

Scope of Work

The metering systems used for network operations and settlement are the property of the transmission owners, generators, and other control area operators. The purpose of performing an assessment of the current metering hardware and program is to quantify the impact of metering hardware and communications equipment on billing accuracy, settlement timeline, and on real-time billing determinants. Also, The NYISO is in the process of grooming its State Estimator for network security analysis, and would like to assess the impact of real-time data on State Estimator accuracy.

This metering adequacy assessment shall take into consideration the current operational, business and regulatory drivers and requirements. The assessment shall use detailed technical information about the metering systems and processes currently in use, and also look at the process by which readings are supplied the NYISO, reviewed and possibly resubmitted, and eventually “locked down” from future changes. The final report should calculate the accuracy and timeliness of revenue meters and the quality of key SCADA parameters, evaluate their impact on Billing determinants and State Estimator accuracy, prioritize opportunities for improvement, and estimate their cost and benefit.

The scope of work for the proposed Meter Assessment shall include the following:

1. Review the current NYISO metering program and industry standards.
 - Review the following:
 - Industry standards for metering hardware and metering communications hardware
 - NYISO Tariffs
 - NYISO Control Center Requirements Manual
 - New York State Electric Meter Engineers’ Committee’s Guide for Uniform Practices in Revenue Quality Metering
 - Interconnection Agreement documents with adjacent control areas
 - Asses the adequacy of existing standards and agreements pertaining to Revenue Metering, and provide justification for any recommended improvements.
 - Asses existing calibration and testing requirements for both Revenue and SCADA metering used by the NYISO, and provide justification for any recommended improvements.
2. For each interconnection point on the list of NYISO Revenue Meters (Attachment A):
 - Review available substation drawings, one-line diagrams and equipment records regarding metering systems, CT’s and PT’s.
 - Review meter authority calibration records methods, periodicity and documentation.
 - Review compensation settings.

- Compute the source and magnitude of the error rates for each interconnection point as input to the NYISO under various loading conditions.
 - Review the communication equipment and methodology used to transmit the data to the NYISO, and determine the speed/frequency at which billing quality readings could be provided to the NYISO with present communications equipment.
 - Recommend if additional interconnection points should be included in the list of NYISO Revenue Meters.
 - Recommend policies to reduce and mitigate potential seams issues stemming from metering equipment located at interfaces with neighboring control areas.
 - Prioritize the opportunities for improvement.
3. Evaluate each interconnection point on the list of NYISO Revenue Meters (Attachment A) for impact on the Billing Cycle timeline:
- Analyze a statistically significant sample of Tie, Generator, and Load data from the NYISO's Market Information System
 - Determine which meters, if any, contribute to the length of the billing cycle by requiring changes at the various stages of the invoicing and true-up cycle.
4. Evaluate accuracy/error rate for NYISO Critical SCADA Parameters through examination of a sample of meters on this list (Attachment B).
- Review available substation drawings, one-line diagrams and equipment records regarding metering systems, CT's and PT's.
 - Review meter authority calibration records methods, periodicity and documentation.
 - Review the real-time communication equipment and methodology used to transmit the data to the NYISO.
 - Compute the source and magnitude of the error rates for each parameter at the entry to the NYISO SCADA system under various loading conditions.
 - Calculate the source and magnitude for time stamping errors of SCADA data at the entry to the NYISO SCADA system.
 - Prioritize the points from the worst to the best accuracy.
5. Determine consequences of the existing metering system and methodology.
- Estimate/quantify impacts of NYISO Revenue Meter errors on settlements processes.
 - Estimate the impact of NYISO Critical SCADA Parameter errors on real-time balancing market operations and settlement processes.
 - Evaluate the accuracy of State Estimator solutions for ties lacking revenue-quality metering.

- Identify potential issues pertaining to upgrading the NYISO Revenue Meters and NYISO Critical SCADA Parameters located at ties with adjacent control areas.
6. Estimate the costs (both one-time and recurring) and benefits for upgrading existing metering and communications hardware.
 - Estimate the cost to Meter Authorities and the NYISO to perform various upgrades to meter hardware and communications equipment, broken down by individual ties and providing options for different accuracies and timeliness of readings. This should include cost to achieve a next-day and seven-day “reading lockdown” for all revenue meters.
 - Estimate the recurring costs to Meter Authorities and the NYISO associated with the proposed upgrade strategies, including maintenance, testing and calibration. Include any potential impact on staffing.
 - Quantify the benefits of this improvement, by market sector (Generation, Load, Transmission Owner, and the NYISO) for the different upgrade strategies.
 7. Evaluate the impact of utilizing State Estimator values for ties which lack Revenue Quality Metering.
 - For ties found to have opportunities to improve meter accuracy or timeliness, determine the error, impact, and potential risks associated with utilizing State Estimator values in lieu of Revenue Meter readings.
 - Recommend methods (and associated costs) of improving State Estimator accuracy.
 8. Prepare a detailed and comprehensive written report and a summary presentation of the findings, assessments, strategies, and recommendations of the project.
 9. Provide a detailed Project Plan for your Meter Assessment proposal:
 - Establish appropriate time frame for the project. Establish time-line and milestones.
 - Create a high level Project Plan including key project tasks and work breakdown structure.
 - Provide your sample plan for evaluating NYISO Critical SCADA Parameters.
 - Analyze project risks – technical, scope, complexity, etc. and recommend steps to mitigate significant risks and eliminate any potential cost overruns.

Attachment A:

(Would consist of the approximately 700 generator, inter-zonal, sub-zonal and inter-control area tie meters (MWh and sometimes integrated MW) utilized by the NYISO for energy settlements and maintained in WebReq database.

Attachment B:

(Would consist of the instantaneous MW SCADA Points for generators, inter-zonal, sub-zonal and inter-control area tie meters.)

These appendices would be subject to rules of confidentiality.

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