New York ISO
Independent System Operator

October 2020 Update of Load Forecasting Manual

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Summary

- **Manual was last updated in April 2020**
- **Primary data sources and methods have remained the same**
  - Schedule for developing the ICAP forecast is provided each year by September 1
  - Transmission owners and other stakeholders submit actual load data, weather-adjusted peaks, and regional load growth factors to the NYISO
  - The NYISO prepares its own estimates for weather-adjusted peaks, and regional load growth factors and compares with the Transmission owner values.
  - TO results are accepted by NYISO and other stakeholders if the are within acceptance criteria specified in the manual
- **Revisions made primarily to include updates for selection of the peak load hour for the Capability Year and updates to the Regional Load Growth Factor (RLGF) evaluation criteria**

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Peak Load Hour Selection

- Current Load Forecasting Manual states that the NYCA forecasted peak load for each Capability Year is based on the highest Adjusted Actual load for the immediately preceding Capability Year
- The manual update states that the highest NYCA load hour occurring on a non-holiday weekday during July and August when calculating the NYCA Peak Load Forecast. This change reflects the recently approved changes to MST sections 2, 5.10, and 5.11

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Peak Load Hour Selection

- **The change will not statistically change the NYCA Peak Load Forecast because the process today already aligns the Peak Load Forecast with "design conditions"**
  - If the highest load hour occurs on a weekend or holiday, then load is added to account for expected additional load that would have occurred if the highest load hour had been a non-holiday weekday
  - Similarly, load is added when the highest load hour occurs outside the months of July and August to account for expected additional load that would have occurred if the highest load hour had been in July or August
  - The above adjustments are part of the process of determining the Adjusted Actual Load
    - Other adjustments factor into this analysis as well. For example, if the temperature is higher than the design temperature, then load is removed to account for the expected lower load that would have occurred if the highest load hour had taken place at the "design" temperature

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RLGF Criteria Updates

- Current Load Forecasting Manual for Criterion 2 specifies the construction of *ratios* of peak load to several economic variables for five specific years.
- The LFTF 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 LFTF asked the NYISO to propose modifications to Criterion 2 to address this issue.

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RLGF Criteria Updates

- In December 2014, the NYISO presented to the LFTF a modified approach to the construction of bounds for 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 the second lowest and second highest ratios of peak growth to economic growth
- The LFTF accepted this modification as a significant improvement, and it has been in use since 2014
- The manual updates incorporate the process updates from the August 2020 Technical Bulletin updates presented to LFTF (NYISO Technical Bulletin #251, TB-251)
- The manual updates modify the text to specify the current methods for constructing Criterion 2, and for combining Criterion 1 and Criterion 2 in the event that they provide mutually- exclusive bandwidths

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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 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

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

- Uses daily weather, peak and economic data from the most recent five 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.

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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

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Next Steps

- Discussion and review with ICAPWG on 10/27
- Revised manual will be presented for approval at the 11/11 BIC meeting
- Upon approval of the revised manual, Technical Bulletin 251 will be retired

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Questions?

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- 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

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