# 2020-2021 NYCA IRM Requirement Study

## Preliminary Base Case (PBC) Model Assumptions

## Assumption Matrix

Draft V 2.1 -, July 30, 2019

# Load Parameters

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 1 | Peak Load Forecast (Preliminary Base Case – Parametric & Sensitivities ) | 2018 Gold Book<br>NYCA: 32,857MW<br>NYC: 11,474 MW<br>LI: 5,323 MW<br>G-J: 15,815 MW | 2019 Gold Book<br>NYCA: 32,202MW[1]<br>NYC: 11,651 MW<br>LI: 5,134 MW<br>G-J: 15,911 MW | Most recent Gold Book Forecast is used for Preliminary Base Case parametric study and sensitivity cases | | Minimal |
| 2 | Peak Load Forecast (Final Base Case) | October 2018 Fcst.<br>NYCA: 32,488 MW<br>NYC: 11,585 MW<br>LI: 5,346 MW<br>G-J: 15,831 MW | October 2019 Fcst.<br>NYCA: xxxxxMW<br>NYC: yyyyy MW<br>LI: zzzz MW<br>G-J: rrrrr MW | Forecast based on examination of 2019 weather normalized peaks. Top three external Area peak days aligned with NYCA | | |
| 3 | Load Shape (Multiple Load Shape) | Bin 1: 2006<br>Bin 2: 2002<br>Bins 3-7: 2007 | Bin 1: 2006<br>Bin 2: 2002<br>Bins 3-7: 2007 | ICS Recommendation remains unchanged after NYISO review presentations of 4/3 and 5/1 | | None |
| 4 | Load Forecast Uncertainty (LFU)- Summer | 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.[2] | | Low(+) |
| 5 | LFU Winter | No update | Updated<br>See (Attachment A1) | Existing Winter LFU may no longer be representative. | | Minimal |

*(-) 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, see attachment B-4.

[2] As reviewed at the 7/30/19 ICS meeting.

## Generation Parameters

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 1 | Existing Generating Unit Capacities | 2018 Gold Book values. Use min (DMNC vs. CRIS) capacity value | 2019 Gold Book values. Use min (DMNC vs. CRIS) capacity value | Latest Gold Book publication | | Low (+) |
| 2 | Proposed New Units (Non-Renewable) and re-ratings | MW 11.1 MW of new non- wind resources, plus 209.3 MW of project related re-ratings. (Attachment B1) | MW 1020 MW of new non- wind resources, plus 0 MW of project related re-ratings. (Attachment B1) | Latest Gold Book publication, NYISO interconnection queue, and generator notifications | | Low (-) |
| 3 | Retirements, Mothballed units, and ICAP ineligible units | 0 MW of retirements, 399.2 MW of unit deactivations, and 389.4 MW of IIFO and IR (Attachment B2) | 151.0 MW of retirements, 1023.4 MW of unit deactivations, and 0 MW of IIFO and IR[3] (Attachment B2) | Latest Gold Book publication and generator notifications | | Low (+)[4] |
| 4 | Forced and Partial Outage Rates | Five-year (2013-2017) GADS data for each unit represented. Those units with less than five years – use representative data. (Attachment C) | Five-year (2014-2018) 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 | | Low (+) |
| 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 | | Low (+) |

[3] ICAP Ineligible Forced Outage (IIFO) and inactive Reserve (IR)

[4] A tan 45 analysis will be performed on the IP2 retirement impact

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 6 | Summer Maintenance | Nominal 50 MWs – divided equally between zones J and K | Nominal ~~iii~~50[5] MWs – divided equally between zones J and K | Review of most recent data | | |
| 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 | | None |
| 8 | Existing and Proposed New Wind Units | 158.3 MW of Wind Capacity additions totaling 1891.7 MW of qualifying wind (Attachment B3) | 0 MW of Wind Capacity additions totaling 1891.7 MW of qualifying wind (Attachment B3) | ICAP units based on RPS agreements, interconnection queue, and ICS input. | | None |
| 9 | Wind Shape | Actual hourly plant output over the period 2013-2017. New units will use zonal hourly averages or nearby units. | Actual hourly plant output over the period 2014-2018. 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. | | |
| 10 | Solar Resources (Grid connected) | Total of 31.5 MW of qualifying Solar Capacity. (Attachment B3) | Total of 51.5 MW of qualifying Solar Capacity. (Attachment B3) | New 20 MW solar resource. ICAP Resources connected to Bulk Electric System | | Minimal |
| 11 | Solar Shape | Actual hourly plant output over the period 2013-2017. New units will use zonal hourly averages or nearby units. | Actual hourly plant output over the period 2014-2018. 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. | | Minimal |

[5] ~~Summer Maintenance data will become available in early July and be used in the PBC~~As presented at the 7/30 ICS meeting

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 12 | BTM- NG Program | Addition of Greenidge 4 to BTM NG program. 104.3 MW unit.<br>Forecast load adjustment of 11.6 MW<br>(Attachment B4) | No new BTM NG resources<br>(Attachment B4) | Both the generation of the participating resources and the full host loads are modeled. | | None |
| 13 | Small Hydro Resources | Actual hourly plant output over the period 2013-2017. | Actual hourly plant output over the period 2014-2018. | Program randomly selects a Hydro shape of hourly production from the most recent five-year period for each model iteration. | | |
| 14 | Large Hydro | Probabilistic Model based on 5 years of GADS data (2013-2017) | Probabilistic Model based on 5 years of GADS data (2014-2018) | Transition Rates representing the Equivalent Forced Outage Rates (EFORd) during demand periods over the most recent five-year period | | |
| 15 | Land Fill Gas | Actual hourly plant output over the period 2013-2017. | Actual hourly plant output over the period 2014-2018. | Program randomly selects a LFG shape of hourly production from the most recent five-year period for each model iteration. | | Minimal |
| 16 | New ESR (Energy Storage Resources) | None Modeled | 5 MW of new battery storage resource scheduled (see attachment B3) | Existing 5 MW as load modifier, new 5 MWs as a resource | Y | Minimal |

## Transactions – Imports and Exports

| | # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|---|
| | 1 | Capacity Purchases | Existing Rights:<br>PJM – 1,080 MW<br>HQ – 1,110 MW<br>All contracts model as equivalent contracts | Existing Rights:<br>PJM – 1,080 MW<br>HQ – 1,110 MW<br>All contracts model as equivalent contracts | Grandfathered Rights, ETCNL, and other awarded long-term rights. | | None |
| | 2 | Capacity Sales | Long Term firm sales<br>Summer 279.3 MW | Long Term firm sales<br>Summer 281.1 MW | These are long term federal contracts. | | Minimal |
| | 3 | FCM Sales from a Locality[6] | No Sales modeled within study period | No Sales modeled within study period | White Paper, NYISO recommendation, and ICS discussions | | None |
| | 4 | Wheels through NYCA | None Modeled | 300 MW HQ to NE equivalent contract | Developed model per ICS presentations | Y | Med (+) |
| | 5 | New UDRs (Unforced capacity Deliverability Rights) | No new UDR projects | No new UDR projects | Existing UDR elections are made by August 1st and will be incorporated into the model. | | None |
| | 6 | New EDRs (External Deliverability Rights) | None | 0 MWs for 2020 Study | 80 MW scheduled for 2021 Study. Sensitivity to be performed. | | None |

[6] 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 | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 1 | Interface Limits | Update provided to TPAS with updated VFT return path.<br>B and C lines out of service for base case. Par 33 from Ontario out of service.<br>(Attachment E) | (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. | | Low (-) |
| 2 | New Transmission | None Identified | None Identified | Based on TO provided models and NYISO's review. | | None |
| 3 | AC Cable Forced Outage Rates | All existing Cable EFORs will be updated for NYC and LI to reflect most recent five-year history (2013-2017) | All existing Cable EFORs for NYC and LI to reflect most recent five-year history (2014-2018) | TO provided transition rates with NYISO review. | | Low (+) |
| 4 | UDR Line Unavailability | Five year history of forced outages (2013-2017) | Five year history of forced outages (2014-2018) | NYISO/TO review. | | Low (-) |

## Emergency Operating Procedures

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 1 | Special Case Resources | July 2018 –1309 MW based on registrations and modeled as 903 MW of effective capacity. Monthly variation based on historical experience* | July 2019 –1,282 MW based on registrations and modeled as 873 MW of effective capacity. Monthly variation based on historical experience* | SCRs sold for the program discounted to historic availability. Summer values calculated from July 2019 registrations. Performance calculation updated per ICS presentations on SCR performance. (Attachment F) | | Low (+) |
| 2 | Other EOPs | 713.4 MW of non-SCR/non-EDRP resources (Attachment D) | 692 MW of non-SCR/non-EDRP resources (Attachment D) | Based on TO information, measured data, and NYISO forecasts. | | Low (+) |
| 3 | EOP Structure | 10 EOP Steps Modeled | 12 EOP Steps Modeled | Add one to separate EA from 10 min reserve. Add 2nd as placeholder for Policy 5, Appendix C | | None |

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

# External Control Areas

| # | Parameter | 2019 Model Assumptions | 2020 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) | 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. | | |
| 2 | ISONE, Quebec, IESO | 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 adjusted per NYSRC Policy 5 (Attachment E) | Initial review performed by the NPCC CP-8 WG prior to Policy 5 changes. | | |
| 3 | External Adjustments per Policy 5 | If needed, add load to externals proportional to existing load | If needed, add load to externals proportional to existing excess capacity | White paper on external Control Area adjustments | Y | Low (+) |
| 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 | Per NPCC CP-8 WG. | | None |
| 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. | White paper on Modelling of Emergency Assistance for NYCA in IRM studies | | |

## Miscellaneous

| # | Parameter | 2019 Model Assumptions | 2020 Model Assumptions | Basis for Recommendation | Model Change | Est. IRM Impact* |
|---|---|---|---|---|---|---|
| 1 | MARS Model Version | Version 3.22.6 | Version 3.22.6 | NYISO Vetting of new version 3.24.460 is ongoing | | None |
| 2 | Environmental Initiatives | No estimated impacts based on review of existing rules and retirement trends | Proposed rules would not take effect until after the summer of 2020 | Review of existing regulations and rules. | | None |

# Attachment A

## NYCA Summer Load Forecast Uncertainty Model

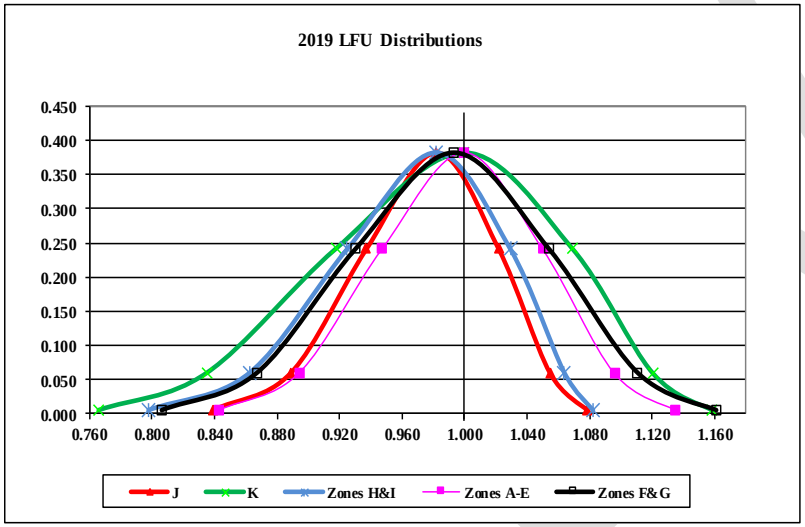
**2019 and 2020 Summer LFU Models**

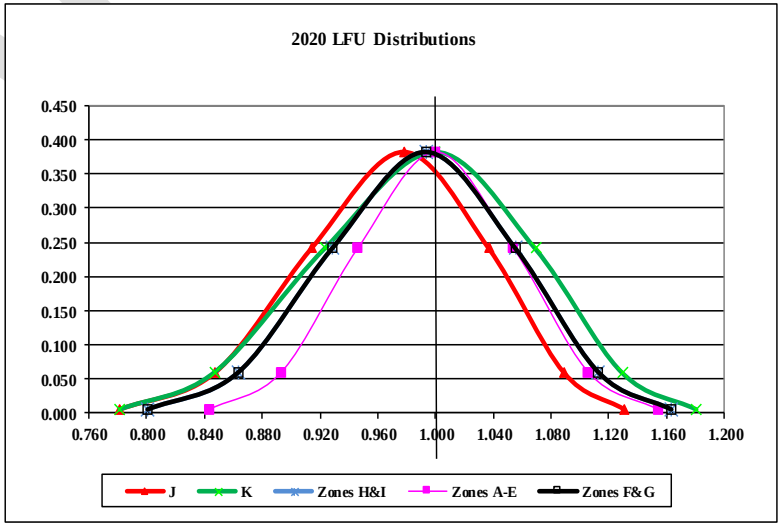
2019 Load Forecast Uncertainty Models

| Step | Multiplier | Zones A-E | Zones F&G | Zones H&I | Con Ed (J) | LIPA (K) |
|---|---|---|---|---|---|---|
| 1 | 0.0062 | 0.8431 | 0.8067 | 0.7978 | 0.8388 | 0.7659 |
| 2 | 0.0606 | 0.8944 | 0.8674 | 0.8624 | 0.8887 | 0.8351 |
| 3 | 0.2417 | 0.9474 | 0.9303 | 0.9249 | 0.9371 | 0.9175 |
| 4 | 0.3830 | 1.0000 | 0.9933 | 0.9817 | 0.9821 | 1.0000 |
| 5 | 0.2417 | 1.0502 | 1.0541 | 1.0293 | 1.0219 | 1.0695 |
| 6 | 0.0606 | 1.0959 | 1.1107 | 1.0639 | 1.0547 | 1.1206 |
| 7 | 0.0062 | 1.1351 | 1.1608 | 1.0822 | 1.0786 | 1.1586 |

2020 Load Forecast Uncertainty Models

| Step | Multiplier | Zones A-E | Zones F&G | Zones H&I | Con Ed (J) | LIPA (K) |
|---|---|---|---|---|---|---|
| 1 | 0.0062 | 0.8430 | 0.8012 | 0.7815 | 0.8307 | 0.7816 |
| 2 | 0.0606 | 0.8929 | 0.8639 | 0.8479 | 0.8819 | 0.8473 |
| 3 | 0.2417 | 0.9458 | 0.9286 | 0.9143 | 0.9324 | 0.9236 |
| 4 | 0.3830 | 1.0000 | 0.9931 | 0.9782 | 0.9804 | 1.0000 |
| 5 | 0.2417 | 1.0539 | 1.0552 | 1.0372 | 1.0245 | 1.0693 |
| 6 | 0.0606 | 1.1057 | 1.1125 | 1.0890 | 1.0628 | 1.1292 |
| 7 | 0.0062 | 1.1539 | 1.1628 | 1.1311 | 1.0938 | 1.1809 |



# Attachment A1

NYCA Winter Load Forecast Uncertainty Model

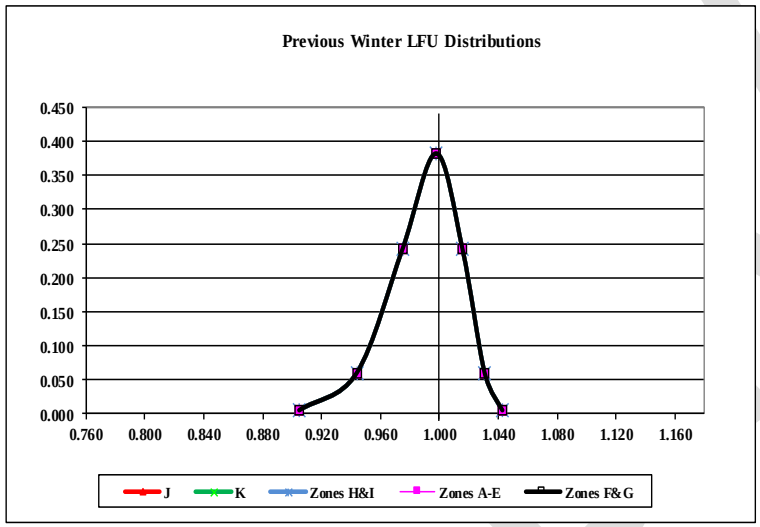
**Previous and 2020 Winter LFU Models**

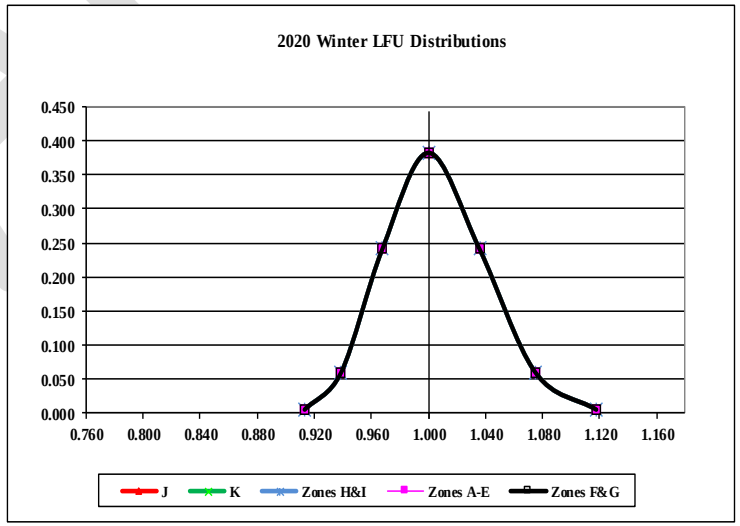
Previous Winter Load Forecast Uncertainty Models

| Step | Multiplier | Zones A-E | Zones F&G | Zones H&I | Con Ed (J) | LIPA (K) |
|---|---|---|---|---|---|---|
| 1 | 0.0062 | 0.9050 | 0.9050 | 0.9050 | 0.9050 | 0.9050 |
| 2 | 0.0606 | 0.9440 | 0.9440 | 0.9440 | 0.9440 | 0.9440 |
| 3 | 0.2417 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 |
| 4 | 0.3830 | 0.9980 | 0.9980 | 0.9980 | 0.9980 | 0.9980 |
| 5 | 0.2417 | 1.0160 | 1.0160 | 1.0160 | 1.0160 | 1.0160 |
| 6 | 0.0606 | 1.0310 | 1.0310 | 1.0310 | 1.0310 | 1.0310 |
| 7 | 0.0062 | 1.0430 | 1.0430 | 1.0430 | 1.0430 | 1.0430 |

2020 Winter Load Forecast Uncertainty Models

| Step | Multiplier | Zones A-E | Zones F&G | Zones H&I | Con Ed (J) | LIPA (K) |
|---|---|---|---|---|---|---|
| 1 | 0.0062 | 0.9128 | 0.9128 | 0.9128 | 0.9128 | 0.9128 |
| 2 | 0.0606 | 0.9385 | 0.9385 | 0.9385 | 0.9385 | 0.9385 |
| 3 | 0.2417 | 0.9675 | 0.9675 | 0.9675 | 0.9675 | 0.9675 |
| 4 | 0.3830 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 5 | 0.2417 | 1.0359 | 1.0359 | 1.0359 | 1.0359 | 1.0359 |
| 6 | 0.0606 | 1.0752 | 1.0752 | 1.0752 | 1.0752 | 1.0752 |
| 7 | 0.0062 | 1.1180 | 1.1180 | 1.1180 | 1.1180 | 1.1180 |



# Attachment B1

## New Non-Intermittent Units and Unit Re-ratings[7]

| B1 - Proposed Non-Intermittant Units and Unit Re-ratings (summer ratings) | | | | | |
|---|---|---|---|---|---|
| **Project or Generator Name** | **Zone** | **2019 MARS Model (MW)** | **2019 Gold Book (MW)** | **New or Incremental (MW)** | **2020 MARS Model (MW)** |
| **New Units** | | | | | |
| Cricket Valley Energy Center, LLC | G | 0 | 1,020.0 | 1,020.0 | 1,020.0 |
| | | | | | |
| **Total New Units** | | 0 | 1,020.0 | 1,020.0 | 1,020.0 |



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

# Attachment B2

## Retiring and Ineligible Generating Units

| Attachment B2 -Announced Unit Retirements, Deactivations, and ICAP Ineligible Forced Outage (IIFO) since 2019 IRM Study | | | |
|---|---|---|---|
| **Generator Name** | **Zone** | **CRIS (MW)** | **CRIS adusted value from 2019 Gold Book (MW)** |
| Cayuga Unit 1 | C | 154.1 | 151.0 |
| ***Retirements*** | | | **151.0** |
| | | | |
| Monroe Livingston | B | 2.4 | 2.4 |
| Steuben County LF | C | 3.2 | 3.2 |
| Auburn - State St. | C | 5.8 | 1.7 |
| Indian Point 2 | H | 1026.5 | 1016.1 |
| ***Deactivations*** | | 0.0 | **1023.4** |
| | | | |
| HUDSON AVE_GT_4 | J | 13.9 | 0.0 |
| ***ICAP Ineligible*** | | 13.9 | **0.0** |
| | | | |
| **Total Removals** | | | **1174.4** |

# Attachment B3

## New Intermittent Resources

| B3 - New Intermittent Resources | | | | |
|---|---|---|---|---|
| **Resouce** | **Zone** | **CRIS (MW)** | **Summer Capability (MW)** | **CRIS adusted value from 2019 Gold Book (MW)** |
| **New Wind Units** | | | | |
| | | | | |
| **Total New Wind** | | | | **0.0** |
| **New Solar Units** | | | | |
| Riverhead Solar Farm, LLC | K | 20.0 | 20.0 | 20.0 |
| **Total New Solar** | | | | **20.0** |
| **Other Intermittent** | | | | |
| Montauk Battery Storage | K | 5.0 | 5.0 | 5.0 |
| **Total New Other** | | | | **5.0** |
| **Total New Intermittent** | | | | **25.0** |

# Attachment B4

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

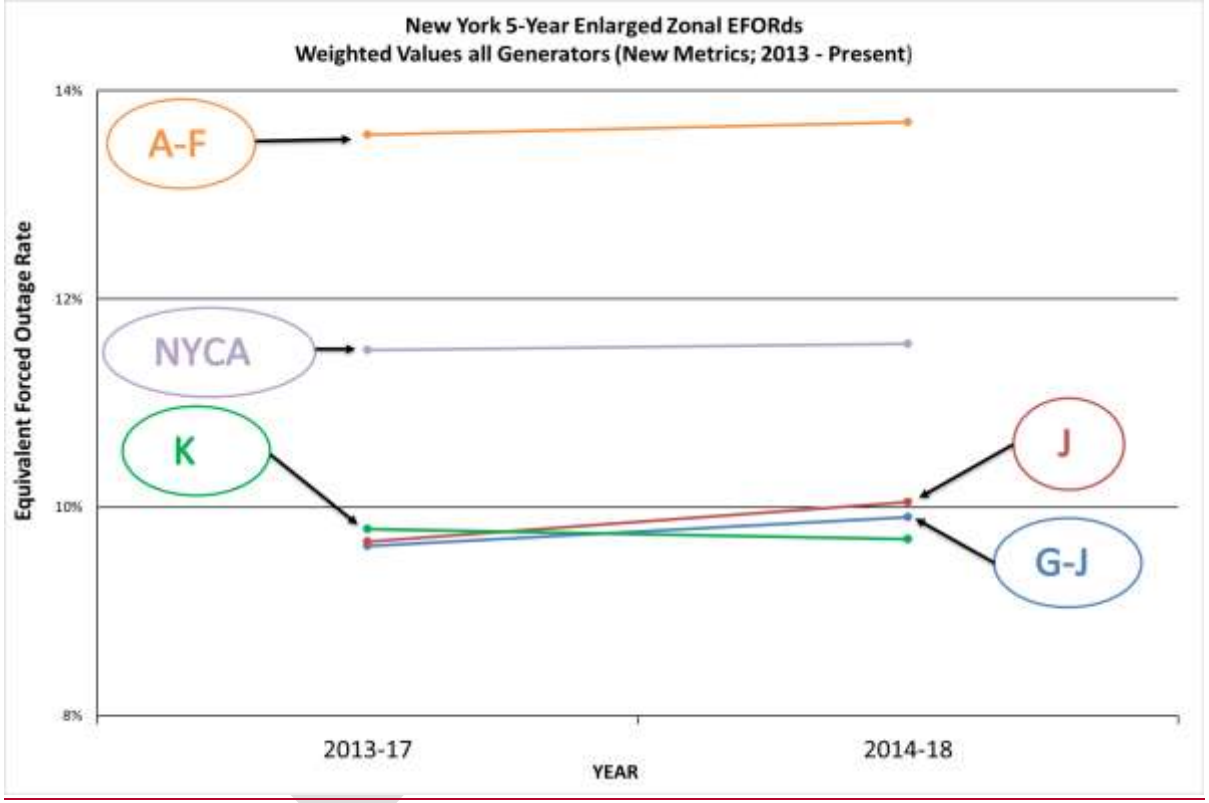
| Attachment B4 -Units in the Behind the Meter Net Generation Program* | | | |
|---|---|---|---|
| **Generator Name** | **Zone** | **Resource Value (MW)[1]** | **Peak Load Adjustment (MW)[2]** |
| **Existing:** | | | |
| Stonybrook | K | 39.8 | 38.9 |
| Greenidge 4[3] | C | 104.3 | 11.6 |
| **Total BTM Gen** | | 144.1 | 50.5 |

* 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. Greenidge values will be updated for FBC

# Attachment C

## NYCA Five Year Derating Factors



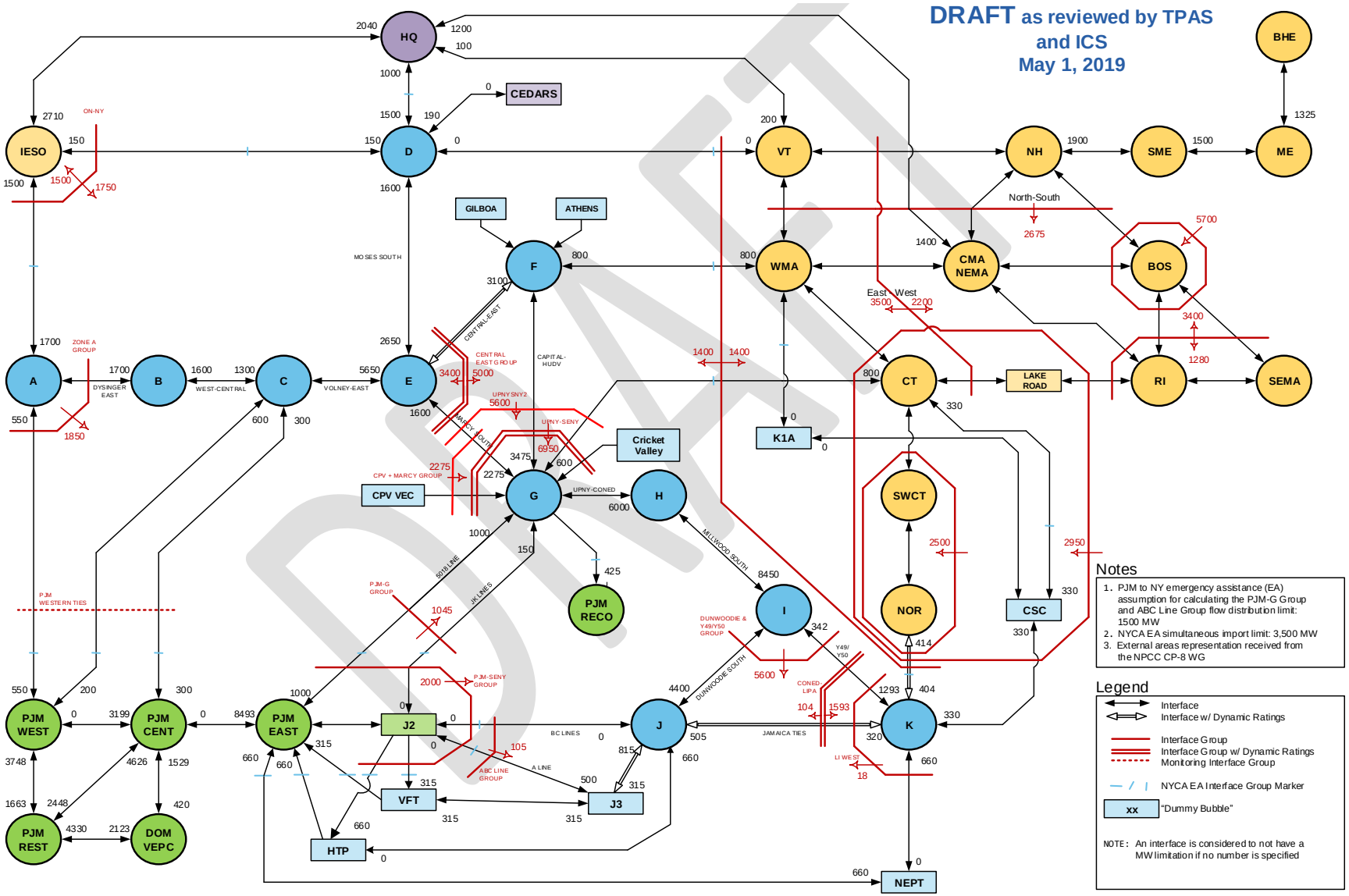
# Attachment D

## Emergency Operating Procedures

| Step | Procedure | Effect | 2019 MW Value | 2020 MW Value |
|---|---|---|---|---|
| 1 | Special Case Resources | Load relief | 1309 MW Enrolled/ 903 MW modeled | 1282 MW Enrolled/ 873 MW modeled |
| 2 | Emergency Demand Response Program | Load relief | 6 MW Enrolled/1 MW Modeled | None Modeled |
| 3 | 5% manual voltage Reduction | Load relief | 66 MW | 57 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 | 401 MW | 347 MW |
| 6 | Voluntary industrial curtailment | Load relief | 166 MW | 207 MW |
| 7 | General public appeals | Load relief | 81 MW | 80 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 - IRM Topology

## 2020 IRM Topology (Summer Limits)



# Attachment F
## SCR Determinations

| SCR Performance for 2019 IRM Study | | | | | | |
|---|---|---|---|---|---|---|
| **Super Zones** | **Enrollments (July 2019)** | **Forecast (2020)[1]** | **Performance Factor[2]** | **UCAP (2020)** | **Adjustment Factor[3]** | **Model Value** |
| A - F | 629.3 | 629.3 | 0.867 | 545.9 | 0.942 | 514.3 |
| G - I | 125.5 | 125.5 | 0.756 | 94.9 | 0.851 | 80.8 |
| J | 478.9 | 478.9 | 0.691 | 330.8 | 0.753 | 249.0 |
| K | 48.2 | 48.2 | 0.718 | 34.6 | 0.823 | 28.5 |
| **Totals** | 1281.9 | 1281.9 | | 1006.1 | | **872.5** |
| | | | | | | |
| | Notes | | | | Overall Performance: | 68.1% |
| | 1. These values represent no growth from the July 2019 ICAP enrollments | | | | | |
| | 2. Performance Factor based on ACL methodology | | | | | |
| | 3. The Adjustment Factor captures two different performance derates; 1) Calculated Translation Factor (TF) between ACL and CBL values, and 2) the Fatigue Factor (FF), (FF = 1.00) | | | | | |

# Assumption Matrix History

| Date | Ver | Preliminary Base Case | Date | Ver | Final Base Case |
|---|---|---|---|---|---|
| 1/29/19 | V0.0 | Preliminary assumptions without attachments. | | | |
| 4/3/19 | V0.1 | Adds winter LFU update, removes EDRP in model- | | | |
| 4/30/19 | V1.0 | Added GB forecast, added attachments A-B4,E. Added row for energy storage resources | | | |
| 5/1/19 | V1.2 | Updated tables B1 through B4 per ICS meeting. Updates on pages 2, 5, 6, 7 (mostly clerical) | | | |
| 6/26/19 | V1.3 | Filled out summary table (clerical) | | | |
| 6/28/19 | V1.4 | New row to show policy 5 adjustments<br>Table B1 and B3 updates<br>Added ICS estimated impacts | | | |
| 7/1/19 | V1.5 | Add Cayuga Retirement | | | |
| 7/10/19 | V2.0 | Adds Attachments A,D, and F | | | |
| 7/30/19 | V2.1 | Adds SCR, EOP, LFU, and EFORd values | | | |