

# NYCA IRM Requirement Study 2025-2026 Final Base Case (FBC) Model Assumptions Matrix

Draft V1.0

NYSRC

**Installed Capacity Subcommittee Meeting #294**

October 2, 2024

# Load Forecast

| # | Parameter   | 2024 Model Assumptions  | 2025 Model Assumptions  | Basis for Recommendation  | Model Change |
|---|---|---|---|---|--------------|
| 1 | Peak Load Forecast<br>(Preliminary Base Case –<br>Parametric & Sensitivities) | 2023 Gold Book <sup>1</sup><br>NYCA: 32,451.5 MW<br>NYC: 11,303 MY<br>LI: 5,090.1 MW<br>G-J: 15,439 MW<br>(Attachment A1) | 2024 Gold Book <sup>1</sup><br>NYCA: 31,832.2 MW<br>NYC: 11,227.5 MY<br>LI: 5,077.9 MW<br>G-J: 15,298.5 MW<br>(Attachment A1) | Most recent Gold Book Forecast is used for Preliminary Base Case parametric study and sensitivity cases | N            |
| 2 | Peak Load Forecast<br>(Final Base Case)                                       | October 2023 Fcst<br>NYCA: 31,765.6 MW <sup>1</sup><br>NYC: 11,170.6 MW<br>LI: 5,080.3 MW<br>G-J: 15,273.5 MW             | October 2024 Fcst<br>NYCA: 31,649.7 MW <sup>1</sup><br>NYC: 11,043.9 MW<br>LI: 5,092.1 MW<br>G-J: 15,205.1 MW                 | Updated Load Forecast in October will be used for Final Base Case (FBC)                                 | N            |
| 3 | Load Shape (Multiple Load<br>Shape)   | Bin 1-2: 2013<br>Bin 3-4: 2018<br>Bin 5-7: 2017   | Bin 1-2: 2013<br>Bin 3-4: 2018<br>Bin 5-7: 2017   | ICS Recommendation  | N            |
| 4 | Load Forecast Uncertainty<br>(LFU)  | Zonal Model to reflect current data with input from Con Ed and LIPA.<br>(Attachment A2)                                   | Zonal Model to reflect current data with input from Con Ed and LIPA.<br>(Attachment A2)                                       | Based on TO and NYISO data analysis   | N            |
| 5 | LFU Winter  | Attachment A3   | Attachment A3   | Based on TO and NYISO data analysis   | N            |

<sup>1</sup> Behind-the-Meter Net Generation (BTM:NG) resource loads have been incorporated into these numbers.

<sup>2</sup> The loads associated with the BTM:NG program need to be added to these values.

# Generation Parameters

| #  | Parameter                                   | 2024 Model Assumptions   | 2025 Model Assumptions   | Basis for Recommendation   | Model Change |
|----|---|--|--|--|--------------|
| 6  | Existing Generating Unit Capacities         | 2023 Gold Book Values. Use min. (DMNC vs. CRIS) capacity value   | 2024 Gold Book Values. Use min. (DMNC vs. CRIS) capacity value   | Latest Gold Book publication   | N            |
| 7  | Proposed New Units (Thermal) and re-ratings | 0 MW of new Thermal resources (Attachment B1)  | <del>0</del> -47.0 MW summer re-rating for Thermal resources (Attachment B1)   | NYISO recommendation based on documented process that includes the latest Gold Book publication, NYISO interconnection queue, and generation notifications | N            |
| 8  | Deactivations and Removals <sup>3</sup>     | -140.1 MW unit deactivations (Attachment B2)   | <del>164.6</del> -165.4 MW unit deactivations (Attachment B2)  | Latest Gold Book publications and generator notifications  | N            |
| 9  | Forced and Partial Outage Rates             | Five-year (2018-2022) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachment C) | Five-year (2019-2023) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachment C) | Transition Rates representing the Equivalent Forced Outage Rates (EFORd) during demand periods over the most recent five-year period                       | N            |
| 10 | Planned Outages                             | Planned Outages are removed from the IRM study   | Planned Outages are removed from the IRM study   | Based on 2022-2023 IRM study FBC   | N            |

<sup>3</sup> Negative values in the ‘SUMMER CRIS (MW)’ column represent units that were previously expected to deactivate due to the NYSDEC “Peaker Rule” requirements for 2023 but did not deactivate. Therefore, they were reinstated in the 2024-25 IRM Study.

# Generation Parameters

| #   | Parameter                                 | 2024 Model Assumptions  | 2025 Model Assumptions   | Basis for Recommendation  | Model Change |
|-----|---|---|--|---|--------------|
| 11  | Summer Maintenance                        | Nominal 50 MW – divided equally between Zones J and K   | Nominal 50 MW – divided equally as 2 negative 25MW units in Load Zones J and K   | Review of most recent data<br>Per NYSRC recommendation  | N            |
| 12  | 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 provided curves                                   | N            |
| 13  | Existing and Proposed New Wind Units      | 136 MW of offshore wind capacity additions totaling 2,502.3 MW of qualifying wind. (Attachment B3)              | 0 MW of offshore wind capacity additions 2,566.20 MW of qualifying wind. (Attachment B3)   | ICAP based on clean energy standard (CES) agreements, interconnection queue and ICS input.                                  | N            |
| 14a | Land-Based Wind Shape                     | Actual hourly plant output over the period 2018-2022. New units will use zonal hourly averages or nearby units. | Actual hourly plant output over the period 2019-2023. New units will use zonal hourly averages or nearby units.                                      | Program randomly selects a wind shape of hourly production from the most recent five-year period for each model iteration.  | N            |
| 14b | Offshore Wind Shape                       | Normalized offshore wind shapes as published by NYISO over the period 2017-2021                                 | Normalized offshore wind shapes as published by NYISO over the period 2017-2021  | Program randomly selects a wind shape of hourly production from the most recent five-year period for each model iteration.  | N            |
| 15  | Existing and Proposed New Solar Resources | 90 MW of utility-scale solar capacity additions totaling 304.4 MW of qualifying solar capacity. (Attachment B3) | <del>346.8</del> 267.0 MW of utility-scale solar capacity additions totaling <del>651.2</del> 571.4 MW of qualifying solar capacity. (Attachment B3) | ICAP based on CES agreements, interconnection queue and ICS input.  | N            |
| 16  | Solar Shape                               | Actual hourly plant output over the period 2018-2022. New units will use zonal hourly averages or nearby units. | Actual hourly plant output over the period 2019-2023. New units will use zonal hourly averages or nearby units.                                      | Program randomly selects a solar shape of hourly production from the most recent five-year period for each model iteration. | N            |

# Generation Parameters

| #  | Parameter                           | 2024 Model Assumptions   | 2025 Model Assumptions   | Basis for Recommendation  | Model Change |
|----|-------------------------------------|--|--|---|--------------|
| 17 | BTM:NG Program                      | One new BTM:NG resource: Oxbow (Zone A) – 3.2 MW, with the total of 148.8 MW (Attachment B5)                         | No new BTM:NG resources, total of <del>182.2</del> 170.6 MW (Attachment B5)  | Both the generation of the participating resources and the full host loads are modeled                                      | N            |
| 18 | Small Hydro Resources               | Actual hourly plant output over the period 2018-2022   | Actual hourly plant output over the period 2019-2023   | Program randomly selects a hydro shape of hourly production from the most recent five-year period for each model iteration. | N            |
| 19 | Large Hydro                         | Probabilistic model based on five years of GADS data (2018-2022)   | Probabilistic model based on five years of GADS data (2019-2023)   | Transition Rates representing the EFORD during demand periods over the most recent five-year period.                        | N            |
| 20 | Landfill Gas (LFG)                  | Actual hourly plant output over the period 2018-2022.  | Actual hourly plant output over the period 2019-2023.  | Program randomly selects an LFG shape of hourly production from the most recent five-year period for each model iteration.  | N            |
| 21 | New Energy Storage Resources (ESRs) | 0 MW of new battery storage scheduled.<br><br>20 MW of total battery storage modeled.                                | 0 MW of new battery storage scheduled.<br><br>20 MW of total battery storage modeled.                                | ICAP based on NYSEERDA/utility agreements, interconnection queue and ICS input.   | N            |
| 22 | Energy Limited Resources (ELRs)     | Based upon elections made by August 1 <sup>st</sup> , 2023<br><br>ES and small EL3 output limitations lifted at HB14 | Based upon elections made by August 1 <sup>st</sup> , 2024<br><br>ES and small EL3 output limitations lifted at HB14 | Existing elections are made by August 1 <sup>st</sup> and will be incorporated into the model                               | N            |

# Transactions- Imports and Exports

| #  | Parameter  | 2024 Model Assumptions   | 2025 Model Assumptions   | Basis for Recommendation   | Model Change |
|----|--|--|--|--|--------------|
| 23 | Capacity Purchases   | Existing Rights: PJM – 1,013 MW<br>HQ – 1,190 MW<br>All contracts modeled as equivalent contracts. | Existing Rights: PJM – 1,013 MW<br>HQ – 1,190 MW<br>All contracts modeled as equivalent contracts. | Grandfathered Rights, Existing Transmission Capacity for Native Load (ETCNL), and other awarded long-term rights | N            |
| 24 | Capacity Sales   | Long Term firm sales Summer<br>265.3 MW  | Long Term firm sales Summer<br>266.6 MW  | Long term contracts  | N            |
| 25 | Forward Capacity Market (FCM) Sales from a Locality <sup>4</sup> | No sales modeled within study period   | No sales modeled within study period   | White paper, NYISO recommendation  | N            |
| 26 | Wheels through NYCA  | 300 MW HQ to NE equivalent contract  | 300 MW HQ to NE equivalent contract  | HQ wheel has an ISO-NE capacity supply obligation for 2025-2026  | N            |
| 27 | New Unforced Capacity Deliverability Rights (UDRs)               | No new UDRs Identified   | No new UDRs Identified   | Existing UDR elections are made by August 1 <sup>st</sup> and will be incorporated into the model for FBC        | N            |
| 28 | New External Deliverability Rights (EDRs)                        | No new EDRs Identified   | No new EDRs Identified   | Existing EDRs are incorporated in the model as an increase in the transfer limits                                | N            |

<sup>4</sup> 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                    | 2024 Model Assumptions  | 2025 Model Assumptions   | Basis for Recommendation  | Model Change |
|----|------------------------------|---|--|---|--------------|
| 29 | Interface Limits             | Updates to the forward limits of Central East, Central East Group, Marcy South, Capital to Hudson Valley, UPNYSENY, and UPNY-ConED interfaces due to the partial completion of Segment B of the AC Transmission Project. The delay of the Dover PAR construction is captured. | Updates to the Central East forward limits, and West-Central reverse limit                                   | Based on the most recent NYISO operating studies and processes                    | N            |
| 30 | New Transmission             | None Identified   | None Identified  | Based on TO provided models and NYISO's review                                    | N            |
| 31 | AC Cable Forced Outage Rates | All existing Cable EFORds for NYC and LI to reflect most recent five-year history (2018-2022) (Attachment E4)   | All existing Cable EFORds for NYC and LI to reflect most recent ten-year history (2014-2023) (Attachment E4) | TO provided transition rates with NYISO review<br>Based upon NYSRC recommendation | N            |
| 32 | UDR Line Unavailability      | Five-year history of forced outages (2018-2022)   | Ten-year history of forced outages (2014-2023)   | NYISO/TO review<br>Based upon NYSRC recommendation                                | N            |

# Emergency Operating Procedures

| #  | Parameter                                   | 2024 Model Assumptions   | 2025 Model Assumptions   | Basis for Recommendation  | Model Change |
|----|---|--|--|---|--------------|
| 33 | Special Case Resources (SCRs)               | July 2023 - 1,281 MW based on registrations and modeled as 896.5 MW of effective capacity. Monthly variation based on historical experience. | July <del>2023-2024 - 1,281</del> <del>1,486.7</del> MW based on registrations and modeled with maximum capacity of <del>1,094.7</del> <del>1,280.8</del> MW derated by hourly response rates. Utilize a new energy limited resource (ELR) functionality to model SCRs as duration limited resources with hourly response rates and limited to one call per day. Monthly variation based on historical experience. | Enhanced SCR Modeling Review  | Y            |
| 34 | Other Emergency Operating Procedures (EOPs) | 400 MW of 10-min reserves maintained at load shedding<br>929.8 MW of non-SCR/non-EDRP resources (Attachment D)                               | 400 MW of 10-min reserves maintained at load shedding<br><br>Voluntary Curtailment and Public Appeals limited to 3 calls per year<br><br><del>804.6</del> MW of non-SCR/non-EDRP resources (Attachment D)  | Based on Whitepaper and NYISO updated analysis recommendation<br><br>Based on NYSRC recommendation<br><br>Based on TO information, measured data, and NYISO forecasts | Y            |
| 35 | EOP Structure                               | 10 EOP steps modeled<br><br>EOP order updated to align with the emergency operating procedure sequence                                       | 10 EOP steps modeled   | Based on agreement with ICS   | N            |



# External Control Areas

| #  | Parameter                         | 2024 Model Assumptions   | 2025 Model Assumptions  | Basis for Recommendation  | Model Change |
|----|-----------------------------------|--|---|---|--------------|
| 36 | PJM                               | Load and capacity data will be provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5. (Attachment E)   | Load and capacity data will be provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5. (Attachment E)  | Initial Review by the NPCC CP-8 WG prior to Policy 5  | N            |
| 37 | ISONE, Quebec, IESO               | Load and capacity data will be provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5. (Attachment E)   | Load and capacity data will be provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5. (Attachment E)  | Initial Review by the NPCC CP-8 WG prior to Policy 5  | N            |
| 38 | External Adjustments per Policy 5 | If needed, add load to externals proportional to existing excess capacity.   | If needed, add load to externals proportional to existing excess capacity.  | Whitepaper on External Control Area adjustments   | N            |
| 39 | Reserve Sharing                   | All NPCC Control Areas indicate that they will initially share reserves equally among all members and then non-members.  | All NPCC Control Areas indicate that they will initially share reserves equally among all members and then non-members.   | Per NPCC CP-8 WG  | N            |
| 40 | Emergency Assistance              | Statewide emergency assistance allowed from neighbors:<br>Bin 1: 1,470 MW<br>Bin 2: 2,600 MW<br>Bin 3-7: 3,500 MW<br><br>Individual interface limits are also reduced by Bin | Statewide emergency assistance allowed from neighbors:<br>Bin 1: 1,470 MW<br>Bin 2: 2,600 MW<br>Bin 3-7: 3,500 MW<br><br>Individual interface limits and PJM cables are also reduced by Bin (Attachment E5) | Whitepaper on Modeling of Emergency Assistance for NYCA in IRM studies<br><br>Based upon NYSRC recommendation | Y            |

# Miscellaneous

| #  | Parameter                 | 2024 Model Assumptions                        | 2025 Model Assumptions                        | Basis for Recommendation                 | Model Change |
|----|---------------------------|---|---|--|--------------|
| 41 | MARS Model Version        | 4.14.2179                                     | 4.14.2179                                     | Per testing and ICS recommendation       | N            |
| 42 | Environmental Initiatives | No new rules for 2024-2025<br>Capability Year | No new rules for 2025-2026<br>Capability Year | Review of existing regulations and rules | N            |

# Attachment A1

## NYCA Summer Load Forecast Coincident and Non-Coincident Peak: 2025-2026 Final Base Case (FBC) and Preliminary Base Case (PBC)

| 2025-2026 FBC       |         |         |         |       |         |         |         |       |         |          |         |          |          |
|---------------------|---------|---------|---------|-------|---------|---------|---------|-------|---------|----------|---------|----------|----------|
| Area                | A       | B       | C       | D     | E       | F       | G       | H     | I       | J        | K       | NYCA     | G_J      |
| NCP - Forecast      | 3,089.2 | 1,971.1 | 2,675.8 | 721.3 | 1,326.2 | 2,293.8 | 2,286.2 | 614.2 | 1,352.7 | 11,043.9 | 5,092.1 |          |          |
| CP - Forecast       | 2,926.8 | 1,925.4 | 2,596.5 | 693.0 | 1,291.2 | 2,239.2 | 2,235.5 | 600.7 | 1,323.1 | 10,802.3 | 5,016.0 | 31,649.7 |          |
| G-J Peak - Forecast |         |         |         |       |         |         | 2,271.8 | 610.5 | 1,344.7 | 10,978.1 |         |          | 15,205.1 |

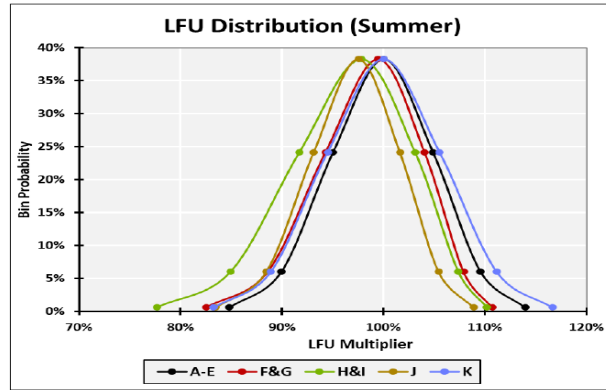
| 2025-2026 PBC       |         |         |         |       |         |         |         |       |         |          |         |          |          |
|---------------------|---------|---------|---------|-------|---------|---------|---------|-------|---------|----------|---------|----------|----------|
| Area                | A       | B       | C       | D     | E       | F       | G       | H     | I       | J        | K       | NYCA     | G_J      |
| NCP - Forecast      | 2,929.5 | 2,067.3 | 2,692.2 | 708.0 | 1,355.8 | 2,318.0 | 2,204.0 | 629.0 | 1,364.0 | 11,227.5 | 5,077.9 |          |          |
| CP - Forecast       | 2,824.5 | 2,023.3 | 2,622.2 | 689.0 | 1,318.8 | 2,273.0 | 2,157.0 | 615.0 | 1,334.0 | 10,977.5 | 4,997.9 | 31,832.2 |          |
| G-J Peak - Forecast |         |         |         |       |         |         | 2,188.0 | 624.0 | 1,353.0 | 11,133.5 |         |          | 15,298.5 |

| Delta               |       |       |       |      |       |       |      |       |       |        |      |        |       |
|---------------------|-------|-------|-------|------|-------|-------|------|-------|-------|--------|------|--------|-------|
| Area                | A     | B     | C     | D    | E     | F     | G    | H     | I     | J      | K    | NYCA   | G_J   |
| NCP - Forecast      | 159.7 | -96.2 | -16.4 | 13.3 | -29.6 | -24.2 | 82.2 | -14.8 | -11.3 | -183.6 | 14.2 |        |       |
| CP - Forecast       | 102.3 | -97.9 | -25.7 | 4.0  | -27.6 | -33.8 | 78.5 | -14.3 | -10.9 | -175.2 | 18.1 | -182.5 |       |
| G-J Peak - Forecast |       |       |       |      |       |       | 83.8 | -13.5 | -8.3  | -155.4 |      |        | -93.4 |

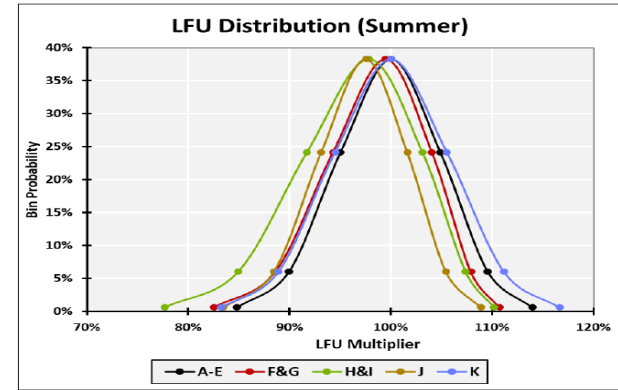
# Attachment A2

## NYCA Summer Load Forecast Uncertainty Model: 2024 and 2025

Load Forecast 2024



Load Forecast 2025



| Bin   | Bin z | Bin Probability | A-E     | F&G     | H&I     | J       | K       |
|-------|-------|-----------------|---------|---------|---------|---------|---------|
| Bin 1 | 2.74  | 0.62%           | 113.93% | 110.69% | 110.18% | 108.88% | 116.62% |
| Bin 2 | 1.79  | 6.06%           | 109.54% | 107.86% | 107.34% | 105.42% | 111.14% |
| Bin 3 | 0.89  | 24.17%          | 104.86% | 104.04% | 103.09% | 101.61% | 105.52% |
| Bin 4 | 0.00  | 38.29%          | 100.00% | 99.46%  | 97.81%  | 97.51%  | 100.00% |
| Bin 5 | -0.89 | 24.17%          | 95.00%  | 94.29%  | 91.70%  | 93.12%  | 94.48%  |
| Bin 6 | -1.79 | 6.06%           | 89.91%  | 88.61%  | 84.93%  | 88.45%  | 88.89%  |
| Bin 7 | -2.74 | 0.62%           | 84.79%  | 82.53%  | 77.65%  | 83.48%  | 83.27%  |

| Bin   | Bin z | Bin Probability | A-E     | F&G     | H&I     | J       | K       |
|-------|-------|-----------------|---------|---------|---------|---------|---------|
| Bin 1 | 2.74  | 0.62%           | 113.93% | 110.69% | 110.18% | 108.88% | 116.62% |
| Bin 2 | 1.79  | 6.06%           | 109.54% | 107.86% | 107.34% | 105.42% | 111.14% |
| Bin 3 | 0.89  | 24.17%          | 104.86% | 104.04% | 103.09% | 101.61% | 105.52% |
| Bin 4 | 0.00  | 38.29%          | 100.00% | 99.46%  | 97.81%  | 97.51%  | 100.00% |
| Bin 5 | -0.89 | 24.17%          | 95.00%  | 94.29%  | 91.70%  | 93.12%  | 94.48%  |
| Bin 6 | -1.79 | 6.06%           | 89.91%  | 88.61%  | 84.93%  | 88.45%  | 88.89%  |
| Bin 7 | -2.74 | 0.62%           | 84.79%  | 82.53%  | 77.65%  | 83.48%  | 83.27%  |

# Attachment A3

NYCA Winter Load Forecast Uncertainty Model: 2025

| Bin   | Bin z | Bin Probability | NYCA    |
|-------|-------|-----------------|---------|
| Bin 1 | 2.74  | 0.62%           | 110.37% |
| Bin 2 | 1.79  | 6.06%           | 106.37% |
| Bin 3 | 0.89  | 24.17%          | 102.75% |
| Bin 4 | 0.00  | 38.29%          | 99.42%  |
| Bin 5 | -0.89 | 24.17%          | 96.29%  |
| Bin 6 | -1.79 | 6.06%           | 93.30%  |
| Bin 7 | -2.74 | 0.62%           | 90.41%  |

# Attachment B1

## New Thermal Units and Unit Re-Ratings

| New Thermal Units and Unit Re-ratings (summer ratings) |      |                             |                             |                         |                      |
|--|------|-----------------------------|-----------------------------|-------------------------|----------------------|
| Project or Generator Name                              | Zone | 2024 Gold Book (MW)<br>CRIS | 2024 Gold Book (MW)<br>DMNC | New or Incremental (MW) | 2025 MARS Model (MW) |
| New Units  |      |                             |                             |                         |                      |
| New Athens Unit 1                                      | F    | 316.6                       | 329.4                       | 12.2                    | 328.8                |
| New Athens Unit 2                                      | F    | 315.6                       | 333.3                       | 17.1                    | 332.7                |
| New Athens Unit 3                                      | F    | 312.8                       | 331.1                       | 17.7                    | 330.5                |
|  |      |                             |                             |                         |                      |
|  |      |                             |                             |                         |                      |
|  |      |                             |                             |                         |                      |
|  |      |                             |                             |                         |                      |
| Total New Units and Uprates (MW)                       |      |                             |                             | 47.0                    |                      |

# Attachment B2

## Deactivations and Removals

| Unit Removal since 2024-2025 IRM Study |      |      |                        |
|--|------|------|------------------------|
| Generator Name                         | Type | Zone | SUMMER CRIS (MW)       |
| Arthur Kill Cogen                      | NG   | J    | 11.1                   |
| Arthur Kill GT1                        | GT   | J    | <del>15.7</del> 16.5   |
| Astoria GT1                            | GT   | J    | 15.7                   |
| Glenwood GT03                          | GT   | K    | 54.7                   |
| Shoreham 1                             | GT   | K    | 48.9                   |
| Shoreham 2                             | JE   | K    | 18.5                   |
| <b>Total Removals</b>                  |      |      | <del>164.6</del> 165.4 |

# Attachment B3

## New Intermittent Resources

| New Intermittent Units                 |              |                 |                           |                       |
|--|--------------|-----------------|---------------------------|-----------------------|
| Resource                               | Zone         | CRIS (MW)       | Summer<br>Capability (MW) | MARS Modeled Capacity |
| Wind                                   |              |                 |                           |                       |
|  |              |                 |                           |                       |
|  |              |                 |                           |                       |
|  |              |                 |                           |                       |
| <b>Total Wind</b>                      |              |                 |                           |                       |
| Solar                                  |              |                 |                           |                       |
| Morris Ridge Solar Energy Center       | C            | 177.0           | 177.0                     | 177.0                 |
| <del>Trelina Solar Energy Center</del> | <del>C</del> | <del>80.0</del> | <del>79.8</del>           | <del>79.8</del>       |
| High River Solar                       | F            | 90.0            | 90.0                      | 90.0                  |
| <b>Total Solar</b>                     |              |                 |                           | <b>346.8-267</b>      |



# Attachment B4

## New Energy Storage Resources

| Energy Storage                  |      |           |                        |                                     |
|---------------------------------|------|-----------|------------------------|-------------------------------------|
| Resource                        | Zone | CRIS (MW) | Summer Capability (MW) | Lesser of Summer Capability VS CRIS |
| New Battery Units               |      |           |                        |                                     |
|                                 |      |           |                        |                                     |
| <b>Total New Energy Storage</b> |      |           |                        |                                     |

# Attachment B5

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

| Attachment B5 - Units in the Behind-the-Meter Net Generation Resource Program* |      |                                  |  |
|--|------|----------------------------------|--|
| Generator Name   | Zone | Resource Value (MW) <sup>5</sup> | Peak Load Adjustment (MW) <sup>6</sup> |
| <b>Existing:</b>   |      |                                  |  |
| Stony Brook  | K    | 0.0                              | <del>41.9</del> -37.4                  |
| Greenidge 4  | C    | 102.8                            | <del>63.2</del> -62.6                  |
| Lyons Falls Hydro  | E    | 0.0                              | <del>1.8</del> -1.3                    |
| KIAC_JFK   | J    | 127.7                            | <del>17.5</del> -18.3                  |
| Red Rochester  | B    | 79.4                             | <del>54.3</del> -50.5                  |
| Oxbow (Fortistar - N.Tonawanda)  | A    | 57.4                             | <del>3.5</del> -0.5                    |
| <b>Total BTM-NG</b>  |      |                                  | <del>182.2</del> -170.6                |

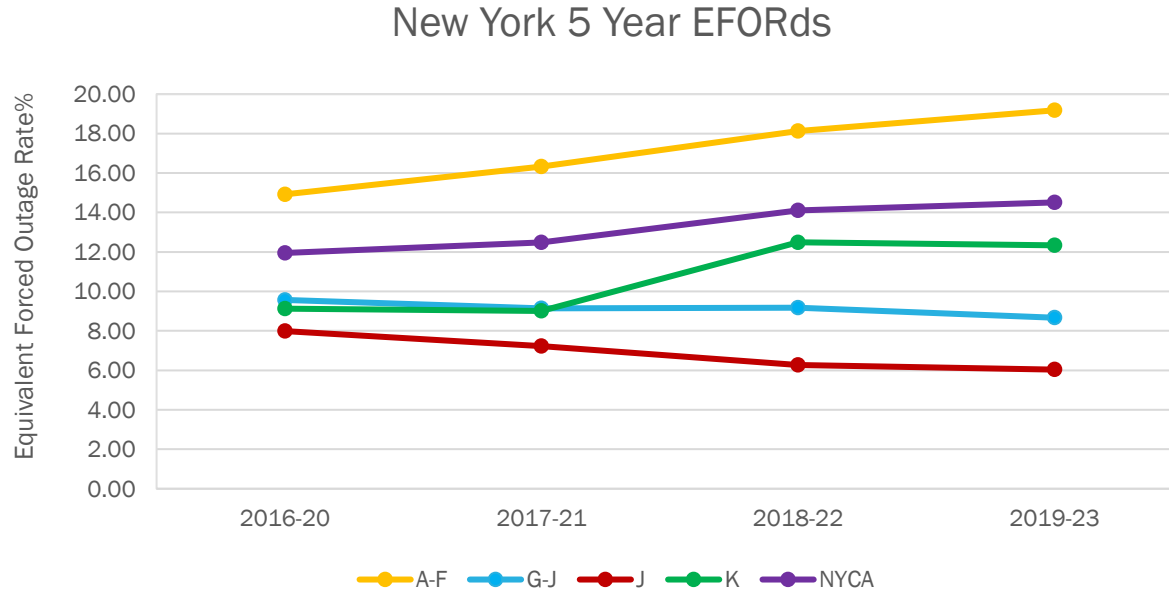
\*The IRM study independently models the generation and load components of BTM:NG Resources.

<sup>5</sup> Based on adjusted Dependable Maximum Gross Capability (DMGC) value.

<sup>6</sup> Based on Average Coincident Host Load (ACHL).

# Attachment C1

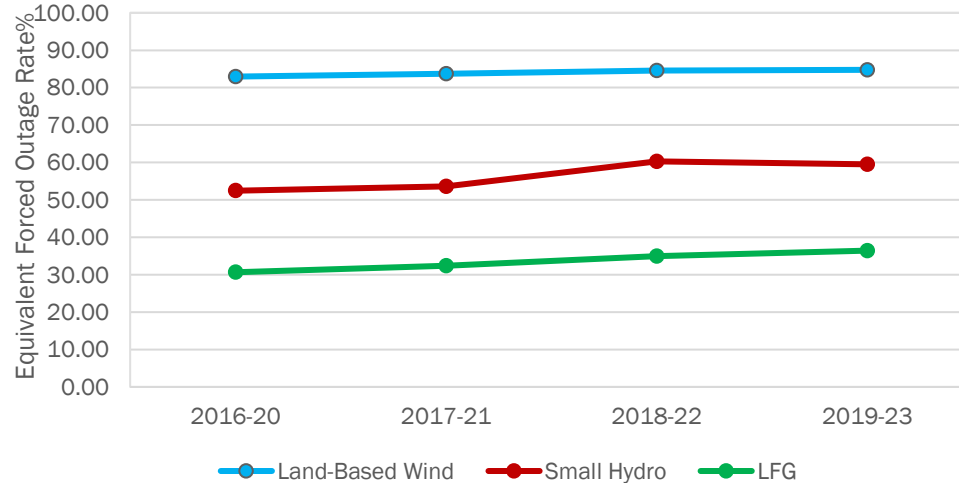
## NYCA Five Year Derating Factors – All Resources



# Attachment C2

## NYCA Five Year Derating Factors - Intermittent Power Resources

New York 5 Year EFORds - Intermittent



\* Solar will be added when there are at least 3 units with production data for all 5 years of the applicable historical period

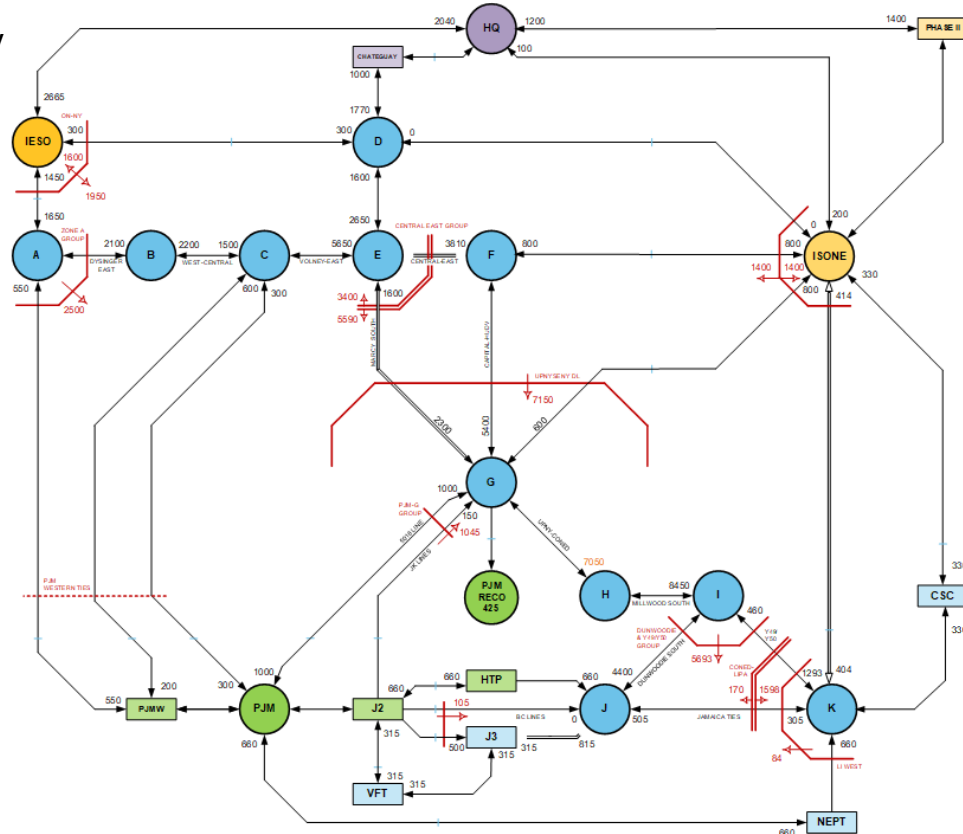
# Attachment D

## Emergency Operating Procedures

| Step | Procedure   | 2024 IRM MW Value                              | 2025 IRM MW Value  |
|------|---|--|--|
| 1    | Special Case Resources – Load, Gen                          | 1,281 MW Enrolled/ 896.5 MW Modeled            | <del>1,281</del> –1,486.7 MW Enrolled /<br><del>1,094.7</del> 1,280.8 MW Modeled |
| 2    | 5% manual voltage Reduction                                 | 113.11 MW                                      | 63.38 MW   |
| 3    | Thirty-minute reserve to zero                               | 655 MW   | 655 MW   |
| 4    | Voluntary industrial curtailment                            | 267.17 MW                                      | 260.74 MW<br>Limited to 3 calls per year   |
| 5    | General Public Appeals                                      | 74 MW  | 74 MW<br>Limited to 3 calls per year   |
| 6    | 5% remote voltage reduction                                 | 475.56 MW                                      | 406.49 MW  |
| 7    | Emergency Purchases   | Varies   | Varies   |
| 8    | Ten-minute reserves to zero                                 | 910 MW<br>(400 MW maintained at load shedding) | 910 MW<br>(400 MW maintained at load shedding)                                   |
| 9    | Customer disconnections                                     | As needed                                      | As needed  |
| 10   | Adjustment used if IRM is lower than technical study margin | As needed                                      | As needed  |

# Attachment E1

## IRM Topology



### Notes

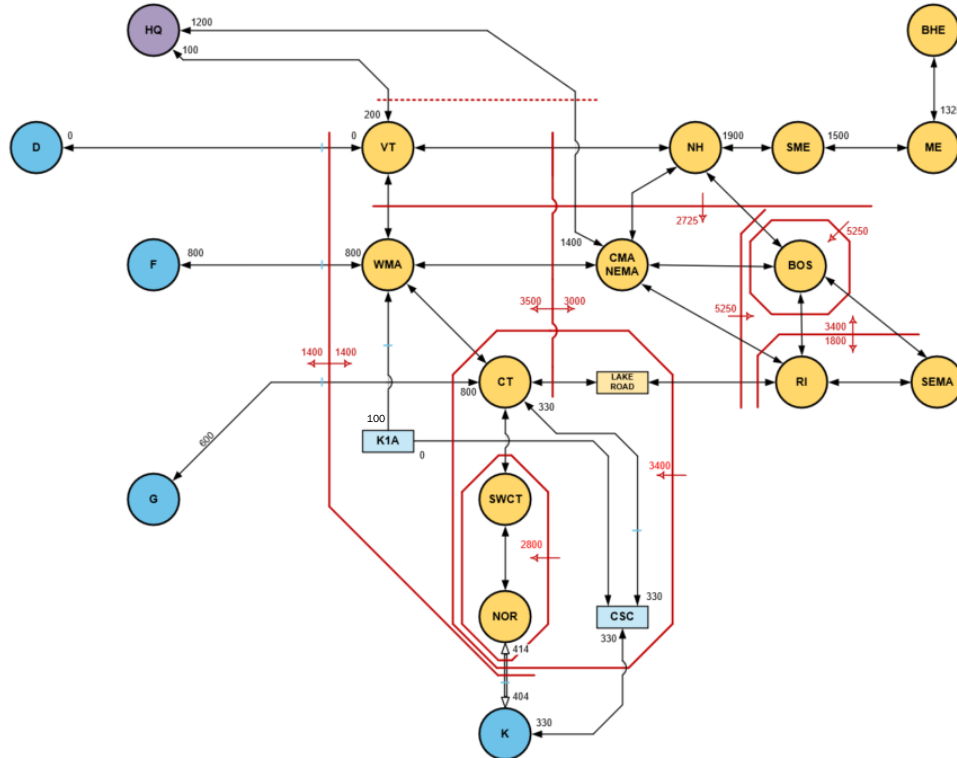
1. PJM to NY emergency assistance (EA) assumption for calculating the PJM-NY Western ties, PJM-G Group, and ABC Line Group flow distribution limit: 1500MW
2. NYCA EA simultaneous import limit: 3,500 MW
3. External areas representation based upon information received from the NPCC OP-8 WG

### Legend

- ↔ Interface
  - ↔ Interface
  - ↔ Interface w/ Dynamic Ratings
  - Interface Group
  - Interface Group w/ Dynamic Ratings
  - - - Monitoring Interface Group
  - / - NYCA EA Interface Group Marker
  - xx "Dummy Bubble" i.e. no load
- NOTE: An interface is considered to not have a MW limitation if no number is specified

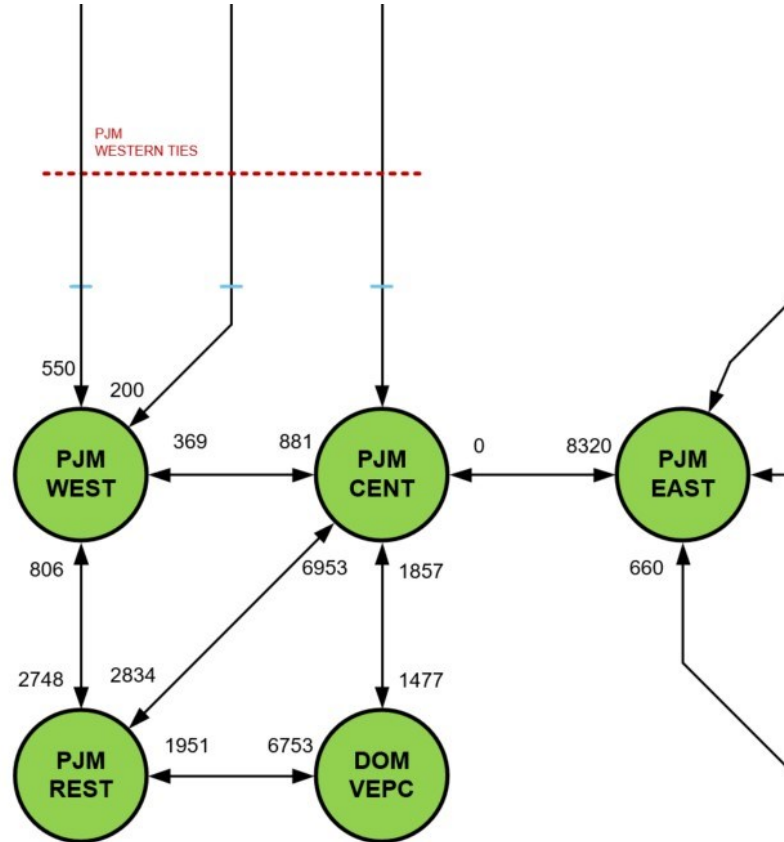
# Attachment E2

## ISO-NE 14 Bubble Model



# Attachment E3

## PJM Bubble Model





# Attachment E4

| Cable Outage Rate         |                           |
|---------------------------|---------------------------|
| 2018-22* (5-year average) | 2014-23 (10-year average) |
| 4.83%-5.36%               | 6.62%-5.31%               |

The facilities included in these averages are VFT, HTP, Dunwoodie-South, Y49/Y50, CSC, Neptune, Norwalk-Northport and A-Line.

\*The 10-year average data is not available for the 2024-2025 IRM study

# Attachment E5

| 2025-2026 IRM Dynamic Emergency Assistance (EA) Interface Group Limits (MW) |                  |       |                    |       |                    |       |       |
|---|------------------|-------|--------------------|-------|--------------------|-------|-------|
| Area  | Bin 1            | Bin 2 | Bin 3              | Bin 4 | Bin 5              | Bin 6 | Bin 7 |
| IESO  | 550              | 660   | 750                | 860   | Maximum EA (1,950) |       |       |
| ISONE   | 50               | 540   | 1,000              | 1,530 | Maximum EA (1,804) |       |       |
| PJM*  | 580              | 1,110 | Maximum EA (1,415) |       |                    |       |       |
| HQ  | Maximum EA (280) |       |                    |       |                    |       |       |
| <b>Total EA**</b>   | 1,470            | 2,600 | Maximum EA (3,500) |       |                    |       |       |

| Dynamic EA PJM Cable Limits (MW)*** |       |       |                  |       |       |       |       |
|-------------------------------------|-------|-------|------------------|-------|-------|-------|-------|
| Area                                | Bin 1 | Bin 2 | Bin 3            | Bin 4 | Bin 5 | Bin 6 | Bin 7 |
| HTP                                 | 90    | 173   | Maximum EA (660) |       |       |       |       |
| Neptune                             | 90    | 173   | Maximum EA (660) |       |       |       |       |
| VFT                                 | 43    | 83    | Maximum EA (315) |       |       |       |       |
| A Line                              | 14    | 28    | Maximum EA (105) |       |       |       |       |

\* PJM ties limits are only applicable to A, C, and G ties, and individual cables are derated separately, in proportion to the Bin 1 and Bin 2 PJM interface group limits listed above

\*\* The total EA limit from all ties are derived from a separate regression analysis and may not match the sum of all group tie limits in each LFU bin

\*\*\* Limiting EA, does not affect contract capacity over UDRs

# Attachment F

## SCR Determinations 2024-2025 and 2025-2026 IRM Studies

| SCR Performance for 2025-2026 IRM Study* |                      |   |               |               |               |               |               |               |  |
|--|----------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|--|
| Super Zones                              | SCR Enrollments (MW) | Response Rate (%) by Hour of SCR Activation |               |               |               |               |               |               | Superzonal ACL to CBL Translation Factor (%) |
|  |                      | Event Hour 1                                | Event Hour 2  | Event Hour 3  | Event Hour 4  | Event Hour 5  | Event Hour 6  | Event Hour 7  |  |
| A - E                                    | 783.4                | 77.85%                                      | 83.57%        | 82.28%        | 70.24%        | 69.18%        | 0%            | 0%            | 93.45%                                       |
| F  | 103.5                | 75.94%                                      | 82.20%        | 85.24%        | 86.18%        | 85.54%        | 70.40%        | 66.99%        | 90.58%                                       |
| G - I                                    | 90.6                 | 58.45%                                      | 67.53%        | 70.20%        | 71.94%        | 73.63%        | 71.48%        | 0%            | 84.07%                                       |
| J  | 478.7                | 55.04%                                      | 60.60%        | 65.47%        | 67.78%        | 68.80%        | 66.09%        | 0%            | 74.29%                                       |
| K  | 30.6                 | 49.71%                                      | 56.72%        | 62.12%        | 64.63%        | 64.66%        | 63.36%        | 52.65%        | 76.11%                                       |
| <b>All Zones</b>                         | <b>1,486.7</b>       | <b>62.01%</b>                               | <b>68.39%</b> | <b>71.35%</b> | <b>69.61%</b> | <b>69.93%</b> | <b>66.38%</b> | <b>58.14%</b> |  |

\*The SCR Performance for 2025-2026 IRM study reflects the [Enhanced SCR Modeling](#) construct

| SCR Performance for 2024-2025 IRM Study |                                     |                              |                                 |                |                                |              |
|---|-------------------------------------|------------------------------|---------------------------------|----------------|--------------------------------|--------------|
| Super Zones                             | Enrollments (July 2023 - estimated) | Forecast (2024) <sup>6</sup> | Performance Factor <sup>7</sup> | UCAP (2024)    | Adjustment Factor <sup>8</sup> | Model Value  |
| A - F                                   | 719.1                               | 719.1                        | 0.871                           | 626.3          | 0.942                          | 589.8        |
| G - I                                   | 84.3                                | 84.3                         | 0.778                           | 65.5           | 0.843                          | 55.3         |
| J                                       | 442.4                               | 442.4                        | 0.706                           | 312.4          | 0.745                          | 232.7        |
| K                                       | 35.4                                | 35.3                         | 0.698                           | 24.6           | 0.762                          | 18.8         |
| <b>Totals</b>                           | <b>1,281.0</b>                      | <b>1,281.0</b>               |                                 | <b>1,028.9</b> |                                | <b>896.5</b> |
|   |                                     |                              |                                 |                | Overall Performance = 70.0%    |              |

7. These values represent no growth from July ICAP based enrollments for the previous year. Differences in data in this column are due to software rounding updates since the 2023 IRM. Updated data aligns with 2023 Gold Book values.

8. Performance Factor based on ACL methodology.

9. The SCR Adjustment factor captures two different performance derates: (1) Calculated Translation Factor (TF) between ACL and CBL values and (2) the Fatigue Factor (FF=1.00).

# Attachment G Wind Units Modeled

| Wind                                |      |                 |                        |                           |
|-------------------------------------|------|-----------------|------------------------|---------------------------|
| Resource                            | Zone | CRIS (MW)       | Summer Capability (MW) | MARS Modeled Capability** |
| Arkwright Summit Wind Farm [WT]     | A    | 78.4            | 78.4                   | 78.4                      |
| Ball Hill Wind [WT]                 | A    | 100.0           | 107.5                  | 100.0                     |
| Bliss Wind Power [WT]               | A    | 100.5           | 100.5                  | 100.5                     |
| Baron Winds [WT]                    | C    | 300.0           | 121.8                  | 121.8                     |
| Canandaigua Wind Power [WT]         | C    | 125.0           | 125.0                  | 125.0                     |
| Eight Point Wind Energy Center [WT] | C    | 101.2           | 111.2                  | 101.2                     |
| High Sheldon Wind Farm [WT]         | C    | 112.5           | 118.1                  | 112.5                     |
| Howard Wind [WT]                    | C    | 57.4            | 55.4                   | 55.4                      |
| Orangeville Wind Farm [WT]          | C    | 94.4            | 93.9                   | 93.9                      |
| Wethersfield Wind Power [WT]        | C    | 126.0           | 126.0                  | 126.0                     |
| Altona Wind Power [WT]              | D    | 97.5            | 97.5                   | 97.5                      |
| Chateaugay Wind Power [WT]          | D    | 106.5           | 106.5                  | 106.5                     |
| Clinton Wind Power [WT]             | D    | 100.5           | 100.5                  | 100.5                     |
| Ellenburg Wind Power [WT]           | D    | 81.0            | 81.0                   | 81.0                      |
| Jericho Rise Wind Farm [WT]         | D    | 77.7            | 77.7                   | 77.7                      |
| Marble River Wind [WT]              | D    | 215.2           | 215.2                  | 215.2                     |
| Bluestone Wind [WT]                 | E    | 124.2           | 111.8                  | 111.8                     |
| Hardscrabble Wind [WT]              | E    | 74.0            | 74.0                   | 74.0                      |
| Madison Wind Power [WT]             | E    | 11.5            | 11.6                   | 11.5                      |
| Maple Ridge Wind [WTO1]             | E    | 231.0           | 231.0                  | 231.0                     |
| Maple Ridge Wind [WTO2]             | E    | 90.7            | 90.8                   | 90.7                      |
| Munnsville Wind Power [WT]          | E    | 34.5            | 34.5                   | 34.5                      |
| Number 3 Wind Energy [WT]           | E    | 105.8           | 103.9                  | 103.9                     |
| Roaring Brook [WT]                  | E    | 79.7            | 79.7                   | 79.7                      |
| South Fork Wind Farm (Offshore)     | K    | 136.0           | 136.0                  | 136.0                     |
| <b>Total</b>                        |      | <b>2,761.20</b> | <b>2,589.50</b>        | <b>2,566.20</b>           |

# Attachment G1

## Wind Units Not Currently Participating in ICAP Market

| Wind                      |      |                |              |                        |                       |
|---------------------------|------|----------------|--------------|------------------------|-----------------------|
| Resource                  | Zone | Nameplate (MW) | CRIS (MW)    | Summer Capability (MW) | MARS Modeled Capacity |
| Cassadaga Wind [WT]       | A    | 126.5          | 126.0        | 0.0                    | 0.0                   |
| Erie Wind [WT]            | A    | 15.0           | 0.0          | 0.0                    | 0.0                   |
| Steel Wind [WT]           | A    | 20.0           | 0.0          | 0.0                    | 0.0                   |
| Fenner Wind [WT]          | C    | 30.0           | 30.0         | 0.0                    | 0.0                   |
| Marsh Hill Wind Farm [WT] | C    | 16.2           | 0.0          | 0.0                    | 0.0                   |
| Copenhagen Wind [WT]      | E    | 79.9           | 79.9         | 0.0                    | 0.0                   |
| Total                     |      | <b>287.6</b>   | <b>235.9</b> | <b>0.0</b>             | <b>0.0</b>            |

# Attachment G2

## Solar Units Modeled

| Solar                              |      |           |                        |                                      |
|------------------------------------|------|-----------|------------------------|--------------------------------------|
| Resource                           | Zone | CRIS (MW) | Summer Capability (MW) | Lesser of Summer Capability vs. CRIS |
| Janis Solar [PV]                   | C    | 20.0      | 20.0                   | 20.0                                 |
| Morris Ridge Solar Energy Center   | C    | 177.0     | 177.0                  | 177.0                                |
| Puckett Solar [PV]                 | C    | 20.0      | 20.0                   | 20.0                                 |
| Albany County                      | F    | 20.0      | 20.0                   | 20.0                                 |
| Trelina Solar Energy Center        | C    | 80.0      | 79.8                   | 79.8                                 |
| Albany County II                   | F    | 20.0      | 20.0                   | 20.0                                 |
| Branscomb Solar [PV]               | F    | 20.0      | 20.0                   | 20.0                                 |
| Darby Solar [PV]                   | F    | 20.0      | 20.0                   | 20.0                                 |
| East Point Solar                   | F    | 50.0      | 50.0                   | 50.0                                 |
| Grissom Solar [PV]                 | F    | 20.0      | 20.0                   | 20.0                                 |
| High River Solar                   | F    | 90.0      | 90.0                   | 90.0                                 |
| Pattersonville Solar [PV]          | F    | 20.0      | 20.0                   | 20.0                                 |
| Regan Solar [PV]                   | F    | 20.0      | 20.0                   | 20.0                                 |
| ELP Stillwater Solar [PV]          | F    | 20.0      | 20.0                   | 20.0                                 |
| Calverton Solar Energy Center [PV] | K    | 22.9      | 22.9                   | 22.9                                 |
| Long Island Solar Farm [PV]        | K    | 31.5      | 31.5                   | 31.5                                 |
| Total                              |      | 651.4     | 571.4                  | 651.2                                |

# Attachment G3

## Solar Units Not Modeled

| Solar                |      |             |                        |                                      |
|----------------------|------|-------------|------------------------|--------------------------------------|
| Resource             | Zone | CRIS (MW)   | Summer Capability (MW) | Lesser of Summer Capability vs. CRIS |
| Shoreham Solar [PV]* | K    | 25.0        | 0.0                    | 0.0                                  |
| <b>Total</b>         |      | <b>25.0</b> | <b>0.0</b>             | <b>0.0</b>                           |

\*Unit provides power at the distribution rather than at the transmission level.

# Attachment G4

## Landfill Gas (LFG) Units Modeled

| LFG                              |      |              |                        |                                     |
|----------------------------------|------|--------------|------------------------|-------------------------------------|
| Resource                         | Zone | CRIS (MW)    | Summer Capability (MW) | Lesser of Summer Capability VS CRIS |
| CHAFFEE [IC]                     | A    | 6.4          | 6.4                    | 6.4                                 |
| Model City Energy LFGE [IC]      | A    | 5.6          | 5.6                    | 5.6                                 |
| Modern LFGE [IC]                 | A    | 6.4          | 6.4                    | 6.4                                 |
| Hyland LFGE [IC]                 | B    | 4.8          | 4.8                    | 4.8                                 |
| Mill Seat [IC]                   | B    | 6.4          | 6.4                    | 6.4                                 |
| Broome 2 [IC]                    | C    | 2.0          | 2.1                    | 2.0                                 |
| Broome LFGE [IC]                 | C    | 2.1          | 2.4                    | 2.1                                 |
| High Acres Group [IC] (23767)    | C    | 9.6          | 9.6                    | 9.6                                 |
| Ontario LFGE [IC]                | C    | 11.2         | 11.2                   | 11.2                                |
| Seneca Energy Group [IC] (23797) | C    | 17.6         | 17.6                   | 17.6                                |
| Clinton LFGE [IC]                | D    | 6.4          | 6.4                    | 6.4                                 |
| DANC LFGE [IC]                   | E    | 6.4          | 6.4                    | 6.4                                 |
| Oneida-Herkimer LFGE [IC]        | E    | 3.2          | 3.2                    | 3.2                                 |
| Colonie LFGTE [IC]               | F    | 6.4          | 6.4                    | 6.4                                 |
| Fulton County Landfill [IC]      | F    | 3.2          | 3.2                    | 3.2                                 |
| Albany LFGE                      | F    | 4.5          | 5.6                    | 4.5                                 |
| <b>Totals</b>                    |      | <b>102.2</b> | <b>103.7</b>           | <b>102.2</b>                        |



# Attachment G5

## Landfill Gas (LFG) Units Not Modeled

| LFG                      |      |             |                        |                                     |
|--------------------------|------|-------------|------------------------|-------------------------------------|
| Resource                 | Zone | CRIS (MW)   | Summer Capability (MW) | Lesser of Summer Capability VS CRIS |
| Chautauqua LFGE          | A    | 9.6         | 0.0                    | 0.0                                 |
| Synergy Biogas           | B    | 2.0         | 0.0                    | 0.0                                 |
| Madison County LFGE [IC] | E    | 1.6         | 0.0                    | 0.0                                 |
| <b>Total</b>             |      | <b>13.2</b> | <b>0.0</b>             | <b>0.0</b>                          |

# Assumption Matrix History

| Date       | Ver  | Preliminary Base Case  | Date       | Ver  | Final Base Case  |
|------------|------|--|------------|------|--|
| 01/19/2024 | V0.0 | Preliminary assumptions without attachments  | 09/04/2024 | V0.0 | Preliminary assumptions with updates to Attachments B2, C (addition of C2 for Intermittent Power Resources), D, E4, and F  |
| 02/21/2024 | V1.0 | Addition of proposed Attachment H (pending approval of Gas Constraints Modeling Whitepaper)  | 10/02/2024 | V1.0 | Preliminary assumptions with updates to Item No. 2, Item No. 7, Item No. 15, Item No. 17, Item No. 34, Item No. 42, as well as Attachments A1, B1, B3, B5, C1, C2, D, E1, E2, and G2 |
| 03/28/2024 | V2.0 | Preliminary assumptions and Attachments C and H (pending approval of Gas Constraints Modeling Whitepaper)  |            |      |  |
| 04/25/2024 | V3.0 | Preliminary assumptions, Attachment A1, Attachment D and Attachment F  |            |      |  |
| 05/28/2024 | V4.0 | Preliminary assumptions, Attachments A1-3, B2, B5, D, E4, G, G1, and removed proposed Attachment H consistent with recommendation to study fuel availability constraints as sensitivities to the 2025-2026 IRM study |            |      |  |
| 06/20/2024 | V5.0 | Preliminary assumptions, Attachments B3, C, D, E1-3 and G2   |            |      |  |
| 06/26/2024 | V5.1 | Preliminary assumptions, Attachments D, E1, E4 and the proposed addition of Attachment E5  |            |      |  |
|            |      |  |            |      |  |
|            |      |  |            |      |  |
|            |      |  |            |      |  |
|            |      |  |            |      |  |