New York ISO
Independent System Operator

M-06

Load Forecasting Manual

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Revision History

Version	Date	Revisions
1.0	09/23/1999	Initial Release
2.0	05/14/2001	Unavailable
3.0	08/09/2006	Complete rewrite of manual
4.0	04/30/2010	Global ➢ Completely revised content. ➢ Updated tariff citations to reflect section renumbering secondary to e-Tariff implementation. ➢ Reformatted per new template to standardize presentation. ➢ Implemented minor stylistic changes. ➢ Revision History Table: changed column headings as follows: • "Revision" changed to "Version." • "Changes" changed to "Revisions."
4.0.1	09/11/2013	Recertification
4.1	04/02/2020	Global ➢ Added text to account for BTM:NG Resources. ➢ Updated text on release of LFTF Schedule ➢ Clarified rule for treatment of TO Demand Response impacts ➢ Added a subsection to describe the difference in forecasts used for the ICAP Market and the forecast used for Locational Capacity Markets
4.1	07/23/2020	Recertification Ministerial ➢ Hyperlinks and cross references updated ➢ Branding and formatting updated
4.2	11/11/2020	Global ➢ Added text to update clarify the selection criteria for the NYCA peak day ➢ Updated and clarified the RLGF criteria to reflect the updates discussed with LFTF and changes put forth in NYISO Technical Bulletin #251 (TB-251)
4.3	MM/DD/YYYY	Recertified Global ➢ Updated data submission requirements for the Large Load Facilities load forecast requests and integration with the ICAP forecast method ➢ Included changes puth forth in NYISO Technical Bulletin #253 (TB-253)

1. Overview

The NYISO's Business Issues Committee (BIC) is responsible for the establishment of procedures related to the efficient and non-discriminatory operation of electricity markets centrally coordinated by the NYISO, including procedures related to bidding and settlements and the calculation of market prices. (BIC By-Laws, 9.01.1.)

The Load Forecasting Task Force (LFTF) has been designated by the Installed Capacity Working Group of the BIC to prepare and present load forecasts used in the Installed Capacity markets for the New York Control Area (NYCA) and for those Transmission Districts with a Locational Minimum Installed Capacity Requirement. The LFTF's methods and procedures for preparing load forecasts are described in this Load Forecasting Manual. The LFTF does not prepare the Installed Reserve Margin (IRM), the Equivalent Demand Forced Outage Rates for Generators, or the percentages of the Locational Minimum Installed Capacity Requirements.

1.1 Purpose and Scope

This manual has threewo main purposes.

The first purpose is to set forth the data reporting, weather-normalization methodology, and load forecasting methodology requirements that are prescribed in the *NYISO Market Administration and Control Area Services Tariff* (*Services Tariff*) Sections 5.10 and 5.11 and used in the calculation of the NYCA Installed Capacity ("ICAP") forecast. The load forecasts used in the calculation of the NYISO's Installed Capacity requirements will be referred to herein as *ICAP Market Load Forecasts*.

The second purpose is to set forth the data submissions required by the NYISO to prepare the ICAP Market Load Forecasts and its filings to NPCC, NERC, FERC, and other reliability and regulatory bodies.

The third purpose is to set forth the data submissions required by the NYISO to forecast the impacts of Large Load Facilities[1] subject to reporting requirements of as described in Appendix A.

1.2 ICAP Forecast for the New York Control Area and ICAP Forecast for Localities

Prior to each Capability Year, the NYISO determines the forecast peak load for the NYCA (as referred to in *NYISO Services Tariff* Section 5.11.1, "NYCA peak Load") and for each Locality. The NYCA forecasted peak

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[1] Large Load Facilities: Pursuant to the NYISO's Transmission Expansion and Interconnection Manual, the NYISO Load interconnection procedures apply to Load interconnections that are either: a) greater than 10 MW connecting at a voltage level of 115 kV or above, or b) 80 MW or more connecting at a voltage level below 115 kV.

Commented [A1]: The footnote suggests that any load not subject to the NYISO's interconnection study process would not be subject to this reporting. Is there a rationale for not requiring data from resources between 10 and 79.9 MW connecting below the 115 kV system??

load for each Capability Year is based on the highest Adjusted Actual Load for the NYCA during non-holiday weekday hours occurring in July or August in the immediately preceding Capability Year. The NYCA Adjusted Actual Load is calculated by adjusting the coincident peak for the entire Control Area. The forecasted peak load for each Locality is based on the highest Adjusted Actual Load in each Locality, calculated using the Locality's non-coincident peak load. That is, each Locality's actual peak load may be non-coincident with the NYCA actual peak load.

Adjusted Actual Load is defined in *NYISO Services Tariff* Section 2.1. That definition sets forth adjustments to Actual Load.

When computing the Adjusted Actual Load for the NYCA or a Locality, the load reductions include those resulting from dispatchable load management programs of Load Serving Entities (LSEs), Curtailment Service Providers (CSPs), or Responsible Interface Providers (RIPs that are not otherwise accounted for by the Transmission Owners (TOs) and Municipal Electric Systems (MES) through the components of their respective Adjusted Actual Load computations.

The ICAP Market Load Forecast for the NYCA is computed by; (1) taking the product of (a) the Adjusted Actual Load of each Transmission District or MES that is coincident with the NYCA peak, and (b) one plus the Regional Load Growth Factor (1 + RLGF) applicable to each Transmission District or MES, and (2) summing these individual Transmission District or MES peak forecasts.

The ICAP Market Load Forecast for each Locality is similarly obtained by (1) taking the product of (a) the non-coincident Adjusted Actual Load in the Locality of each Transmission District or MES, and (b) one plus the Regional Load Growth Factor (1 + RLGF) applicable to each Transmission District or MES in the Locality, and (2) summing these individual Transmission District or MES Locality peak forecasts.

2. Data, Weather-Normalization, and Load Forecasting Methodology Submission Requirements for the NYCA ICAP Market Load Forecast

This section describes the following:

1. Notification procedures to be followed by the NYISO
2. Data submission requirements for TOs and MESes, LSEs, CSPs, RIPs, BTM:NG Resources.
3. The procedures the NYISO follows for:

   - Evaluating the TO and MES submitted actual and weather-normalized loads at the time of the NYCA peak hour (and Locality peaks)

- Calculating NYCA Weather-Normalized Load + Losses (WNL+L) at the NYCA peak hour for the Capability Year during which the calculation is being performed
- Accounting for the impacts of Behind-the-Meter Net Generation (BTM:NG) Resources
- Calculating a Weather Normalization Factor (WNF) for each individual BTM:NG Resource
- Calculating the Transmission District Weather Normalization Factor (TDWNF)
- Evaluating TO and MES Regional Load Growth Factors (RLGFs)
- Calculating the forecasted NYCA ICAP peak and each TO, MES and BTM:NG Resource load at the same one hour on the same date as the forecasted NYCA peak.
- Calculating the Locality peak forecast of all TO, MES and BTM:NG Resource loads located in each of the Localities at their peak dates and times.

2.1 Notification Procedures to be Followed by the NYISO

The *Capability Year Peak* for purposes of this section of the *Load Forecasting Manual* is defined to be the highest hourly load during non-holiday weekdays in July or August during a Capability Year. The peak information and data will be posted by September 1 consistent with the Schedule below.

Information and data provided to members of the LFTF will include:

1. **ICAP Market Load Forecast Schedule:** Each year, the NYISO will release a Schedule by September 1 that will list the dates by which data and analyses are to be completed and submitted to the NYISO;

2. **Capability Year Peak and Date and Hour of Occurrence:** The NYISO will provide these data points to the TOs and MESs by September 1;

3. **Large Load Facility Forecasts:** The NYISO will provide projected Zone and Transmission District peak values associated with the Large Load Facility for the upcoming capability year to the LFTF by September 1, based on information available as of July 15;

4. **EDRP, DADRP, DSASP, and SCR Performance during the NYCA Peak Hour:** The NYISO will provide these data points by October 31;

5. **BTM:NG Resource Load Data:** The NYISO will provide the Peak Proxy Load data points by October 31;

6. **Economic Data:** The NYISO will summarize and distribute to the LFTF economic data used in the evaluation of RLGFs by October 31;

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3.

4. 7. **Evaluation of TO and MES Weather-Normalized Loads:** The NYISO will provide these data points in November;

5. 8. **Evaluation of TO and MES RLGFs:** The NYISO will provide these data points in December;

6. 9. **Preliminary ICAP Market Load Forecast:** The NYISO will provide these data points in December; and

7. 10. **Final ICAP Market Load Forecast:** The NYISO will provide these data points, including the ACHL for BTM:NG Resources in December.

2.2 Data Submission Requirements for TOs, MESs, LSEs, CSPs, RIPs, and BTM:NG Resources

TOs and MESs shall submit to the NYISO:

1. Hourly loads for each quarter-year (first quarter is January – March, *etc.*) within 90 days after the quarter's end;

2. Actual load during the hour and on the date of the NYCA peak, and including a statement of whether or not transmission losses are included;

2. 3. [Up to date reports describing the interconnection status and expected load impacts of new and existing Large Load Facilities]

3. 4. The weather-normalized load during the hour and on the date of the NYCA peak, in accordance with Section 2.2.4;

4. 5. The previous five years' values for Subsections 2.2.2 and 2.2.4 of this manual;

5. 6. The MW impact of Emergency Operating Procedures (EOPs) and load modifiers operating during the hour and on the date of the NYCA peak;

6. 7. The actual and weather-normalized Locality non-coincident peak load for each TO and MES with Locational Minimum Unforced Capacity Requirements; and

7. 8. Regional Load Growth Factors.

LSEs, CSPs, and RIPs shall submit to the NYISO and to the TO providing transmission service to the respective loads, the load reduction resulting from the LSE's, CSP's, or RIP's own dispatchable load management programs that were in effect during the hour and on the date of the NYCA peak and during the hour and on the date of the Locality peak.

Commented [A2]: Again, it appears we intend to leave a gap of 10-79.9 MW loads interconnecting on the lower voltage. I guess this is to appease the TOs, but I wouldn't repeat it here. Just unnecessarily nails us down to a stake that in the future which we may want to be able to wiggle away from a bit.

Commented [A3R2]: I agree. I have removed the description.

We have discussed lowering the threshold for the purpose of forecasting (8/26/2022) LFTF and the feedback was generally not in favor of moving away from the 80MW threshold.

Commented [A4]: How does the LF manual and TB 253 specify large loads that are already online but still growing, for example NCDC currently? This is no longer a "new" large load facility, but its growth is still an important factor in the forecast. Better to characterize as "new or growing large load facilities"?

Commented [A5R4]: Added language for existing large load facilities.

Commented [A6R4]: Large Load facility definition for the purpose of the load forecasts are still in discussion with LFTF

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BTM:NG Resources are subject to particular eligibility rules and qualifications, and special reporting requirements, as described in ICAP Manual Sections 4.15 and 4.1. BTM:NG Resources having Generators that are expected to be unavailable for the next capability year, or that do not enter the market for the first time (*i.e.,* "new" resources) by August 1 of the current Capability Year, may be excluded from the forecasts described in this manual.

The due dates for items required by Subsections 2.2.2 through 2.2.10 of this manual will be set forth in the Schedule.

2.2.1 Hourly Loads

TO and MES hourly loads are necessary for verification of the load at the time of the NYCA peak and for other purposes as described in Section 2.3 of this manual. Data may be submitted in any electronic format acceptable to the NYISO.

2.2.2 Actual Load at the Time of the NYCA Peak

TOs and MESes shall provide their load in MW during the hour and on the date of the NYCA peak for the current Capability Year together with a statement stating whether this load includes transmission losses.

2.2.3 Large Load Facility Status and Load Forecast Impacts

Changes in the timing of the initial construction of Large Load facilities that are interconnecting on the system or existing Large Load Facilities that are expanding (or contracting) have the potential to significantly alter the load forecast within the Large Load Facility's connecting Transmission District. TOs shall provide updated load forecast information for these facilities pursuant to Section 4.4.6 of the NYISO OATT, Attachments Y and FF of the NYISO OATT, and Appendix A of this manual.

2.2.3 2.2.4 Weather-Normalized Load at the Time of the NYCA Peak and Supporting Material

TOs and MESes shall provide the weather-normalized load corresponding to their actual load (provided pursuant to Section 2.2.2 of this manual). TOs and MESes may calculate their weather-normalized load using their own procedures. However, the design criteria employed by each TO and MES shall be such that it ensures, at a maximum, a 0.50 probability of occurrence on an annual basis. The design criterion (T

Design) is sometimes referred to by specifying the number of years in which it is expected that the design criterion will be exceeded. A "1-in-2" criterion means that the actual peak day weather conditions are expected to exceed design once in every two years. A "1-in-3" criterion means that the actual peak day weather conditions are expected to exceed design once in every three years. The probability of occurrence for a "1-in-2" criterion is 50% while for a "1-in-3" criterion it is 33 1/3%. The probabilities of these criteria are 0.50 or less.

TOs and MESes shall provide the following supporting material:

1. A written description of the method used to derive the weather-normalized load from the actual load.
2. If a statistical model is used, the model, its statistics, and the data from which weather-normalized load was derived.
3. A description of and supporting data for the design conditions used in calculating the weather-normalized load.

2.2.4 2.2.5 Actual and Weather-Normalized Load at the Time of the NYCA Peak for the Five Preceding Years

TOs and MESes shall provide historical values of the actual and weather-normalized loads for each of the five Capability Years preceding each ICAP forecast. This data is used by the NYISO to evaluate Regional Load Growth Factors provided by TOs and MESes. If requested, the TOs and MESes shall provide supporting documentation. Results submitted by a TO or MES in respect of an ICAP forecast for a previous Capability Year need not be resubmitted unless the TO or MES has revised actual or weather-normalized data or resulting computation of its actual or weather-normalized load.

2.2.5 2.2.6 MW Impact of EOPs and Load Modifiers Operating at, and MW Reductions from Programs Achieved During the Time of the NYCA Peak

TOs and MESes shall provide the MW reduction achieved by Emergency Operating Procedures (EOPs) and Load modifiers during the hour and on the date of the NYCA peak. TOs and MESes shall provide supporting documentation if requested by the NYISO.

LSEs, CSPs, and RIPs that activate resources in their own dispatchable load management programs during the hour and on the date of either the NYCA peak or a Locality peak shall report to the NYISO and the TO providing transmission service to the respective load, the MW reduction achieved by these resources at the time of each peak. LSEs, CSPs, and RIPS shall provide supporting documentation to the NYISO and the respective TO if requested.

Commented [A9]: In practice, we rarely if ever receive and typically do not explicitly request historical WN loads. We use the final values from prior forecasts. Is it worth keeping this data requirement? I suppose it could be useful to point to in certain cases, but seems largely unneeded. I see that the final sentence in the paragraph makes this seem like an as needed request in the event of updates, so maybe this is fine as is.

Commented [A10R9]: CA: Good Point. The language is general enough to request prior WN loads if needed.

LEGAL/Dave – Please confirm.

TOs, MESs, LSEs, CSPs, RIPs shall compare the MW reduction from Demand Side Resources and their other respective dispatchable load management programs with those of the NYISO's SCR, DADRP, DSASP, and EDRP programs to properly account for these impacts.

The NYISO shall verify data submitted by LSEs, CSPs, and RIPs on MW reductions achieved from programs that the NYISO uses in computing the NYCA Adjusted Actual Load. Each TO and MES shall verify the data submitted by LSEs, CSPs, and RIPs on MW reductions achieved from programs that the TO or MES uses in computing the Transmission District Adjusted Actual Load. Each TO and MES shall submit such verified data to the NYISO and any revisions or updates to the data. TOs and MESs shall provide supporting documentation if requested by the NYISO.

2.2.62.2.7 Behind-the-Meter Net Generation Resources

A BTM:NG Resource is defined in Section 2.2 of the NYISO's Market Services Tariff. BTM:NG Resources will provide actual hourly loads to the NYISO in accordance with the procedures defined in ICAP Manual Section 4.15. The NYISO will provide the following load data for BTM:NG Resources in accordance with Section 2.1 of this Manual:

1. The Peak Proxy Load, which is the average of the Resource's actual Host Load during its top 20 Load hours that occur during the highest 40 one-hour NYCA peak loads for the current Capability Year;

2. The ACHL that is applicable for the current Capability Year for each BTM:NG Resource, which is the Peak Proxy Load Value multiplied by 1+ WNF calculated for each BTM:NG Resource and 1+RLGF, pursuant to Services Tariff section 5.12.6.1.2.1;

3. The actual BTM:NG Resource Load, aggregated by Transmission District, at the date and hour of the NYCA peak; and

4. The actual BTM:NG Resource Load, aggregated by Transmission District, at the date and hour of each Locality peak.

2.2.72.2.8 Actual and Weather-Normalized Locality Peaks

Locality peaks may occur at a different time than the NYCA peak hour. If that is the case, each TO or MES that serves load in such Locality shall also provide the data required by Subsections 2.2.2 through 2.2.6 of this manual for the peak hour of each such Locality.

2.2.8 2.2.9   Weather Normalization Factor

The NYISO will calculate a Weather Normalization Factor (WNF) for each BTM:NG Resource and for each Transmission District (TDWNF). If a WNF for a BTM:NG Resource cannot be calculated by the NYISO, the applicable TDWNF will be used in the calculation of ACHL described in section 2.2.6 above. The TDWNF will be calculated after determining the Adjusted Actual Load in a Transmission District. The TDWNF is calculated by subtracting Actual Load Less Losses (LLL) from the Adjusted Actual Load and dividing it by the Adjusted Actual Load. The NYISO will report this as (1 + TDWNF).

The (1 + WNF) for each BTM:NG Resource is determined as follows:

1. Find the average of the top twenty load hours for the BTM:NG Resource, selected from the top forty load hours of the NYCA: MW_Avg_Actual = Sum(top 20 loads) / 20. This is the Peak Proxy Load.

2. Calculate the difference between the temperature or heat index in the Transmission District at the time of the NYCA coincident peak and the design temperature or heat index for the Transmission District using the applicable T_Design for the Transmission District as discussed in section 2.2.3 of this manual: Delta_T = (T_Design – T_Actual)

3. For each of the top twenty load hours for the BTM: NG Resource, select the corresponding temperature or heat index for the Transmission District. Then find the slope of the regression line corresponding to these twenty ordered pairs of load for the BTM:NG Resource and temperature. This slope is referred to as Beta, in units of MW per degree. Beta must be greater than zero. If Beta is negative, then assign Beta a value of 0.

4. Calculate the weather adjustment Delta_MW for the BTM:NG Resource as the product of Delta_T and Beta: Delta_MW = Beta * Delta_T

5. The weather-adjusted load for the BTM:NG Resource is the sum of the MW_Avg load and the weather adjustment: MW_adj = MW_Avg_Actual + Delta_MW

6. Bulk power system losses for the BTM:NG loads are accounted for by multiplying the weather adjusted load by the factor (1 + TDWNF):

   MW_adj,TD = MW_adj * (1 + TDWNF)

7. The (1 + WNF) for each BTM:NG resource is the ratio of the MW_Adj,TD load from step 6 and the MW_Avg Actual load from step 1:

$$(1 + WNF) = MW\_Adj,TD / MW\_Avg\_Actual$$

2.2.92.2.10   Regional Load Growth Factors ("RLGFs")

Each TO and MES shall provide RLGFs to the NYISO. An RLGF reflects the difference between its projected load during the hour and on the date of the NYCA peak for the next Capability Year and its Adjusted Actual Load during the hour and on the date of the NYCA peak in the current Capability Year as a fraction of the Adjusted Actual Load. RLGF shall be provided on the date set forth in the Schedule. The forecast for the next Capability Year is obtained by multiplying the Adjusted Actual Load in a Transmission District by (1 + RLGF) for that Transmission District.

2.3 Procedures for Determining the NYISO ICAP Market Load Forecast

This section describes procedures the NYISO will follow to produce the ICAP Market Load Forecast for each Capability Year. The following analyses will be performed:

1. Reconciliation of Transmission District loads at NYCA Peak;
2. ~~Calculation of TO and MES Load Less Losses (LLL);~~
2. Accounting for BTM:NG Resources;
3. Accounting for the impact of Large Load Facilities;
3. ~~~~
4. Deduction of Station Power;
5. Evaluation of TO and MES Weather-normalized Load and Losses;
6. Allocation of Weather-normalized Losses to TOs and MESes;
7. Evaluation of TO and MES RLGFs;
8. Forecast of TO and MES loads at time of predicted NYCA Peak; and
9. Forecast of Locality peaks.

2.3.1 Reconciliation of Transmission District Load at Time of NYCA Peak

TOs and MESs submit their above-described load data for the time and date of the NYCA peak in accordance with Subsection 2.2.2 of this manual. The NYISO will calculate Transmission District loads by adding TO and appropriate MES loads. The NYISO will compare the Transmission District peak loads reported by the TOs and MESes to Transmission District billing loads with the NYISO Decision Support

System (DSS). The NYISO will make adjustments necessary to account consistently for losses, Load modifiers, EOPs, SCRs, DADRP, EDRP, and DSASP reductions from dispatchable demand resource programs of LSEs, CSPs, and RIPs not otherwise accounted for.

The NYISO will also add back to the Transmission District loads the following data for Demand Side Resources participating in the NYISO's EDRP and SCR program:

1. Load reductions resulting from activation of the SCR Program and EDRP during the Transmission District and NYCA peaks;
2. The output of any Local Generators that participate in NYISO's SCR Program operating during the date and time of the Transmission District and NYCA peaks when the NYISO has not activated its Demand Response programs; and

Load reductions of EDRP resources and SCRs resulting from activation of Transmission Owner-administered retail demand response programs occurring during the Transmission District and NYCA peaks. Load reductions achieved by resources participating only in the Transmission Owner-administered demand response programs will not be added back. The NYISO will perform a reconciliation of Transmission District peak load prior to weather normalization as follows. If the Transmission District loads calculated from data submitted to the NYISO does not match the NYISO's calculations of Transmission District load, the NYISO will discuss and try to resolve the difference with the TO, MES, LSEs, CSPs, or RIPS, as appropriate. If the unresolved difference in Transmission District load is less than 1%, the NYISO will accept the Transmission District peak load reported by the TO or MES. If the unresolved difference exceeds 1%, the NYISO will determine the appropriate Transmission District load and submit it for comment to the Load Forecasting Task Force. In its discretion, the NYISO may also submit it for comment to the ICAP Working Group.

2.3.2 Calculation of TO and MES Load Less Losses (LLL)

Losses will be obtained from the NYISO DSS for each Transmission District. In cases where TOs reported their peak load inclusive of losses, the LLL will be calculated by deducting the NYISO DSS losses from the reported peak load. MES loads are reported net of losses.

2.3.3 Accounting for BTM:NG Resources

The load of a BTM:NG resource that obtains power from an LSE or TO during the NYCA peak will be deducted from the actual load of the LSE or TO, even if the Resource does not offer Net-ICAP into the market (*e.g.,* when BTM:NG Resources offer only Energy to the wholesale markets).

However, if by August 1st of the current Capability Year a BTM:NG Resource elects, pursuant to NYISO Procedures, not to participate as a BTM:NG Resource in the upcoming Capability Year, the ACHL of a BTM:NG Resource for the current Capability Year will be added to the actual load and Adjusted Actual Load of the LSE or TO in which the BTM:NG Resource is located. This adjustment shall be made after accounting for any BTM:NG Resource load served by a TO or LSE.

2.3.4   Forecasts of New and Existing Large Load Facilities by Transmission District

The impact of Large Load Facilities on the time of the forecasted NYCA peak will be reviewed with the TOs and the LFTF. The sum of the forecasted large load changes will be computed for each Transmission District and added to its ICAP Market Forecast.   The Transmission District Regional Load Growth Factor will not be applied to load changes from Large Load Facilities. The Large Load Facilities forecast shall reflect projected load growth (or contraction) at the facility as provided in the Transmission Owner forecast(s).

2.3.5   Deduction of Station Power

Station Power delivered that is not being self-supplied pursuant to Section 4.2.3 of the ICAP Manual shall be deducted by TOs and MESs in calculating LLL. The Generator to which the deduction pertains and the amount of the deduction shall be reported to the NYISO.

2.3.6   Evaluation of TO and MES Weather-Normalized Load and Losses

The NYISO shall also adjust Transmission District actual peak loads for the effects of weather and will produce its own estimate of the weather-normalized load for each TO. These estimates will be produced using models and design criteria the NYISO develops. The NYISO will compare its own estimates with those submitted by the TOs according to Subsection 2.2.4 of this manual using two comparisons:

- If the adjustments to the actual load calculated by the NYISO and a TO pursuant to Section 2.3 of this manual differ by 25% or less, the NYISO will accept the submitted estimate;

Or

- If the weather-normalized adjusted load calculated by the NYISO differs from that calculated by the TO or MES by 1% or less, the NYISO will accept the submitted estimate.

If the differences between the NYISO and TO or MES calculations of both the actual load and the weather normalized exceed the above thresholds, the NYISO and TO or MES will investigate and attempt to reconcile it.

If it is not possible to reconcile the difference within a period of time that comports with the development of the respective peak load forecast, the NYISO will use its own estimate of the weather-normalized load for that TO. The TO may dispute the NYISO's decision to substitute its weather-normalized load for the TO's, pursuant to the Expedited Dispute Resolution Procedures specified in the *NYISO Services Tariff*, Section 5.17.

If an MES does not submit a weather-normalized load, the NYISO will calculate one for it by applying the ratio of (a) the weather-normalized to actual load of the TO in whose Transmission District the MES is located to (b) the MES actual load.

Transmission District losses will be weather-normalized for each TO and all other Load Serving Entities, Municipal Energy Systems and BTM:NG Resources in the Transmission District using the same proportion of weather-normalized load to actual load as was determined for the primary TO in that Transmission District.

2.3.6 2.3.7   Allocation of Weather-Normalized Losses to TOs and MESs

The total of all TO and MES weather-normalized loads will be calculated by the NYISO. The sum of the calculation is the NYCA weather-normalized peak load less losses (W/N LLL). The total of all weather-normalized losses will be calculated by adding all TO weather-normalized losses.

Total weather-normalized losses will be allocated to each TO and MES according to the ratio of its W/N LLL to the NYCA W/N LLL. The result will be the weather-normalized load plus losses (W/N L+L) for each TO and MES and will be the Adjusted Actual Load for the TO, MES and Transmission District.

The sum of Adjusted Actual Load for all Transmission Districts all TO and MES W/N L+Ls will be the NYCA Adjusted Actual Load for the Capability Year.

~~Each~~ The Adjusted Actual Load for the TO, MES and Transmission District ~~Each TO and MES W/N L+L~~ will be the basis upon which its RLGF will be applied by the NYISO to calculate respective TO, MES and Transmission District ~~or MES~~ forecasted load coincident with the NYCA peak in the next Capability Year.

~~2.3.7~~2.3.8   Evaluation of TO and MES Regional Load Growth Factors

The NYISO will evaluate Capability Year RLGFs using the following criterion:

1. *Criterion 1: Index of Recent Historical Peak Load Growth* – RLGFs should be within a range of historical year-to-year growth rates of actual adjusted peak load (AAPL) experienced in the previous five Capability Years.

2. *Criterion 2: Projection of Peak Load Growth in Relation to Economic Growth*– The NYISO will clearly outline for all Market Participants (MPs) the economic parameters it will use in developing these relationships, no less than 15 calendar days before the date the TOs and MESs are required to submit RLGFs. Criterion 2 predicts the RLGF using a regression model estimated from historical data for a period of at least five years and up to 15 years. The regression model will include predicted growth in economic indicators, as provided to the NYISO by its economic forecasting consultant along with other relevant data as determined by the NYISO. Criterion 2 reflects the projected load growth for the next Capability Year relative to the current Capability Year.

3. *Criterion 3: Projections performed by NYISO* – The NYISO will develop independent projections of RLGFs and use them in evaluating the RLGFs submitted by the TOs and MES~~e~~s pursuant to Subsection 2.1 of this manual. The NYISO will post on the NYISO website for all MPs the assumptions and methodologies used to develop its projected RLGFs for each Transmission District.

The NYISO will develop a range for each of the three criteria above. The ranges for Criterion 1 shall be based upon the second highest and second lowest of the five annual growth rates calculated.   The acceptable range for Criterion 2 shall be generally defined as the 25th to 75th percentiles of predicted growth as calculated using the standard error of the regression model developed by the NYISO. The minimum range of each of the three Criteria shall be 1%. In the event that the ranges for Criterion 1 and Criterion 2 are mutually exclusive, the NYISO will construct an alternate Criterion by combining the ranges of Criterion 1 and Criterion 2. The upper and lower bounds of the combined Criterion shall typically be calculated by averaging the upper bounds of Criterion 1 and Criterion 2, and averaging the lower bounds of

Criterion 1 and Criterion 2. The NYISO may also take into account additional factors when establishing the ranges for Criteria 2 and 3.

If the NYISO determines that a TO or MES forecast is not within the established range for at least two of the three criteria above, the NYISO and the TO or MES will attempt to reconcile and explain the difference. In the event that Criterion 1 and Criterion 2 are combined, then it is sufficient for the RLGF to satisfy either the combined Criterion or Criterion 3. If the difference cannot be reconciled, the NYISO will inform the TO or MES of that fact and that it intends to substitute its RLGF for the submitted one. The TO or MES may dispute the NYISO's decision to substitute the NYISO RLGF, pursuant to the Expedited Dispute Resolution Procedures specified in the *NYISO Services Tariff* Section 5.17.

The RLGF for a BTM:NG Resource will be that of the Transmission District in which it is located.

If, as a result of the deliberations between the NYISO and TO required under Section 5.17.1 of the *NYISO Services Tariff*, the NYISO decides to accept a TO forecast that does not fall within the range provided for at least two out of three above criteria, any MP may dispute that decision pursuant to the Expedited Dispute Resolution Procedures specified in the *NYISO Services Tariff,* Section 5.17 (available from the NYISO Web site at the following URL: https://www.nyiso.com/regulatory-viewer.).

The only RLGFs that may be disputed under the Expedited Dispute Resolution Procedures are those developed by the TO or MES and the NYISO.

2.3.82.3.9   Installed Capacity Market Forecast of TO, MES, and BTM:NG Resource, and Large Interconnecting Loads Load at Time of Predicted NYCA Peak

First, tThe NYISO will calculate a forecast of each TO and MES load during the hour and on the date of the forecast NYCA peak for the next Capability Year as the product of (a) the W/N L+L Adjusted Actual Load for each TO and MES, as determined in Section 2.3.78 of this manual, and (b) the RLGF determined for the respective TO or MES, calculated in Section 2.3.98 of this manual. Second, the sum of projected load changes at Large Load Facilities will be added to each TOs forecasted peak value as applicable. The NYCA Installed Capacity peak load forecast for the Capability Year will be the sum of the TO and MES forecasted loads during the hour of the NYCA peak.

BTM:NG Resource Load is not considered in the calculation of the ICAP Market forecast because the Resource is required to satisfy all of its Host Load, and therefore contributes 0 MW to the Load at the time of the NYCA Peak. This exclusion of BTM:NG Resource Host Load from the ICAP Market forecast is different

> **Commented [A17]:** This may need to be expanded if we move towards Mark and Howard and start using noncoincident peak hours…fft
>
> **Commented [A18R17]:** Understood

from the treatment of BTM:NG Resource Host Load for the purposes of determining the Installed Reserve Margin.

2.3.9 2.3.10   Forecast of Locality Peaks

To determine LSE Locational Unforced Capacity Requirements, Locality peaks forecasts need to be determined. The NYISO shall determine the forecasts of the peaks for the Localities as follows:

1. Each TO and MES in a Locality will provide an actual and weather-normalized peak for its Load in the Locality.

2. The adjustments to actual load shall include Load reductions due to dispatchable load management programs and BTM:NG Resources, as follows:

   a. The NYISO will add back to the Locality Peak load the following data for any SCRs, DADRP, EDRP, or DSASP:

      i. Load reductions resulting from activation of the SCR Program and EDRP during the Locality peak;

      ii. The output of any Local Generators that participate in NYISO SCR program operating during the date and time of the Locality peak when the NYISO has not activated its Demand Response programs; and

   b. Load reductions of EDRP resources and SCRs resulting from activation of Transmission Owner-administered retail demand response programs occurring during the Locality peaks. Load reductions achieved by resources participating only in the Transmission Owner-administered demand response programs will not be added back. The TO or MES shall adjust its actual Locality Peak for the verified load reductions of EOPs or dispatchable load management programs of any LSE or RIP in its Transmission District, if these impacts were submitted in accordance with Section 2.2.6 of this manual.

   c. The TO or MES shall adjust its actual Locality peak for the load reductions of EOPs and dispatchable load management programs that it implemented.

   d. The load of a BTM:NG Resource that obtains power from an LSE or TO during the Locality peak will be deducted from the actual load of the LSE or TO, even if they do not have Net-ICAP to offer in to the market (*e.g.*, when BTM:NG Resources offer only Energy to the wholesale markets).

3. The TO or MES Losses in the Locality shall be weather-normalized, but should not be otherwise adjusted in relation to Losses elsewhere in the NYCA.

4. The TO shall determine its Adjusted Actual Peak Load (AAPL) within the Locality by accounting for the effects of weather on Loads and Losses, and after adjusting for reductions of dispatchable load management programs as set forth in this Subsection 2.3.9, item.2.

5. The NYISO shall also adjust actual Locality peak loads for the effects of weather normalization and will produce its own estimate of the weather-normalized load for each TO and MES. These estimates will be produced using models and design criteria the NYISO develops.

6. The NYISO shall then review each TO's and MES' AAPL for the Locality. In the event of a difference that exceeds both one percent (1%) of the AAPL and twenty-five percent (25%) of the adjustment, the NYISO and TO or MES will investigate and attempt to reconcile the difference. If it is not possible to reconcile the difference within a period of time that comports with the development of the respective peak load forecast, the NYISO will use its own estimate of the AAPL for the Locality peak. The TO or MES may dispute the NYISO's decision to use its AAPL, pursuant to the Expedited Dispute Resolution Procedures specified in the *NYISO Services Tariff*, Section 5.17.

7. The TO will use the RLGF for the Transmission District in which the Locality is located, as determined in Section 2.3.8~~7~~.

8. The Locality Peak forecast shall be calculated as the product of the AAPL in the Locality and the applicable RLGF.

9. The sum of the forecasted load changes associated with Large Load Facilities loads will be computed for each Locality District and added to its ICAP Market Forecast. There will be no adjustment to the Large Load Facility load forecasts for the Regional Load Growth Factor of the Locality District in which they are located. The load forecasts at each Large Load Facility for the Locality peaks shall reflect projected load levels as specified in the Transmission Owner forecast(s).

2.4 Load Forecast~~s~~ for Installed Reserve Margin Study and for Locational Capacity Requirements Study

In addition to the ICAP Market Forecast described in Section 2.3 of this Load Forecasting Manual, the NYISO produces ~~another~~ distinct ~~two~~ load forecast~~s~~ that includes~~include~~ the ACHL and the Load and Generation attributes of each BTM:NG Resource. ~~The other~~This ~~e first~~ load forecast is prepared for use in the Installed Reserve Margin (IRM) Study conducted by the New York State Reliability Council~~, The second load forecast provides an update to the first,~~. and is also~~used~~ ~~for use~~ in the Locational Capacity Requirements (LCR) Study conducted by the NYISO. The load forecast~~s~~ produced for those two studies will

include the ACHL of each BTM:NG Resource for the most recent Capability Year available. Including the Load and Generation attributes for these Resources provides for their accurate representation in these studies.

Appendix A – Load Forecast Reporting for Large Load Facility Interconnections

Background

Pursuant to NERC MOD-031-3 Demand and Energy Data, Sections 4.4.6 of the NYISO OATT, Attachment Y of the NYISO OATT as it relates to the Reliability Planning Process, and Attachment FF of the NYISO OATT as it relates to the Short-Term Reliability Process, the NYISO shall obtain updated load forecast information from Connecting Transmission Owners (TOs) and Affected TOs throughout the development of a new Large Load Facility. In order to meet these requirements, Connecting TOs and Affected TOs shall submit an updated load forecast as outlined below on a quarterly basis or as requested by NYISO.

Load Forecast Update Report

NYISO has established a load forecast update form to be used by the TOs for reporting the following information:

1. Point of Interconnection
1. Impacted NYISO Zone
2. Capability Year Summer Peak Loads in MW
3. Capability Year Winter Peak Loads in MW
4. Annual Energy in GWh
5. Annual Load Factor
6. Changes to scheduled in-service date
8. Project Progress

Upon completion of the System Impact Study for a new or existing Large Load Facility or as otherwise determined by the NYISO, the NYISO will provide a spreadsheet entitled, "Large Load Interconnection Forecast Report" to each Connecting TO and Affected TO. This report (attached to this

Technical Bulletin and is also posted on the NYISO website at https://www.nyiso.com/planning-reliability-compliance) shall be used to document the status of the project, provide a monthly peak and energy load forecast for the facility for the upcoming capability year, and document any changes subsequent to the completion of the System Impact Study. The Connecting TO and Affected TO shall only provide information regarding the portions of the project that are under their control and responsibility as described in the final study reports for the technical studies performed for the Large Load Facility under Section 3.9 of the NYISO OATT or the interconnection agreement for the new Large Load Facility, as applicable.[2]

Reporting Timelines

       If any load forecast changes have occurred to the Large Load Facility since the completion of the System Impact Study, the Connecting TO or Affected TO, as applicable, shall separately notify NYISO of the change in a timely manner. The Connecting TO or Affected TO shall provide an updated load forecast, a description of the change, the reason for the change in the forecast and supporting documentation without delay but no later than 30 days from receiving the information regarding the update. Any scope changes should be noted in the "Large Load Interconnection Forecast Report." The Forecast Report includes a "Yes" and "No" check box to indicate a project scope change is resulting items listed above. The Connecting TO or Affected TO shall indicate whether there are any scope changes since the completion of the System Impact Study by clicking one of the check boxes and indicate the date that the revised information regarding the change was submitted to NYISO. If there are no changes in status or the load forecast for the Large Load Facility since the prior quarterly report, a new status report will not be required. The NYISO will use all available information as of July 15 of the current Capability Year when producing the ICAP Market Forecast for the following Capability Year.

Project Progress

       The "Large Load Interconnection Forecast Report" includes a dropdown for reporting project status. The report includes at a minimum the following six project status descriptions: Facility Study In-Progress, Facility Study Complete, Engineering/Permitting Complete, Construction In Progress, Construction Complete, and Permission to Operate Complete. Also note any changes of ownership and any concerns and potential risks that may impact the Large Load Facility's forecasted load values.

Confidentiality

       The submitting party can request that specific information be treated as Confidential Information in accordance with Attachment F, Attachment FF, Attachment X and Attachment Y the NYISO OATT, as

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[2] The NYISO is not a party to interconnection agreements for Load Interconnections. See OATT §§ 3.9.4 and 4.5.8.3; NYISO TIE Manual § 3.5.

Commented [A20]: Would we be getting one number for summer peak design or would we get a forecast number for each month of the capability year? I guess if the load is expected to be 90 in October, but 50 in August and 30 in June and July, we may want to know that. I think at a minimum we want to get the 50 for August.

Commented [A21R20]: Great point. I'm OK asking for monthly data from the TOs. A couple of TOs provide us this information now for the nearer term projects.

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applicable. 5. Report Submission Unless otherwise requested by NYISO, the Connecting TO or Affected TO shall submit the Large Load Interconnection Forecast Report at least ten days prior to the first day of each calendar quarter following the effective date of the System Impact Study and quarterly thereafter in the same manner until the submission of As-built data is complete. If there are no changes in status or the load forecast for the Large Load Facility since the prior quarterly report, a new status report will not be required. Reports are to be submitted to the NYISO electronically to: Demand_Forecasting@nyiso.com.