NYCA IRM Requirement Study

2021-2022 Preliminary Base Case (PBC)

Model Assumptions Assumption Matrix

Draft V 0.0 - January 28, 2020

Load Parameters

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	Peak Load Forecast (Preliminary Base Case – Parametric & Sensitivities)	2020 Gold Book NYCA: 32,202MW[1] NYC: 11,651 MW LI: 5,134 MW G-J: 15,911 MW			
2	Peak Load Forecast (Final Base Case)	October 2020 Fcst. NYCA: 32,393 MW[2] NYC: 11,503 MW LI: 5,384MW G-J: 15,795 MW			
3	Load Shape (Multiple Load Shape)	Bin 1: 2006 Bin 2: 2002 Bins 3-7: 2007			
4	Load Forecast Uncertainty (LFU)- Summer	Zonal Model to reflect current data with input from Con Ed and LIPA. (Attachment A)			
5	LFU Winter	Updated See (Attachment A1)			

[1] The loads associated with the BTM-NG program need to be added to these values.
[2] BTM-NG loads will be incorporated into these numbers.

Generation Parameters

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	Existing Generating Unit Capacities	2019 Gold Book values. Use min (DMNC vs. CRIS) capacity value			
2	Proposed New Units (Non-Renewable) and re-ratings	MW 1020 MW of new non- wind resources, plus 0 MW of project related re-ratings. (Attachment B1)			
3	Retirements, Mothballed units, and ICAP ineligible units	1205.9 MW of unit deactivations (Attachment B2)			
4	Forced and Partial Outage Rates	Five-year (2014-2018) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachment C)			
5	Planned Outages	Based on schedules received by the NYISO and adjusted for history			

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
6	Summer Maintenance	Nominal 50[4] MWs – divided equally between zones J and K			
7	Combustion Turbine Derates	Derate based on temperature correction curves provided			
8	Existing and Proposed New Wind Units	0 MW of Wind Capacity additions totaling 1891.7 MW of qualifying wind (Attachment B3)			
9	Wind Shape	Actual hourly plant output over the period 2014-2018. New units will use zonal hourly averages or nearby units.			
10	Solar Resources (Grid connected)	Total of 51.5 MW of qualifying Solar Capacity. (Attachment B3)			
11	Solar Shape	Actual hourly plant output over the period 2014-2018. New units will use zonal hourly averages or nearby units.			

[4] As presented at the 7/30 ICS meeting

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
12	BTM- NG Program	No new BTM NG resources (Attachment B4)			
13	Small Hydro Resources	Actual hourly plant output over the period 2014-2018.			
14	Large Hydro	Probabilistic Model based on 5 years of GADS data (2014-2018)			
15	Land Fill Gas	Actual hourly plant output over the period 2014-2018.			
16	New ESR (Energy Storage Resources)	5 MW of new battery storage resource scheduled (see attachment B3)			

Transactions – Imports and Exports

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	Capacity Purchases	Existing Rights: PJM – 1,080 MW HQ – 1,110 MW All contracts model as equivalent contracts			
2	Capacity Sales	Long Term firm sales Summer 281.1 MW			
3	FCM Sales from a Locality[5]	No Sales modeled within study period			
4	Wheels through NYCA	300 MW HQ to NE equivalent contract			
5	New UDRs (Unforced capacity Deliverability Rights)	No new UDR projects			
6	New EDRs (External Deliverability Rights)	0 MWs for 2021 Study			

[5] Final FCM sales that will materialize are unknowable at the time of the IRM study. To reflect the impact these sales have on reliability, the NYISO applies a Locality Exchange Factor in the market.

Topology

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	Interface Limits	Updated UPNY-SENY interface group, Jamaica ties (from J to K), and UPNY-ConEd interface. The Cedars bubble merged into the HQ bubble (Attachment E)			
2	New Transmission	None Identified			
3	AC Cable Forced Outage Rates	All existing Cable EFORs for NYC and LI to reflect most recent five-year history (2014-2018)			
4	UDR Line Unavailability	Five year history of forced outages (2014-2018)			

Emergency Operating Procedures

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	Special Case Resources	July 2019 –1,282 MW based on registrations and modeled as 873 MW of effective capacity. Monthly variation based on historical experience*			
2	Other EOPs	692 MW of non-SCR/non-EDRP resources (Attachment D)			
3	EOP Structure	12 EOP Steps Modeled			

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

External Control Areas

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	PJM	Load and Capacity data provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 (Attachment E)			
2	ISONE, Quebec, IESO	Load and Capacity data provided by ISONE/NPCC CP-8 Data adjusted per NYSRC Policy 5 (Attachment E)			
3	External Adjustments per Policy 5	If needed, add load to externals proportional to existing excess capacity			
4	Reserve Sharing	All NPCC Control Areas indicate that they will initially share reserves equally among all members and then among non-members			
5	Emergency Assistance	Statewide Limit of 3,500 MW of emergency assistance allowed from neighbors.			

Miscellaneous

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change
1	MARS Model Version	Version 3.22.6			
2	Environmental Initiatives	Proposed rules would not take effect until after the summer of 2020			

Attachment A

NYCA Summer Load Forecast Uncertainty Model

Attachment A1

NYCA Winter Load Forecast Uncertainty Model

Attachment B1

New Non-Intermittent Units and Unit Re-ratings[6]

B1 - Proposed Non-Intermittant Units and Unit Re-ratings (summer ratings)					
Project or Generator Name	**Zone**	**2021 MARS Model (MW)**	**2021 Gold Book (MW)**	**New or Incremental (MW)**	**2021 MARS Model (MW)**
New Units					
Total New Units					

[6] Unit re-ratings are for generation facilities that have undergone uprate projects.

Attachment B2

Retiring and Ineligible Generating Units

Attachment B2 -Announced Unit Deactivations since 2021 IRM Study		
Generator Name	**Zone**	**CRIS (MW)**
Retirements:		
Deactivations:		
ICAP Ineligible:		
Total Removals		

Attachment B3

New Intermittent Resources

B3 - New Intermittent Resources				
Resouce	Zone	CRIS (MW)	Summer Capability (MW)	CRIS adusted value from 2020 Gold Book (MW)
New Wind Units				
Total New Wind				
New Solar Units				
Total New Solar				
Other Intermittent				
Total New Other				
Total New Intermittent				

Attachment B4

Resources in the Behind the Meter Net Generation Program (BTM-NG)

Attachment B4 -Units in the Behind the Meter Net Generation Program*			
Generator Name	**Zone**	**Resource Value (MW)[1]**	**Peak Load Adjustment (MW)[2,3]**
Existing:			
Total BTM Gen			

* The IRM study independently models the generation and load components of BTM:NG Resources

1. Based on adjusted DMGC value
2. Based on ACHL
3. The load adjustment values need to be added to the load forecast

Attachment C

NYCA Five Year Derating Factors

Attachment D

Emergency Operating Procedures

Step	Procedure	2020 MW Value	2021 MW Value
1,2	Special Case Resources –Load, Gen	1282 MW Enrolled/ 873 MW modeled	
3	Emergency Demand Response Program	None Modeled	
4	5% manual voltage Reduction	57 MW	
5	Thirty-minute reserve to zero	655 MW	
6	5% remote voltage reduction	347 MW	
7	Voluntary industrial curtailment	207 MW	
8	General public appeals	80 MW	
9	Emergency Purchases	Varies	
10	Ten-minute reserve to zero	1,310 MW	
11	Customer disconnections	As needed	
12	Adjustment used if IRM is lower than technical study margin	As needed	

Attachment E - IRM Topology

2021 IRM Topology (Summer Limits)

Attachment F

SCR Determinations

SCR Performance for 2021 IRM Study						
Super Zones	**Enrollments (July 2020)**	**Forecast (2021)[1]**	**Performance Factor[2]**	**UCAP (2021)**	**Adjustment Factor[3]**	**Model Value**
A - F						
G - I						
J						
K						
Totals						

Assumption Matrix History

Date	Ver	Preliminary Base Case	Date	Ver	Final Base Case
1/17/19	V0.0	Preliminary assumptions without attachments.			