NYCA IRM Requirement Study

2021-2022 Preliminary Base Case (PBC)

Model Assumptions Assumption Matrix

Draft V 2.0 - March 19, 2020

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
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)-	Zonal Model to reflect current data with input from Con Ed and LIPA. (Attachment A)				

*(-) indicates a reduction in IRM while (+) indicates an increase. Range: Low < 0.5%, Medium 0.5% - 1%, High > 1%, Minimal indicates there may be some movement but within 0 to +/- 0.1%.

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

Generation Parameters

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
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 1,020 MW of new non-wind resources, plus 0 MW of project related re-ratings. (Attachment B1)				
3	Retirements, Mothballed units, and ICAP ineligible units	1,205.9 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)	Five-year (2015-2019) 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	Based on schedules received by the NYISO and adjusted for history			

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
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	Derate based on temperature correction curves provided			
8	Existing and Proposed New Wind Units	0 MW of Wind Capacity additions totaling 1,891.7 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.	Actual hourly plant output over the period 2015-2019. New units will use zonal hourly averages or nearby units.			
10	Existing and Proposed New Solar Resources	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.	Actual hourly plant output over the period 2015-2019. New units will use zonal hourly averages or nearby units.			

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
12	BTM- NG Program	No new BTM NG resources (Attachment B4)				
13	Small Hydro Resources	Actual hourly plant output over the period 2014-2018.	Actual hourly plant output over the period 2015-2019.			
14	Large Hydro	Probabilistic Model based on 5 years of GADS data (2014-2018)	Probabilistic Model based on 5 years of GADS data (2015-2019)			
15	Landfill Gas	Actual hourly plant output over the period 2014-2018.	Actual hourly plant output over the period 2015-2019.			
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	Est. IRM Impact*
1	Capacity Purchases	Existing Rights: PJM – 1,080 MW HQ – 1,110 MW All contracts model as equivalent contracts	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	No Sales modeled within study period			
4	Wheels through NYCA	300 MW HQ to NE equivalent contract	300 MW HQ to NE equivalent contract			
5	New UDRs (Unforced capacity Deliverability Rights)	No new UDR projects	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	Est. IRM Impact*
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	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)	All existing Cable EFORs for NYC and LI to reflect most recent five-year history (2015-2019)			
4	UDR Line Unavailability	Five year history of forced outages (2014-2018)	Five year history of forced outages (2015-2019)			

Emergency Operating Procedures

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
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	9 EOP steps modeled			

External Control Areas

#	Parameter	2020 Model Assumptions	2021 Model Assumptions	Basis for Recommendation	Model Change	Est. IRM Impact*
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	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.	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	Est. IRM Impact*
1	MARS Model Version	Version 3.22.6	3.27.1376			
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-Intermittent 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

Attachment B2 -Announced Unit Deactivations since 2020 IRM Study		
Generator Name	**Zone**	**CRIS (MW)**
Retirements:		
Deactivations:		
ICAP Ineligible:		
Total Removals		

B3 - New Intermittent Resources				
Resource	Zone	CRIS (MW)	Summer Capability (MW)	CRIS adjusted 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-NG			

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

1. Based on adjusted Dependable Maximum Gross Capability (DMGC) value
2. Based on Average Coincident Host Load (ACHL)
3. The load adjustment values need to be added to the load forecast

Attachment C

NYCA Five Year Derating Factors

Attachment D

Step	Procedure	2020 MW Value	2021 MW Value
1	Special Case Resources –Load, Gen	1,282 MW Enrolled/ 873 MW	
2	5% manual voltage Reduction	57 MW	
3	Thirty-minute reserve to zero	655 MW	
4	5% remote voltage reduction	347 MW	
5	Voluntary industrial curtailment, General Public Appeals	287 MW	
6	Emergency Purchases	Varies	
7	Ten-minute reserves to zero	1,310 MW	
8	Customer disconnections	As needed	
9	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.			
2/21/20	V1.0	Preliminary assumptions without attachments.			
3/19/20	V2.0	Preliminary assumptions without attachments.			