

DER Meter Data Study

Brian Yung

Market Design Specialist

Market Issues Working Group

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Previous Materials

Date	Working Group	Discussion points and links to materials
02-02-17	Posted	<u>Distributed Energy Resources Roadmap for New York's Wholesale Electricity Market</u>
05-23-17	Market Issues Working Group (MIWG)	<u>DER Measurement & Verification, Monitoring & Control, and Meter Data Study</u>

Purpose of Today's Meeting

- Review the purpose of NYISO's Meter Data Study
- Update NYISO stakeholders on the scope of the Meter Data Study
 - Work to be done by external consultant; and
 - Work to be done by NYISO staff
- Feedback on communication protocols and cost of telemetry

Purpose of Meter Data Study

- NYISO recognizes that DER may require different and/or additional telemetry and revenue grade metering rules and requirements
- NYISO and its external consultant will be evaluating the applicability of existing Monitoring & Control (M&C) and Measurement & Verification (M&V) requirements and identifying whether any additional requirements are needed to integrate DER
- **Meter Data Study will:**
 - Identify whether and what of the NYISO's existing metering requirements should be applicable to DER
 - Investigate whether there are additional DER metering and telemetry issues the NYISO should address
 - Propose potential DER metering requirements

External Consultant Study – Objective and Timeline

- NYISO has selected E-Cubed Policy Associates to provide consultancy services to the NYISO on specific DER M&V and M&C topics
- Objective of the study is to provide guidance to NYISO in the area of DER M&V and M&C with the intent to further understand and consider
 - Performance evaluation methodologies for DER aggregations
 - Certification of meter services for DER participating in the wholesale market
- The consultant will provide a final report of its findings to the NYISO at the conclusion of the study
- Anticipated timeline:
 - MIWG presentation on preliminary findings – October 30
 - MIWG presentation to summarize final report – November 27

External Consultant Study - Scope

■ General considerations for the Consultant

- Research and summarize approaches by other entities such as ISO/RTOs, utilities and standards bodies that are relevant to DER integration.
- Reach out to Market Participants to discuss metering concerns related to DER integration and share findings with the NYISO staff.
- Develop, with feedback from the NYISO and its Market Participants, a study report that summarizes the study's approach, findings and any recommendations.

External Consultant Study – Scope (cont'd)

- **Determine the baseline methodologies and metering configurations that are needed to most effectively evaluate resource performance across all DER resource types, including the following:**
 - Present alternative baseline methodologies and metering configurations to evaluate DER in the following scenarios:
 - Frequent wholesale market dispatch
 - Resource type (e.g., storage, generation, curtailable load or combination)
 - Various market participation (e.g. regulation, reserves, energy, capacity)
 - Highly variable load
 - Dual participation (wholesale and retail/end-customer use)
 - Consideration when baseline evaluation methodologies should be applied on DER that are not typically considered Demand Side Resources (e.g. storage, generation units)
 - Provide considerations for the amount of Installed Capacity (ICAP) a resource can be awarded when it is calculated using a baseline

External Consultant Study – Scope (cont'd)

- **Determine the baseline methodologies and metering configurations that are needed to most effectively evaluate resource performance across all DER resource types, including the following:**
 - Consider whether it is more effective for NYISO to evaluate performance of a DER aggregation by establishing 1) a baseline for each DER in an aggregation, or 2) a single baseline for the entire DER aggregation
 - Develop a methodology with NYISO subject matter experts to calculate the baseline(s) for a DER aggregation in real-time to determine its maximum aggregate MW capability for real-time scheduling and operations

External Consultant Study – Scope (cont'd)

- **Evaluate how NYISO can better facilitate the certification of Meter Service Providers (MSP) and Meter Data Service Providers (MDSP) to support DERs, including:**
 - Reviewing the existing MSP and MDSP construct in New York State and summarizing any other active policies or regulations that may determine what entities can certify 1) meter installations and 2) meter data in New York State, including a comparison of these findings with the policies and regulations in other North American regions.
 - If NYISO permits non-utility entities to install and certify meter data for future DER participation in the wholesale market, identify what existing or new metering policies, regulations and standards that would apply. Identify also what governing entity should be responsible for certifying and auditing the compliance of those meters or meter data.
 - Compare these findings with how other North American regions approach equivalent certification and compliance processes.

External Consultant Study – Scope (cont'd)

- **Evaluate statistical sampling methodologies that are suitable for small residential Demand Side Resources seeking to participate in the wholesale market**
 - Identify what technologies types (e.g. air conditioning, water heaters) and wholesale market services (e.g. reserves, regulation) are suitable to apply a statistical sampling methodology for small, residential Demand Side Resources.
 - Research and summarize any established statistical sampling methodologies for Demand Side Resources used by other ISO/RTOs and evaluate the methodologies' strengths and weaknesses in determining the performance of the overall population.
 - Review existing NYISO methodology to approve statistically sampled aggregations and provide considerations for further improvement. The Consultant shall include guidance on:
 - Sample design and recalibration methodology (e.g. stratification, bias control, etc.)
 - Whether to use a methodology based on empirical or estimated load data
 - Whether non-sampled members of the population need to have a physical meter installed

Internal NYISO Study

■ Objective

- NYISO will address technical and operational requirements associated with M&V and M&C that directly impact NYISO grid and/or market operations

■ Scope

- NYISO will review the following in 2017:
 - Feedback on the proposed 6-second telemetry and 10-second one-way latency requirement
 - Use of public internet, and possible alternative communication networking options
- NYISO will review additional topics on M&V, as necessary, at a later time including:
 - Cybersecurity
 - Alternative communication protocol to ICCP for telemetry to NYISO

Feedback on Communication Protocols

- The NYISO is looking for feedback from its stakeholders on whether the NYISO should consider alternative communication protocols for Market Participants to communicate to the NYISO instead of Inter-control Center Communication Protocol (ICCP):
 - What alternative communication protocol(s) should the NYISO to consider
 - What are the expected benefits to Market Participants and/or to the NYISO of the alternative communication protocol(s)

Feedback Received on Cost Barriers for DER Telemetry

- Currently, the NYISO has received feedback that there are two primary cost barriers to 6-second telemetry for DER at the facility level: measurement accuracy and data usage
- **Measurement Accuracy**
 - NYISO received feedback that in some circumstances it may be challenging, or not be feasible to meet the required measurement accuracy for telemetry when using a pulse counter with a revenue grade meter
 - NYISO has also received feedback that an alternative solution to using pulse counters is to use a shadow meter (i.e. with separate CTs/PTs from the settlement meter) which can meet the required measurement accuracy for telemetry, with an equipment cost of less than \$2,000 on a resource sized below 1 MW
- **Data Usage**
 - DER may utilize wired or wireless solutions to communicate telemetry to a DER Coordinating Entity (DCE) to pass on to the NYISO
 - NYISO has received feedback that annual data usage costs may be high when using wireless solutions, specifically through cell modems, to provide 6-second telemetry
 - NYISO has found publicly available pricing information for cellular options to analyze cellular cost for 6-second data of a DER:
 - Monthly data usage: 446,400 six-second messages x 4 kB¹ = 1.78 GB
 - Typical Machine-2-Machine (M2M) data plan: \$25-30 per month for ~2GB²
 - Estimated annual cost for cellular data plan for 6-second telemetry: \$300-360 per year

¹ Typical DNP3 message size is 2-4kB

² Typical pricing for Tier 1 network provider for cellular/M2M data plans

Next Steps

- NYISO anticipates presenting preliminary findings of its Meter Data Study in the October 30th MIWG

Feedback?

- Email additional feedback to: DER_Feedback@nyiso.com

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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