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Meter Services Entity Manual

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Revision History

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1.0	04/23/2020	Initial Release
1.1	MM/DD/YYYY	Section 1 ➤ Expansion of listed resources that may utilize MSE's.

1. Overview

Services Tariff Section 13 permits Member Systems and third parties—known as Meter Services Entities (MSEs)—to provide metering and meter data services to Demand Reduction Providers, DSASP Providers, Responsible Interface Parties (RIPs) and Curtailment Service Providers (CSPs). Market Participants may use an MSE as an alternative to the local Member System for metering and meter data services for participation in the NYISO-administered markets, and is not required. MSEs are not authorized to provide metering and/or meter data services for Market Participants other than Demand Reduction Providers, DSASP Providers, RIPs and CSPs (*e.g.*, for Generators or Energy Storage Resources). Market Participants and third parties (that are not NYISO Market Participants) may register as a MSE.

This manual defines the roles, responsibilities, and standards for an MSE providing metering and/or meter data services to Demand Reduction Providers, DSASP Providers, RIPs and CSPs. It defines responsibilities for each MSE and describes the processes for data processing and analysis.

References in this document include the *Revenue Metering Requirements Manual (RM²)* available at: <https://www.nyiso.com/manuals-tech-bulletins-user-guides> (expand “Manuals”, click “Administrative”).

1.1. Terminology/Definitions

The following terms are used in this manual:

- **Member Systems** – The eight Transmission Owners that comprised the membership of the New York Power Pool, which are: (1) Central Hudson Gas & Electric Corporation, (2) Consolidated Edison Company of New York, Inc., (3) New York State Electric & Gas Corporation, (4) Niagara Mohawk Power Corporation d/b/a National Grid, (5) Orange and Rockland Utilities, Inc., (6) Rochester Gas and Electric Corporation, (7) the Power Authority of the State of New York, and (8) Long Island Lighting Company d/b/a Long Island Power Authority.
- **Meter Data Services** – The collection, retention, communication and security of revenue grade meter data used for settlements and real-time telemetry data, and the validation, editing and estimation of such data.
- **Metering Devices** – Physical hardware used to measure the amount of electric energy consumed or produced (*e.g.*, revenue meter, pulse counter), and the physical appurtenances

thereto.

- ***Metering Services*** – The installation, calibration, physical security, maintenance, meter programming and configuration of metering devices.
- ***Revenue Metering Equipment*** – Metering Devices used for wholesale market settlements, including the revenue meters, current transformers, voltage transformers, test switches, transducers, remote terminal units (RTU), wiring, connecting blocks, and the cabinets/panels that house the above.

2. Roles and Responsibilities

The responsibilities for each entity include the items described in this section.

2.1. MSE Responsibilities

- MSE is responsible for compliance with the requirements of Services Tariff Section 13.3.
- MSE is responsible for providing metering data to the NYISO for the use in settlements, in accordance with the *Revenue Metering Requirements Manual (RM²)*.
- MSE is responsible for compliance with applicable codes and standards for metering device installation, testing, and maintenance in accordance with Services Tariff Section 13 and the *Revenue Metering Requirements Manual (RM²)*.
- MSE is responsible for promptly notifying the NYISO of any material change to the eligibility information previously submitted to the NYISO.
- MSE is responsible for informing the NYISO of its continuing compliance with changes to MSE eligibility criteria (when made by the NYISO), or provide a detailed plan describing how it will come into compliance.
- MSE must treat all customers on a non-discriminatory basis, and not grant any undue prejudice or disadvantage.
- MSE must comply with NYISO's audit authority under Services Tariff Section 13.3.2.3.1.
- MSE shall provide to the connecting utility (Member Systems), upon request, access to revenue grade meter data or meter installation specifications.

2.2. Market Participant Responsibilities

- The Market Participant must meet the obligations set forth in Services Tariff Section 13.2.
- The Market Participant must ensure that the metering and meter data services that are required to fulfill its responsibilities are provided by the Member System or MSE.
- The Market Participant, if also an MSE, is responsible for compliance with all of the MSE requirements of Services Tariff Section 13.3 and this manual.
- The Market Participant is responsible for the auditing costs associated with the administration of MSE(s) it uses pursuant to Service Tariff 15.10.
- The Market Participant is responsible for any required compensation to the Member System and/or Meter Services Entity concerning the provision of metering and/or meter data services pursuant to Services Tariff Section 13.3.1.3.

- The Market Participant is responsible for any applicable penalties issued as a result of metering or meter data services that do not comply with the NYISO Tariffs.
- The Market Participant is responsible for providing all required meter data to the NYISO.
- Market Participant shall be responsible for the completion and submission of the Meter Inventory, as requested by the NYISO.

2.3. NYISO Responsibilities

- Establish metering and real-time telemetry specifications and standards, and identify them in ISO Procedures.
- Administer the MSE registration process and determine whether MSE Applicants meet the identified criteria.
- Post a list of all authorized MSEs on the NYISO website.
- Review MSE eligibility after the MSE identifies changes to its business, and upon NYISO revision to MSE rules.
- Conduct periodic audits of MSE(s) as described in Services Tariff Section 13.3.2.3 and this manual.
- Analyze metering and data anomalies as reported to it by the MSE or Market Participant.
- Coordinate with the Market Participant or MSE to ensure proper operation and transport of meter data to the NYISO.

3. Eligibility for Meter Services Entity Authorization

Pursuant to Services Tariff Section 13.3.2, an entity may apply to be an authorized MSE in order to provide physical metering and meter data services to NYISO Market Participants. This section describes the requirements and criteria to become authorized to provide those services.

3.1. Registration Submittal Requirements

1. Prior to applying to be a MSE, the Applicant must register as either (i) a NYISO Market Participant, or (ii) a NYISO Guest. Information on registration to be a Market Participant or Guest is available at customer_registration@nyiso.com.
2. MSE Registration Packet and Application Fee – Applicants are required to submit the completed Meter Services Entity Registration Packet to the NYISO accompanied by payment of the non-refundable \$1,000 (one thousand dollar) application fee.

The NYISO will begin its review of the registration materials upon receipt of the completed registration packet and payment of the application fee. Within thirty (30) days of receipt of the completed Registration Packet and application fee, the NYISO will determine whether the applicant satisfactorily meets the requirements to be an MSE. If at any point during that evaluation the NYISO determines it needs further information, it may seek that information from the applicant in order to complete its review. The NYISO must receive all requested additional information within thirty (30) days of its request unless otherwise agreed to by the NYISO and the applicant. The NYISO will reject an application if the requested information is not received within the specified timeframe.

3.2. Reoccurring MSE Obligations

3.2.1. Organization Information

The applicant shall submit Organization Information, as defined in the MSE Registration Packet, required for MSE eligibility. If any material changes occur to the MSE's Organization Information after authorization, the MSE must notify the NYISO prior to those changes taking effect. On an ongoing basis, the MSE must submit to the NYISO:

1. A listing of the utility service territories in which the MSE intends to provide services; and
2. A certification that the MSE's employees have appropriate training (*e.g.*, Electric Safety Training, Electric Meter School) such that the employees are sufficiently qualified to provide physical metering services and meter data services.

Additionally, an MSE must maintain a training plan to ensure employee training, qualifications and

certification to perform those services as necessary.

3.2.2. Infrastructure Plan

The testing and maintenance of metering devices; data management, storage, and security must meet required standards to ensure the accuracy of the data submitted to the NYISO for settlement purposes. In order to verify that the standards are met, each Applicant must include with its Application an Infrastructure Plan. The Infrastructure Plan must include a description of:

1. Meter Test Facilities

1.1. Access to a meter test facility equipped to determine the performance of electric meters and associated equipment used for revenue metering.

1.2. Maintenance plan for testing equipment used for electric meters and associated equipment as defined in Section 3.3 of the *Revenue Metering Requirements Manual (RM²)*.

1.2.1.1. Commercial standardizing facilities shall be allowed when such facilities can be shown to have appropriate test equipment as defined in Section 3.3 of the *Revenue Metering Requirements Manual (RM²)*.

1.3. Meter test standards, ancillary equipment, and instruments used for the testing of electricity meters must be calibrated and traceable, in accordance with the requirements set forth in Section 3.3 of the *Revenue Metering Requirements Manual (RM²)*.

1.4. Calibration intervals for all instrumentation used in establishing meter performance shall be determined according to Section 3.3 of the *Revenue Metering Requirements Manual (RM²)*.

1.5. Records of calibrations of all instruments used for establishing meter performance must be maintained in accordance with Section 3.3 of the *Revenue Metering Requirements Manual (RM²)*.

2. Meter Data Management Practices

2.1. Maintenance records of the calibration of all instruments used in the testing of revenue meters in accordance with Section 3.3.2 of the *Revenue Metering Requirements Manual (RM²)*.

2.2. Records of retired instruments must be maintained in accordance with Section 3.3.2 of the *Revenue Metering Requirements Manual (RM²)*.

2.3. Description of the data Validation, Estimation, and Editing process and rules to be applied to meter data in accordance with [Section 7](#) of this manual.

- 2.4. Description of the data retention practices, including the data to be retained and the retention schedule in accordance with [Section 6](#) of this manual.
3. Meter data record recovery process should be maintained to address various contingencies, including an off-site storage location for updated copies of all software and data files.
4. A listing of meter services intended to be provided. For each service provided, identify industry standards, internal processes, and/or business practice standards used.
5. Provide the following MSE Office/Control Center configurations:
 - 5.1. Physical/Cyber Security shall include, but is not limited to:
 - 5.1.1. 24/7/365 physical security management
 - 5.1.2. Identity and Access Management
 - 5.2. Environmental Controls shall include, but are not limited to:
 - 5.2.1. Cooling and humidity management
 - 5.2.2. Fire detection and suppression systems
 - 5.3. Redundancy of infrastructure shall include, but are not limited to:
 - 5.3.1. All servers having redundant power supplies (*e.g.*, UPS, Direct Current power source)
 - 5.3.2. All servers and storage arrays utilizing RAID 0.1
 - 5.3.3. Server clustering
 - 5.3.4. Hot backup database server availability in the event of database failure
 - 5.4. Scalability should include, but is not limited to:
 - 5.4.1. Ability of the platform database to be expanded in size
 - 5.4.2. The data storage capacity and the potential data storage expansion capacity
 - 5.5. Backup Process
 - 5.5.1. Daily backup of servers and databases
 - 5.5.2. Periodic transaction backups performed between complete backups
 - 5.5.3. Backups routinely shipped to a separate storage facility
 - 5.6. Disaster recovery process should include, but is not limited to:

5.6.1. Hard-drive failure process

5.6.2. Non-mission-critical server process (*e.g.*, backup domain controller)

5.6.3. Database server or disk array failure

5.6.4. Primary data center failure

The NYISO will review the information provided by the MSE in the Infrastructure Plan to assess the plan for completeness. An MSE must notify the NYISO of any material changes to the Infrastructure information prior to those changes taking effect.

3.3. Agreement to Comply with NYISO Tariff and Procedures

The MSE must agree to abide by all associated NYISO requirements set forth in the Services Tariff, NYISO procedures, and this manual for the supply of metering services and/or meter data services. Such requirements may be amended from time to time and the MSE is required to update their registration information as necessary to comply with new requirements. The NYISO has the right to audit the MSE and the records that are required to be maintained by this manual.

4. Suspension and Revocation

In the event the NYISO determines that a MSE has not complied with the requirements set forth in the ISO Tariffs or ISO Procedures (including this manual), it may suspend or revoke the MSE's eligibility to provide metering and meter data services pursuant to Section 13.3.2.3.2 of the Services Tariff.

If a MSE's eligibility is suspended or revoked, the NYISO will: (i) not accept meter data supplied by that MSE, and (ii) inform the NYISO marketplace of the MSE's status. The MSE will be responsible for notifying any Market Participant to whom it provides physical metering or meter data services of its status.

4.1. Conditions of Suspension

The NYISO may suspend an MSE's eligibility to provide physical metering and/or meter data services to NYISO Market Participants if the NYISO determines that an MSE has not complied with Section 13.3.2 of the Services Tariff or the ISO Procedures, including the eligibility rules set forth in this manual.

An MSE shall have 60 days to remedy any NYISO-identified non-compliance, and the NYISO shall terminate any suspension if the MSE corrects its non-compliance, to the satisfaction of the NYISO, within the 60-day window. The NYISO may, at its sole discretion and based on the individual facts and circumstances of a particular case, extend the 60-day period within which a MSE must come into compliance.

4.2. Conditions of Revocation

The NYISO may revoke an MSE's authorization to provide metering and/or meter data services if (i) the MSE fails to remedy the non-compliance resulting in its suspension within the timeframe allotted by the NYISO, or (ii) the MSE's non-compliance is not able to be remedied.

An entity whose authorization to be an MSE has been revoked may re-apply for MSE authorization. Any re-application will be reviewed by the NYISO and will not be approved until, in addition to satisfying the generally applicable eligibility requirements, the entity establishes that the non-compliance causing revocation of its prior MSE authorization has been remedied.

5. Meter Installation Requirements

This section specifies the meter hardware installation requirements for resources participating in the NYISO-administered markets. The MSE shall refer to Section 3.3 of the NYISO *Revenue Metering Requirements Manual (RM²)* for meter Calibration and Maintenance Standards.

5.1. Meter Installation Authority

Authorized MSEs have the authority to install metering devices for participation in the NYISO-administered markets. All Revenue Metering Equipment installed by an MSE and the meter configuration of those devices must meet the requirements for the particular program in which the facility will participate (*e.g.*, the Special Case Resource program) according to the NYISO *Revenue Metering Requirements Manual (RM²)*.

5.2. Meter Installation

The MSE must meet the relevant local utility notification, safety, access, and data retrieval requirements for installing metering devices. The MSE's Revenue Metering Equipment shall be installed at the retail delivery point of the interconnecting utility or at the location of the asset, as required for the particular program in which the facility will participate (*e.g.*, the Special Case Resource program).

All MSE Revenue Quality Meters shall contain an identification number that is unique to the specific MSE. The MSE must also record the serial number of any metering devices located at the same facility or in series with the installed device. Metering devices installed by a MSE must be secured by a physical locking device, such as a seal, that meets the requirements of the currently effective ANSI C12 standard.

The NYISO is not responsible for the costs of installing or maintaining metering devices used for participation in the NYISO-administered markets.

All data recording and communications devices shall be periodically, and after they have undergone maintenance, synchronized, within an accuracy of +/- 15 seconds, with the National Institute of Standards and Technology (NIST) standard time.

5.3. Meter Device Compliance

Metering devices installed by an MSE and equipment calibration records shall be compliant with the requirements set forth in the NYISO *Revenue Metering Requirements Manual (RM²)* as well as this manual.

6. Metering Device and Meter Data Retention Requirements

This section specifies data retention requirements for metering devices as well as the records pertaining to the calibration and testing of such devices. Each MSE shall maintain the following records, as applicable.

6.1. Metering Device

All information below shall be maintained for a period of at least six (6) years:

1. The permanent serial number and identification number of the metering device.
2. The metering device manufacturer, type, form, voltage and current transformer.
3. Installation records, including dates of installation, the entity performing the installation, and the drawings of the installation.
4. Maintenance records including identification of all maintenance undertaken, including the dates of maintenance and supporting documentation.
5. Meter configuration specifications.

6.2. Meter Device Calibration

All information below shall be maintained in accordance with section 3.3.2 of the NYISO *Revenue Metering Requirements Manual (RM²)*:

1. Calibration records must include the dates of calibration, entity performing the calibration, instruments used in the calibration, and the calibration report.
2. Each metering device and instrument used in calibration shall be accompanied with a certificate of calibration.

6.3. Additional Device Testing

All information below shall be maintained for a period of at least six (6) years.

1. When available, test records for current or potential transformers must indicate the frequency, ratio correction factor, and phase angle for each burden at which the transformer was tested.
2. Test records for each phasing transformer.
3. Test records for each transformer shall be retained while the transformer remains in service; prior test records are not valid if the transformer is moved to a different location.

6.4. Meter Data

Meter data shall be maintained for at least thirty-six (36) months from the date that the meter data is submitted.

7. Data Validation, Editing, and Estimation

This section provides guidelines and requirements for validation, editing, and estimation (VEE) of all revenue quality meter data collected for use in the NYISO-administered markets. Validation, editing, and estimation procedures must be performed on all meter data submitted to the NYISO.

All revenue quality meter data provided by MSE's shall, at a minimum, comply with NAESB REQ. 19.3.7 and Good Utility Practice to ensure the quality of information. The following VEE information shall be submitted along with the registration packet by each entity seeking to become a MSE, and from authorized MSEs upon NYISO request:

1. Description of the meter data validation criteria (*e.g.*, time check, sum check, high/low check, etc.) the MSE will use to verify data quality and identify gaps in data. At a minimum, the description must contain the following information.
 - a. Compliance with NAESB VEE standards.
 - b. List of erroneous data conditions against which data is being validated.
 - c. Frequency at which data validation will be conducted.
2. Description of the estimation methodology (*e.g.*, data from backup device, historical profile, data from Transmission Owner interval meters, etc.) the MSE will use to estimate erroneous or missing interval meter data. At a minimum, the description must contain the following information:
 - a. Statement of estimation methods that will be used to replace erroneous or missing data.
 - b. Compliance with NAESB standards.

All revenue quality meter data shall be classified per *Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering* available at: <https://www.nyiso.com/manuals-tech-bulletins-user-guides> (expand "Manuals", click "Additional Manuals"). The data classification shall be stored along with the data values and estimation method in accordance with the data retention requirements in [Section 6](#) of this manual.

8. Auditing

Pursuant to Section 13.3.2.3 of the Services Tariff, the ISO (or its designated entity) may perform an audit, inspection and/or test of a MSE's metering facilities, meters, and/or meter data records to ensure compliance with the ISO Tariffs and ISO Procedures, and consistency with the information the MSE provided to the NYISO at time of registration. The NYISO shall provide thirty (30) days written notice for on-site audits of physical meter infrastructure (including testing facilities). If the NYISO seeks documentation or other written information, the MSE shall respond to the NYISO audit requests within the deadline specified by the NYISO, which will be no less than seven (7) business days. The NYISO may, at its sole discretion and based on the individual facts and circumstances of a particular case, extend the deadline within which a MSE must respond to the audit. As described in Section 13.3.2.3 of the Services Tariff, the NYISO's audit may involve, but is not limited to the following:

1. Validation, Estimation, and Editing (VEE) methodology
2. Site meter configurations
3. Meter compliance with ISO rules and procedures
4. Meter Services Entity operational protocols, procedures, and recordkeeping, and compliance with ISO rules and procedures
5. Telemetry and communication data and records