New York ISO
Independent System Operator

10 Krey Boulevard, Rensselaer, NY 12144
Ph: 518.356.6000 | **Fax:** 518.356.8899

2021-2025 ICAP Demand Curve Reset:
Methodology for Calculating Preliminary Level of Excess Adjustment Factors

Background

As part of the last ICAP Demand Curve reset (DCR), a comprehensive set of revisions to the process were implemented, including revising the methodology for estimating potential net Energy and Ancillary Services (EAS) revenues earned by the hypothetical peaking plants. The revised methodology uses historic data over a three-year period to estimate the likely projected annual net EAS revenue of each hypothetical peaking plant.

MST Section 5.14.1.2.2 requires that "the cost and revenues of the peaking plant used to set the reference point and maximum value for each ICAP Demand Curve shall be determined under conditions in which the available capacity is equal to the sum of (a) the minimum Installed Capacity requirement and (b) the peaking plant's capacity equal to the number of MW specified in the periodic review and used to determine all costs and revenues (for purposes of this Section 5.14.1.2.2 hereinafter referred to as the "prescribed level of excess")."

The historic prices used for estimating net EAS revenues reflect "as found" conditions and adjustments are needed to account for the tariff-prescribed level of excess conditions assumed for the DCR. This adjustment is accomplished through the use of "scaling factors" that are referred to as level of excess adjustment factors (LOE-AFs). The LOE-AFs are determined as part of the DCR and remain fixed for the four year reset period.

Overview of Methodology

Preliminary LOE-AF value results were presented to the Installed Capacity Working Group (ICAPWG) on May 19, 2020. The preliminary results were developed using the same methodology used during the last reset to determine LOE-AFs. This methodology was previously reviewed with stakeholders at the March 10, 2020 ICAPWG meeting.

Consistent with the last reset, GE Energy Consulting (GE) was contracted to perform a series of MAPS runs to simulate wholesale energy prices under various levels of excess to assist in developing the LOE-AFs. For the purposes of the DCR, GE performed two sets of MAPS runs: one run was modeled on the "as-found" system and one run modeled the system at the prescribed level of excess. Both cases were modeled using the base case from the 2019 Congestion Assessment and Resource Integration Studies (CARIS) Phase 1 analysis.

The result of each MAPS run is hourly energy clearing prices by zone. Using the two different runs, the independent consultant developed a series of ratios that reflect the price differences between the system at the prescribed level of excess and as-found. These ratios determine the LOE-AFs that are used to scale historic hourly market clearing prices in the net EAS revenue model to estimate the net EAS revenue that hypothetical peaking plants could earn under the prescribed level of excess conditions.

Preliminary LOE-AF Values

GE performed a similar set of MAPS runs to assist in developing the preliminary LOE-AFs presented at the May 19, 2020 ICAPWG meeting. The 2019 CARIS Phase 1 study[1] base case was used to perform the

[1] An overview of the assumptions used in the 2019 CARIS Phase 1 base case can be found on the NYISO's website at:

10 Krey Boulevard, Rensselaer, NY 12144
Ph: 518.356.6000 | **Fax:** 518.356.8899

required MAPS run, focusing on the 2021, 2022, 2023, 2024, and 2025 calendar years within the case.

For the purposes of the preliminary results, a 300 MW peaking plant value was assumed for the purposes of determining the prescribed level of excess conditions. Load was scaled in all five years to simulate the tariff-prescribed level of excess conditions. As required by the tariff, the prescribed level of excess conditions were determined using the size of peaking plant (i.e., 300 MW for purposes of the preliminary results), as well as the NYCA Minimal Installed Capacity Requirement and Locational Minimum Installed Capacity Requirements in effect for the 2020/2021 Capability Year.

Load Scaling Methodology

In order to arrive at the prescribed level of excess where the amount of capacity is equal to the applicable minimum ICAP requirement plus the MW size of the peaking plant, load was scaled to satisfy this condition for each calendar year evaluated (i.e., 2021-2025 for purposes of the preliminary results). This process was done using the following steps (the process for scaling load in NYC for 2021 is used for this example):

1. Calculate what "peak load" would be under the prescribed level of excess (LOE) conditions using the amount of ICAP available for each Locality/capacity region and year.[2] This represents the LOE net "peak load" (gross peak load less distributed [behind-the-meter] solar):
    - LOE Net Peak Load = (Locality ICAP[3] – Peaking Plant MW [300]) / IRM or LCR
    - 2021 Load Zone J: 12,401.2 MW = (11,039.4 ICAP – 300 MW) / 86.6%

2. Identify the base case ("as-found") net peak load interval and load level:
    - 2021 Load Zone J: 11,695 MW observed on 7/27/21 14:00

3. Scale that specific interval (step 2) to the prescribed LOE peak load value found in step one:
    - 2021 Load Zone J: 7/27/21 14:00 load level changed to 12,401.2 for LOE case

4. Add back distributed generation (distributed generation does not change between base case and LOE case):
    - 2021 Load Zone J: 12,498.2 Gross Peak Load for LOE Case = 12,401.2 MW LOE Net Peak Load + 97 MW distributed gen at 7/27/21 14:00

5. Identify corresponding gross peak load value from the base case ("as-found"):
    - 2021 Load Zone J Gross Peak Load: 11,762.0 MW observed on 7/27/21 14:00

6. Calculate the percent delta between LOE case gross peak load calculated in step 4 and base case gross peak load observed during the same interval in step 5:
    - Scaling Factor = LOE Case Gross Peak Load / Base Case Gross Peak Load
    - 2021 Load Zone J: (12,498.2 MW / 11,762.0 MW) -1 = 5.99%

---

https://www.nyiso.com/documents/20142/7239276/03a+2017+and+2019+CARIS+Base+Case+Assumptions+Matrix+Comparison+v3.pdf/bc58b049-b68f-c59f-ab0a-d24935acc439?version=1.1&t=1561031662262&download=true

[2] Due to the nested nature of capacity regions, the 300 MW peaking unit is added to the NYC and LI Localities, only. For the G-J Locality, the peaking plant MW are accounted for by the addition in NYC; for the NYCA, 300 MW are removed, so that the net increase to the NYCA is 300 MW, only.

[3] "Locality ICAP" MW obtained from the 2019 CARIS Phase 1 base case.

7. Apply the scaling factor calculated in step 6 to gross load from the base case for that Locality/capacity region across the entire year to determine the LOE case loads.

Note: For the G-J, NYC and LI Localities, non-coincident peak load is used for this calculation. For the NYCA, coincident peak load is used.

The tables below provide further details on the LOE and base case net peak load values determined in step 1 (LOE case) and step 2 (base case) above. Note that within the 2019 CARIS Phase 1 database, the level of resource ICAP (MW) is not projected to change over the course of calendar years 2021 through 2025.

10 Krey Boulevard, Rensselaer, NY 12144
Ph: 518.356.6000 | **Fax:** 518.356.8899

"As Found" Case Load and ICAP Levels

Calendar Year	Locality	Peak Load (MW)	IRM/LCR (%)	ICAP Requirement (MW ICAP)	Installed Capacity (MW ICAP)
2021	NYCA	32,201.9	118.9%	38,288.0	42,372.8
	G-J	15,958.9	90.0%	14,363.0	15,865.7
	J	11,695.0	86.6%	10,127.8	11,039.4
	K	5,055.9	103.4%	5,227.8	6,195.3
2022	NYCA	32,111.5	118.9%	38,180.6	42,372.8
	G-J	15,965.9	90.0%	14,369.3	15,865.7
	J	11,703.9	86.6%	10,135.5	11,039.4
	K	5,035.1	103.4%	5,206.3	6,195.3
2023	NYCA	31,859.9	118.9%	37,881.5	42,372.8
	G-J	15,863.2	90.0%	14,276.9	15,865.7
	J	11,608.1	86.6%	10,052.6	11,039.4
	K	4,968.6	103.4%	5,137.5	6,195.3
2024	NYCA	31,692.2	118.9%	37,682.1	42,372.8
	G-J	15,847.9	90.0%	14,263.1	15,865.7
	J	11,598.0	86.6%	10,043.9	11,039.4
	K	4,894.1	103.4%	5,060.5	6,195.3
2025	NYCA	31,571.9	118.9%	37,539.0	42,372.8
	G-J	15,864.8	90.0%	14,278.3	15,865.7
	J	11,616.3	86.6%	10,059.7	11,039.4
	K	4,822.9	103.4%	4,986.8	6,195.3

"Prescribed Level of Excess" Case Load and ICAP Levels

Calendar Year	Locality	Peak Load (MW)	IRM/LCR (%)	ICAP Requirement (MW ICAP)	Installed Capacity (MW ICAP)
2021	NYCA	35,385.0	118.9%	42,072.8	42,372.8
	G-J	17,295.2	90.0%	15,565.7	15,865.7
	J	12,401.2	86.6%	10,739.4	11,039.4
	K	5,701.5	103.4%	5,895.3	6,195.3
2022	NYCA	35,385.0	118.9%	42,072.8	42,372.8
	G-J	17,295.2	90.0%	15,565.7	15,865.7
	J	12,401.2	86.6%	10,739.4	11,039.4
	K	5,701.5	103.4%	5,895.3	6,195.3
2023	NYCA	35,385.0	118.9%	42,072.8	42,372.8
	G-J	17,295.2	90.0%	15,565.7	15,865.7
	J	12,401.2	86.6%	10,739.4	11,039.4
	K	5,701.5	103.4%	5,895.3	6,195.3
2024	NYCA	35,385.0	118.9%	42,072.8	42,372.8
	G-J	17,295.2	90.0%	15,565.7	15,865.7
	J	12,401.2	86.6%	10,739.4	11,039.4
	K	5,701.5	103.4%	5,895.3	6,195.3
2025	NYCA	35,385.0	118.9%	42,072.8	42,372.8
	G-J	17,295.2	90.0%	15,565.7	15,865.7
	J	12,401.2	86.6%	10,739.4	11,039.4
	K	5,701.5	103.4%	5,895.3	6,195.3