Load Forecasting Manual

1. OVERVIEW

1.1 PURPOSE AND SCOPE

This manual has three purposes.

The first is to explain the load forecasting methodology and load data submission requirements that are contained in the NYISO Services Tariff for use in the calculation of the NYCA Installed Capacity Requirement.

The second is to explain the load forecasting methodology and load data submission requirements that TOs are to follow for NYISO submissions to NPCC, NERC, FERC, and other reliability and regulatory bodies.

The third is to explain the load forecasting methodology and load data submission requirements that TOs are required for the NYISO Electric System Planning (ESP) process.

The requirements and procedures related to the load forecast data used in the daily system and market operations are covered in the **NYISO Manual for Day Ahead Scheduling**.

TO Load Forecast Requirements for the ICAP Load Forecast

1.1.1 TOs and ELRRs submit their actual and Weather-Normalized Coincident Load (WNCL) at the time of the NYCA peak to the NYISO. They also submit their methodologies for obtaining their WNCL. TOs and ELRRs are to indicate whether or not the loads reported include Transmission Losses.

1.1.2 TOs submit forecasted RLGFs for their Transmission District. These are applied to the prior calendar year's TD WNCL plus allocated Tranmission Losses at the time of the NYCA peak to forecast the TD Load plus Transmission Losses at the time of the NYCA peak for the forecasted Capability Year. This manual describes the forecast methodology standards to be met in developing the RLGFs. It also describes the criteria for evaluating the projections by the TOs of RLGFs.

TO Submission Requirements for Reliability and Regulatory Agencies

1.1.3 The NYISO is a member of NPCC and NERC and is required to submit data to them for the NYCA. It also coordinates data submissions on behalf of the TOs to the New York State Energy Research and Development Authority and to

FERC, pursuant to applicable laws and regulations. This manual explains the TO submissions that are necessary to fulfill those requirements.

TO Submission Requirements for Electric System Planning Process Forecast

1.1.4 The purpose of the Electric System Planning (ESP) process is to ensure that the NYCA transmission system and available generation are able to meet projected reliability and adequacy needs. A planning horizon of ten years has been established over which these issues are examined. TOs and ELRRS are required to provide forecasts of the annual energy requirements and seasonal peak loads for this planning horizon. Forecast methodologies and assumptions are required also.

2. TO LOAD FORECAST METHODOLOGY AND DATA SUBMISSION REQUIREMENTS FOR CALCULATION OF THE NYCA INSTALLED CAPACITY REQUIREMENT

This section describes the NYISO requirements for TOs load forecasting methodologies and the evaluation criteria that will be applied in evaluating TD RGLFs as supplied by the TOs. A timeline for developing the 2004 ICAP forecast is listed in Appendix A.

2.1 GENERAL REQUIREMENTS

Each TO is required to provide the NYISO information on:

1. The load forecast methodology it used to develop the RLGF for its TD
2. The RLGF it has forecast
3. The previous five calendar years' Adjusted Actual Peak Load
4. Losses
5. Special case resources and price sensitive load
6. LSE data required to be provided by TOs

2.2 SPECIFIC REQUIREMENTS

2.2.1 Forecast Methodology

A methodology includes models, the data used to derive them, assumptions made for the forecast period, and a written explanation of how the RLGF forecast was obtained. If the NYISO rejects the methodology, the TO shall within five business days resubmit a methodology that addresses the NYISO's objections. If a TO is unable to provide an acceptable methodology, and the TO and NYISO are not able to resolve methodology differences in a mutually acceptable fashion, Expedited Dispute Resolution Procedures in the NYISO Services Tariff Section 5.16 will be implemented so that an appropriate RLGF value can be determined no later than February 28th.

2.2.2 Regional Load Growth Factors

NYISO will evaluate Capability Year RLGFs by comparing them to:

1. Recent Historical Load Growth - RLGFs should be within a range of historical year-to-year growth rates of AAPL experienced in the previous five calendar years.

2. Relationship to Economic Indicators

(The NYISO will clearly outline for all market participants the economic parameters it will use in developing these relationships no less than thirty days before date the TOs are required to submit RLGFs.)

1. The ratio of the annual growth in AAPL, reflected in the TOs RLGFs, to annual growth in economic indicators, as provided to the NYISO by its economic forecasting consultant, shall be calculated by the NYISO for each TO.
2. The ratio of each TOs predicted RLGF to the annual growth in economic indicators, as provided to the NYISO by its economic forecasting consultant, shall be calculated by the NYISO.
3. The ratios calculated in 1. should be consistent with the ratios calculated in 2. The selection of indicators and criteria for deciding consistency between 1. and 2. are to be determined by the LFWG.

3. Projections performed by NYISO - NYISO will develop independent projections of RLGFs and use them in evaluating those submitted by the TOs. The NYISO will post on the NYISO website for all market participants the assumptions and methodologies used to develop its projected RLFGs for each Transmission District.

If the NYISO determines that a TOs forecast is not consistent with at least two of the three criteria above, it will inform the TO of that fact and notify the TO that it intends to substitute its RLFG for the TOs. The TO may dispute the NYISO's decision to substitute its RLGF for the TOs, pursuant to the Expedited Dispute Resolution Procedures specified in the NYISO Services Tariff Section 5.16.
If, as a result of the deliberations between the NYISO and TO required under Section 5.16.1, the NYISO decides to accept a TO forecast that does not meet at least two out of three of the above criteria, any market participant may dispute that decision pursuant to the Expedited Dispute Resolution Procedures specified in the NYISO Services Tariff Section 5.16.

The only RLGFs which may be ~~considered~~ disputed in a dispute under the Expedited Dispute Resolution Procedures are those developed by the TO and the NYISO for the Transmission District served by the TO.

2.2.3 **Previous Five Calendar Years' Adjusted Actual Peak Load**

TOs shall provide their AAPL for the previous five calendar years. TOs must explain any other adjustments made in the AAPL calculation.

2.2.4

2.2.5 **Special Case Resources and Price Sensitive Load**

Requirements for interruptible load resources are given in Section 5.12 of the Services Tariff. All RLGFs, AAPLs, and load forecast methodologies should be reported and/or calculated in a manner that ensures that interruptible load resources or any other Special Case Resources (SCRs) are not used in the forecasting methodology as load reduction if they will serve as ICAP Suppliers.

The MW reductions achieved by demand reduction programs which are monitored by the NYISO (e.g., SCRs, the Emergency Demand Response Program (EDRP) and any Emergency Operating Procedures (EOPs) are to be added back to a TO's or ELRR's recorded load.

2.2.6 **LSE Data Requirements to be provided to NYISO by TOs**

TOs are required to provide by January 15 of each year the loads of every LSE in its TD at the time of the NYCA peak. They are also required to provide such loads adjusted for shifting of customers through December 31 of the previous calendar year. If a TO serves one or more zones which have local ICAP requirements, it is required to provide this information for the loads located in such zones individually and separately from the loads in zones which do not have local ICAP requirements.

2.3 MUNICIPAL ELECTRIC SYSTEMS (MES) DATA REQUIREMENTS

An MES must either:

1. Elect to produce its own forecast RLGF. In this case, the same data requirements (2.2.1 - 2.2.6 above) apply to the MES as apply to a TO. Or,

2. Elect to use the growth rate determined for the TD in which it is located. In this case, it must provide its load at the time of the NYCA Actual Peak.

3. TO WEATHER NORMALIZATION METHODOLOGY AND DATA REQUIREMENTS

This section describes the NYISO requirements for TOs and ELRRs weather normalization methodologies and the data submissions that are required. A timeline for developing the submitting this information is listed in Appendix B.

3.1 GENERAL REQUIREMENTS

Each TO and ELRR is required to provide the NYISO information on:

1. A written methodology describing how it develops its WNCL.
2.Description of weather variable used for weather normalization.
3. Definition of 1:2 design conditions.
4. Historical data demonstrating design condition definition and application.
5. Description of analytical approach including model and model statistics.

3.2 NYISO RESPONSIBILITIES

The NYISO shall:

1. Calculate its own estimate of each TO and ELRR WNCL.
2. Review the methodology and weather normalization performed by each TO and ELRR.
3. Evaluate if the weather-normalization performed by a TO or ELRR corresponds to the one the NYISO performed for it.
4. If there is substantial conformance as a result of the analysis performed in 3., the NYISO shall accept the TO or ELRR weather normalization
5. If there is a lack of conformance, the NYISO shall dicuss with the TO or ELRR the reason for the lack of conformance. Should the discussion satisfy the NYISO that the TO or ELRR WNCL is correct, it shall accept the TO or ELRR estimate.
6.If the discussion does not satisfy the NYISO that the TO or ELRR WNCL is correct, the NYISO will use its own estimate thereof.
7.Any Market Participant may challenge the NYISO's decision in 5 using the expedited dispute resolution process.
8.The effected TO may challenge the NYISO's decision in 6 using the expedited dispute resolution process.

4. REPORTING PROCEDURES FOR ACTUAL DEMAND & LOAD FORECAST DATA

This section describes the procedures for reporting actual demand data and load forecast results for TOs.

4.1 GENERAL REQUIREMENTS

TO load data collected pursuant to the requirements of Section 3 is used to satisfy regulatory and reliability agency requirements. It is also used by the NYISO in its own analyses of the adequacy and reliability of the NYCA system.

The State of New York in Section 6-106 of the New York State Consolidated Law imposes one set of requirements. Sections 3.2 and 3.3 describe the load data submission requirements necessary to comply with this law. Data submitted to satisfy Section 6-106 is published by the NYISO in its **Load and Capacity Data** report.

Public Law 93-275 (Federal Energy Administration Act of 1974), Sec. 13(b), 5(a), 5(b), 52 imposes another set of data submission requirements. After the NYISO collects this data, it submits it to NPCC. NPCC combines the data submitted by NYISO with that of other regional control areas and sends it to FERC and NERC. This submission therefore satisfies the reliability agency data requirements of NPCC and NERC and the regulatory requirements of FERC. Sections 3.4 and 3.5 describe the load data submissions necessary to comply with these requirements.

4.2 REGULATORY DATA REQUIREMENTS FOR TOs OTHER THAN NYPA - SECTION 6-106

TOs are required to provide a twenty year forecast, beginning with the year in which the data is provided, of:

6. Summer peak load
7. Winter peak load
8. Annual energy requirements
9. Adjustments to summer peak load due to price sensitive load and interruptible load resources
10. Adjustments to winter peak load due to price sensitive load and interruptible load resources

11. Adjustments to annual energy requirements due to price sensitive load and interruptible load resources
12. Estimated electricity prices (even years only)
13. Load forecast methodology (even years only)

The following historical data is to be submitted for the ten years preceding the year in which the data is submitted:

1. Summer peak load
2. Winter peak load
3. Annual energy requirements.

Data is to be provided for the TD which the TO serves, excluding MESs located in the TD.

Data is to be provided to the NYISO by May 31 of each year.

4.3 REGULATORY DATA REQUIREMENTS FOR NYPA

NYPA shall report the data described in section 3.2 for MESs that are its customers. If an MES is a partial requirements customer, NYPA shall provide forecasts only of the part of the MES load that it serves. Forecasts for NYPA's retail customers shall be provided by the TO in whose TD the retail customer is located.

4.4 RELIABILITY DATA REQUIREMENTS FOR TOs OTHER THAN NYPA - NPCC

TOs are required to provide a ten year forecast, beginning with the year in which the data is provided, of:

1. Summer peak load
2. Winter peak load
3. Annual energy requirements

Monthly forecasts of these quantities are required for the first three years.

TOs are required to provide the data for the most recent three years on:

1. Monthly peak load
2. Monthly energy requirements

Data is to be provided for the TD which the TO serves, excluding MESs located in the TD.

This data is to be provided by March 10 of each year.

4.5 RELIABILITY DATA REQUIREMENTS FOR NYPA - NPCC

NYPA shall report the data described in section 3.4 for MESs that are its customers. If an MES is a partial requirements customer, NYPA shall provide forecasts only of the part of the MES load that it serves. Forecasts for NYPA's retail customers shall be provided by the TO in whose TD the retail customer is located.

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