



Tech Bulletin for Constructing Criterion 2 for Regional Load Growth Factors

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August 24, 2020

Tech Bulletin Needed to Update Criterion 2

For Evaluation of Regional Load Growth Factors

- Current Load Forecasting Manual for Criterion 2 specifies the construction of *ratios* of peak load to several economic variables for five specific years. The LTF recognized some limitations to this method after the 2008 recession, because historical peak loads decreased year over year even though all the economic indexes increased. Hence, the ratios provided inconsistent results. The LTF asked the NYISO to propose modifications to Criterion 2 to address this issue.
- In December 2014, the NYISO presented to the LTF a modified approach to the construction of Criterion 2.
 - Ratios for specific years were replaced by a regression model using multiple years.
 - The bandwidth for Criterion 2 was based upon the standard error of the regression, rather than using the second lowest and second highest ratios of peak growth to economic growth.
- The LTF accepted this modification as a significant improvement, and it has been in use since 2014.
- The Tech Bulletin modifies the text to specify the current method for constructing Criterion 2 and how to combine Criterion 1 and Criterion 2 in the event that they provide mutually exclusive bandwidths.

Regional Load Growth Factors and Evaluation Criteria

- Each year as part of the ICAP forecast process, Transmission Owners provide the NYISO with their estimate of peak load growth for the following year relative to the current year. This measure is known as the Regional Load Growth Factor (RLGF). The RLGF is often expressed in the 1+RLGF format
- For example, an RLGF of 0.01 represents 1% anticipated growth in the peak forecast. The resulting 1+RLGF of 1.01 represents the ratio of the forecasted Transmission District (TD) peak load for the following year relative to the weather-normalized TD peak of the current year
- The NYISO evaluates the TO RLGFs against three load growth Criteria as described in the Load Forecasting Manual. The three Criteria generate ranges of acceptable load growth. If the RLGF submitted by the TO passes through at least two of the three Criteria ranges, the RLGF is accepted for use in the forecast

Current Evaluation of RLGFs – Criteria 1, 2, and 3

- **The Load Forecast Manual specifies that the NYISO will evaluate Regional Load Growth Factors (RLGF) in the current year for each Transmission District are evaluated based upon three criteria**
 - **Criterion 1 – Index of Recent Historical Peak Load Growth**
Bandwidth based only on the recent growth of weather-adjusted peaks
 - **Criterion 2 – Projection of Peak Load Growth in Relation to Economic Growth**
Projection of peak load growth based on a regression of historical summer daily peaks, historical economic data and other variables, and projected economic growth. (Current LF Manual text specifies ratios instead of regressions.)
 - **Criterion 3 – Projections Performed by the NYISO**
An independent projection of load growth currently based upon a regression of historical summer energy, historical economic data and other variables, and projected economic growth

- **If at least two of the three criteria are satisfied, then the load growth factor for the Transmission District is accepted**

Criterion 1 – Index of Recent Historical Peak Load Growth

- Calculate annual growth in weather normalized peaks over the past five years, using Transmission Owner's weather normalized peaks
- Select the 2nd highest annual growth rate of weather-normalized peaks as the upper bound on growth and the 2nd lowest annual growth rate of weather normalized peaks as the lower bound on growth, with a minimum of a 1% difference between the two

Criterion 2 – Projection of Peak Load Growth in Relation to Economic Growth

- Uses daily weather, peak and economic data from the most recent 5 to 15 summers
- Regression model based on top ten Transmission District peak load days from each summer
- Regress daily peak MW against daily weather, annual macroeconomic variable(s), energy efficiency trend variable, and other variables to determine next year's predicted peak load using the projected economic growth.
- Calculate a 25th to 75th percentile confidence interval for the predicted peak load based on the standard error of the regression to obtain the upper and lower bounds for the RLGf, with a minimum of a 1% difference between the two. The NYISO may take into account additional factors when establishing the range for Criterion 2.

Criterion 3 – Projections Performed by the ISO: Summer Energy Growth

- Regress historical summer energy against summer CTHI (Cumulative Temperature & Humidity Index), macroeconomic variable(s) if significant, energy efficiency trend variable, and other variables to determine the predicted summer energy for the following year
- Calculate a 25th to 75th percentile confidence interval for the predicted summer energy based on the standard error of the regression to obtain the upper and lower bounds for the RLGf, with a minimum of a 1% difference between the two. The NYISO may take into account additional factors when establishing the range for Criterion 3
- Criterion 3 is an independent projection performed by the ISO, and is an independent measure separate from Criteria 1 and 2 because it uses daily energy instead of daily peaks. The NYISO may change the Criterion 3 methodology as necessary

Combined Criterion (Criteria 1 and 2)

- 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 will 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, with a minimum 1% difference between the upper and lower bounds
- In the event that Criterion 1 and Criterion 2 are combined, then it is sufficient for the RLGf to satisfy either the Combined Criteria for 1 & 2 or Criterion 3

Next Steps

- **The draft Tech Bulletin will be posted on the NYISO website. Following a comment period of five business days, the Tech Bulletin is finalized**
- **The updated language from the Tech Bulletin will be incorporated into next update of the Load Forecasting Manual**
- **The RLGf Criteria as described in this presentation will be estimated on a Transmission District basis for both the 2021 IRM and the 2021 ICAP forecast. Typically, the criteria are only prepared for the ICAP Forecast.**

Questions?

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

