manufacturer's curves	N
8	Existing and Proposed New Wind Units	221.1 MW of Wind Capacity additions totaling 1676.2 MW of qualifying wind (Attachment B3)	aaaa MW of Wind Capacity additions totaling bbbbb MW of qualifying wind (Attachment B3)	Renewable units based on RPS agreements, interconnection queue, and ICS input.	N
9	Wind Shape	Actual hourly plant output over the period 2011-2015. New units will use zonal hourly averages or nearby units.	Actual hourly plant output over the period 2012-2016. New units will use zonal hourly averages or nearby units.	Program randomly selects a wind shape of hourly production over the years 2012-2016 for each model iteration.	N
10	Solar Resources (Grid connected)	31.5 MW Solar Capacity. Model chooses from 4 years of production data covering the period 2012-2015.	31.5 MW Solar Capacity. Model chooses from 4 years of production data covering the period 2012-2016.	Concepts referenced in wind paper apply to solar modeling. GE MARS program will randomly select a solar shape from multiple years of production data.	N
11	Solar Resources (Behind the meter)	Modeled in Load forecast only	Zonal forecast of hourly solar production. Load forecast altered to reflect "but for" solar penetration	Hourly zonal forecast based on radiance patterns throughout the state. Total MW forecast based on actual plus growth projections.	Y
12	Small Hydro Resources	Derate by 46%	Actual hourly plant output over the period 2012-2016.	Program randomly selects a Hydro shape of hourly production over the years 2012-2016 for each model iteration.	Y

For Discussion Purposes Only

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
13	Large Hydro	Probabilistic Model based on 5 years of GADS data	Probabilistic Model based on 5 years of GADS data	Transition Rates representing the Equivalent Forced Outage Rates (EFORd) during demand periods over the most recent five-year period (2012-2016)	N

Transactions – Imports and Exports

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	Capacity Purchases	Grandfathered amounts: PJM – 1080 MW HQ – 1090 MW HQ TO 1110 MW assuming awarded CRIS rights All contracts model as equivalent contracts	Existing Rights: PJM – 1080 MW HQ – 1110 MW All contracts model as equivalent contracts	Grandfathered Rights, ETCNL, and other awarded long-term rights.	N
2	Capacity Sales	Long Term firm sales Summer 284.9 MW	Long Term firm sales Summer ccc MW	These are long term federal contracts.	N
3	FCM Sales	No Sales within study period	No Sales within study period	Sensitivity based on examination of neighbor’s potential FCM auction results.	N
4	New UDRs	No new UDR projects	No new UDR projects	Existing UDR elections are made by August 1 st and will be incorporated into the model.	N

Topology

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	Interface Limits	All changes reviewed and commented on by TPAS (Attachment E)	All changes reviewed and commented on by TPAS (Attachment E)	Based on the most recent NYISO studies and processes, such as Operating Study, Operations Engineering Voltage Studies, Comprehensive System Planning Process, and additional analysis including interregional planning initiatives.	N
2	New Transmission	None Identified	None Identified	Based on TO provided models and NYISO's review.	N
3	Cable Forced Outage Rates	All existing Cable EFORs updated for NYC and LI to reflect most recent five-year history	All existing Cable EFORs will be updated for NYC and LI to reflect most recent five-year history	Based on TO analysis.	N

Emergency Operating Procedures

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	Special Case Resources	July 2016 –1192MW based on registrations and modeled as 841 MW of effective capacity. Monthly variation based on historical experience*	July 2017 –ddd MW based on registrations and modeled as eee MW of effective capacity. Monthly variation based on historical experience*	SCRs sold for the program discounted to historic availability. Summer values calculated from July 2017 registrations. Performance calculation updated per ICS presentations on SCR performance. (Attachment F)	N
2	EDRP Resources	July 2016 75 MW registered model as 13 MW in July and proportional to monthly peak load in other months. Limit to five calls per month	July 2017 ff MW registered modeled as gg 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 2017 registrations and forecast growth.	N
3	Other EOPs	665 MW of non-SCR/non-EDRP resources	hhh MW of non-SCR/non-EDRP resources (Attachment D)	Based on TO information, measured data, and NYISO forecasts.	N

* The number of SCR calls is limited to 5/month when calculating LOLE based on all 8,760 hours.

External Control Areas

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	PJM	Load and Capacity data provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Load and Capacity data provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes. White paper on external EOPs.	See topology section above
2	ISONE	Load and Capacity data provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Load and Capacity data provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	N
3	HQ	Load and Capacity data provided by HQ/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Load and Capacity data provided by HQ/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	N
4	IESO	Load and Capacity data provided by IESO/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Load and Capacity data provided by IESO/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)	Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes.	N
5	Reserve Sharing	All NPCC Control Areas indicate that they will	All NPCC Control Areas indicate that they will	Per NPCC CP-8 WG.	N

For Discussion Purposes Only

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
		share reserves equally among all members	initially share reserves equally among all members and then among non-members		

Miscellaneous

#	Parameter	2017 Model Assumptions	2018 Model Assumptions	Basis for Recommendation	Model Change
1	MARS Model Version	Version 3.20	Version j.jj	Per benchmark testing and ICS recommendation.	N
2	Environmental Initiatives	No estimated impacts based on review of existing rules and retirement trends	No estimated impacts based on review of existing rules and retirement trends	Review of existing regulations and rules.	N

For Discussion Purposes Only

Attachment A

NYCA Load Forecast Uncertainty Model

TBD

Attachment B1

New Non-Wind Units and Unit Re-ratings²

TBD

² Unit re-ratings are for generation facilities that have undergone uprate projects.

Attachment B2

Retiring and Ineligible Generating Units

TBD

Attachment B3

Existing and New Wind Resources

TBD

Attachment B4

Existing and New Solar Resources

TBD

Attachment C

TBD

Attachment C1

TBD

Attachment D

Emergency Operating Procedures

Step	Procedure	Effect	2017 MW Value	2018 MW Value
1	Special Case Resources	Load relief	1,192 MW Enrolled/ 841 MW modeled	kkkk MW Enrolled/ lll MW modeled
2	Emergency Demand Response Program	Load relief	75 MW Enrolled/13 MW Modeled	mm MW Enrolled/nn MW Modeled
3	5% manual voltage Reduction	Load relief	66 MW	oo MW
4	Thirty-minute reserve to zero	Allow operating reserve to decrease to largest unit capacity (10-minute reserve)	655 MW	655 MW
5	5% remote voltage reduction	Load relief	386 MW	ppp MW
6	Voluntary industrial curtailment	Load relief	125.5 MW	qqq MW
7	General public appeals	Load relief	88 MW	rr MW
8	Emergency Purchases	Increase capacity	Varies	Varies
9	Ten-minute reserve to zero	Allow 10-minute reserve to decrease to zero	1,310 MW	1,310 MW
10	Customer disconnections	Load relief	As needed	As needed

Attachment E TBD

Attachment E1

TBD

Attachment F
SCR Determinations

TBD

Assumption Matrix History

Date	Ver	Preliminary Base Case	Ver	Final Base Case
2/1/17	V00	Preliminary assumptions without attachments.		