

2022 IRM Study- Sensitivity Cases (based on PBC)

| Case | Description | IRM (%) | NYC (%) | LI (%) | IRM% Change from Base Case |
|------|---|---------|---------|--------|----------------------------|
| 0 | 2022 IRM Preliminary Base Case | 18.6 | 80.6 | 96.1 | - |
| | These are the Base Case technical results derived from knee of the IRM-LCR curve. | | | | |
| 1 | NYCA Isolated | 27.2 | 87.0 | 104.4 | +8.6 |
| | Track Total NYCA Emergency Assistance – NYCA system is isolated and receives no emergency assistance from neighboring control areas (New England, Ontario, Quebec, and PJM). UDRs are allowed. | | | | |
| 2 | No Internal NYCA transmission constraints | 16.7 | 79.2 | 94.2 | -1.9 |
| | Track level of NYCA congestion with respect to the IRM model – internal transmission constraints are eliminated and the impact of transmission constraints on statewide IRM requirements is measured. | | | | |
| 3 | No Load forecast uncertainty | 10.7 | 74.7 | 88.5 | -7.9 |
| | Shows sensitivity of IRM to load uncertainty, assuming that the forecast peak loads for NYCA have a 100% probability of occurring. | | | | |
| 4 | No wind capacity | 13.0 | 80.6 | 96.1 | -5.6 |
| | Shows wind impact; performed by freezing J & K at base levels and adjusting capacity in the upstate zones. | | | | |
| 5 | No SCRs | 15.9 | 77.7 | 96.3 | -2.7 |
| | Shows sensitivity of IRM to SCR resources. | | | | |
| 6 | Zone D PAR sensitivity | 18.5 | 80.6 | 96.1 | -0.1 |
| | Determines IRM if the zone D PAR repair is completed in advance of next summer; performed by freezing J & K at base levels and adjusting capacity in the upstate zones. | | | | |
| 7 | Enhanced Energy Limited Resource (ELR) sensitivity. | 17.8 | 80.7 | 96.3 | -0.8 |
| | Selects the TC-4C option from the ELR whitepaper as the basis for testing a functionality of the new MARS ELR software. Includes results on the number of EOPs called. (Tan 45) | | | | |
| 8 | Extended partial outage of Neptune UDR | 19.8 | 82.3 | 98.3 | +1.2 |
| | Sensitivity on line remaining partially unavailable (50%) (Shifting performed across Zones G-K) | | | | |
| 9 | Revert to 2021 IRM Study Cable Forced Outage Rates | 18.5 | 80.4 | 93.1 | -0.1 |
| | Shows the (Tan45) Impact of Updated Cable Forced Outage Rates. | | | | |

- All results are calculated by adding/removing capacity from Zones A-K unless otherwise noted.

| MARGIN STATE | Corresponding EOP Step |
|-------------------|-------------------------------------|
| 1 | Operating Reserves |
| 2 | Special Case Reserve (SCR) Resource |
| 3 | Mandatory Voltage Reduction |
| 4 | 30 Minutes Reserve |
| 5 | 5% Remote Voltage Reduction |
| 6 | Voluntary Curtailment |
| 7 | Public Appeals |
| 8 | Emergency Assistance |
| 9 | 10 Minutes Reserve |
| 10 | EC Adjustments |
| After EOP Step 10 | Firm Load Shedding |

Note: At each Margin State, the corresponding EOP step is implemented. The EOP Calls at each Margin State means after corresponding implementation, the need to call for the next EOP step.

| MONTH | EOP Calls Per MARGIN STATE – 2022 IRM PBC | | | | | | | | | |
|--------------|---|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| JAN | 4.40 | 2.51 | 2.34 | 2.34 | 1.41 | 1.41 | 1.41 | 0.00 | 0.00 | 0.00 |
| FEB | 11.99 | 9.93 | 9.82 | 9.79 | 9.05 | 9.04 | 9.04 | 0.00 | 0.00 | 0.00 |
| MAR | 3.92 | 2.66 | 2.61 | 1.59 | 1.28 | 1.25 | 1.22 | 0.00 | 0.00 | 0.00 |
| APR | 0.43 | 0.37 | 0.36 | 0.10 | 0.08 | 0.06 | 0.05 | 0.00 | 0.00 | 0.00 |
| MAY | 1.20 | 0.87 | 0.85 | 0.10 | 0.08 | 0.06 | 0.04 | 0.00 | 0.00 | 0.00 |
| JUN | 4.07 | 1.94 | 1.84 | 1.69 | 1.37 | 1.35 | 1.34 | 0.00 | 0.00 | 0.00 |
| JUL | 5.70 | 4.02 | 3.94 | 3.73 | 3.12 | 3.08 | 3.07 | 0.15 | 0.05 | 0.05 |
| AUG | 8.21 | 6.46 | 6.31 | 5.84 | 5.13 | 5.04 | 5.00 | 0.15 | 0.05 | 0.05 |
| SEP | 2.71 | 1.17 | 1.13 | 1.12 | 0.87 | 0.86 | 0.86 | 0.00 | 0.00 | 0.00 |
| OCT | 1.46 | 0.70 | 0.67 | 0.25 | 0.17 | 0.14 | 0.13 | 0.00 | 0.00 | 0.00 |
| NOV | 0.07 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 |
| DEC | 1.14 | 0.55 | 0.53 | 0.51 | 0.39 | 0.39 | 0.39 | 0.00 | 0.00 | 0.00 |
| TOTAL | 45.3 | 31.2 | 30.4 | 27.1 | 22.9 | 22.7 | 22.6 | 0.3 | 0.1 | 0.1 |

| MONTH | EOP Calls Per MARGIN STATE – ELR Sensitivity Case | | | | | | | | | |
|--------------|---|-----------|-------------|-----------|-------------|-------------|-------------|------------|------------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| JAN | 2.25 | 0.64 | 0.54 | 0.54 | 0.38 | 0.38 | 0.38 | 0.00 | 0.00 | 0.00 |
| FEB | 10.90 | 9.46 | 9.25 | 9.21 | 8.51 | 8.50 | 8.50 | 0.00 | 0.00 | 0.00 |
| MAR | 3.73 | 2.46 | 2.39 | 1.41 | 1.20 | 1.17 | 1.15 | 0.00 | 0.00 | 0.00 |
| APR | 0.38 | 0.34 | 0.33 | 0.09 | 0.06 | 0.05 | 0.04 | 0.00 | 0.00 | 0.00 |
| MAY | 0.97 | 0.77 | 0.76 | 0.07 | 0.06 | 0.04 | 0.03 | 0.00 | 0.00 | 0.00 |
| JUN | 2.63 | 1.19 | 1.15 | 0.94 | 0.78 | 0.75 | 0.74 | 0.00 | 0.00 | 0.00 |
| JUL | 4.35 | 3.18 | 3.12 | 2.72 | 2.46 | 2.43 | 2.42 | 0.15 | 0.05 | 0.05 |
| AUG | 6.34 | 4.69 | 4.60 | 4.13 | 3.75 | 3.71 | 3.69 | 0.14 | 0.05 | 0.05 |
| SEP | 1.65 | 0.53 | 0.51 | 0.49 | 0.25 | 0.25 | 0.25 | 0.00 | 0.00 | 0.00 |
| OCT | 0.88 | 0.48 | 0.46 | 0.12 | 0.08 | 0.06 | 0.05 | 0.00 | 0.00 | 0.00 |
| NOV | 0.04 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| DEC | 0.67 | 0.24 | 0.22 | 0.21 | 0.16 | 0.16 | 0.16 | 0.00 | 0.00 | 0.00 |
| TOTAL | 34.8 | 24 | 23.4 | 20 | 17.7 | 17.5 | 17.4 | 0.3 | 0.1 | 0.1 |