



Metering Rules Enhancements Settlement Quality Meter Data Plan


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Approved by:

Approver Name

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Mike Russell, Manager, Meter Engineering & Analysis

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REVISION HISTORY

VERSION NO.	DATE REVIEW STARTED	REVISED BY	DESCRIPTION
1.0	03/21/16	Mike Rusell, Monica Mouanetry	Create document.
2.0	04/04/16	Mike Russell	Miscellaneous sections updated to capture new verbiage
2.1	04/05/16	Monica Mouanetry	Updated specific sections according to Mike R.'s previous comments from 04/04/16. Also, updated the definitions to include the following: 1. Market Resource 2. Rules of Conduct 3. SQMD Resource Template.
3.0	04/06/16	Mike Russell	Realigned topics based on feedback
3.1	04/06/16	Monica Mouanetry	Added definitions for BA, UFE, and MSS.
3.2	04/14/16	Mike Russell	Updated Introduction/Purpose to focus on SC responsibility of SQMD Plan
3.3	10/26/2016	Priyanka Namburi	Added requirement for Non-Participating resource.


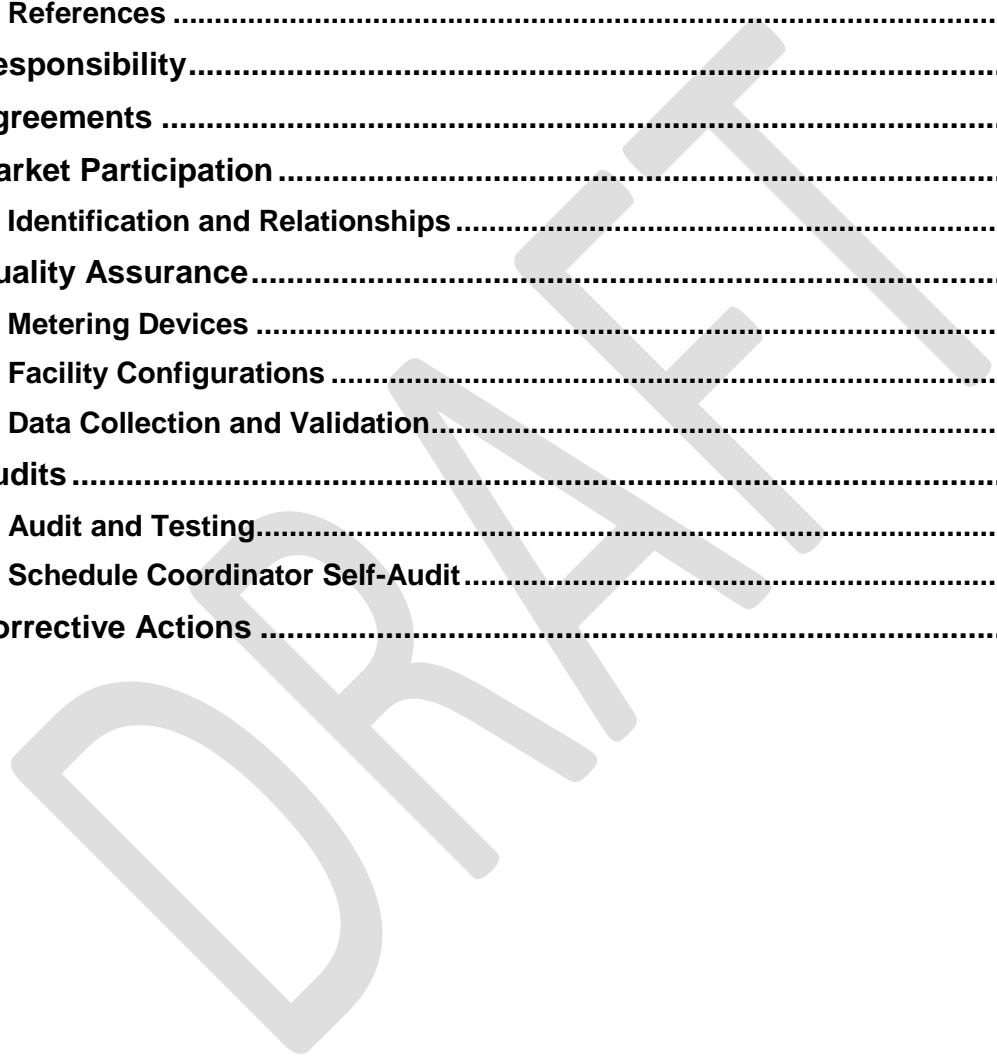

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1. Introduction

1.1 Purpose


The CAISO is proposing to modify existing metering requirements, allowing greater flexibility and cost savings for our market participants. This new proposal will allow the Scheduling Coordinator (SC) the option to submit settlement quality meter data (SQMD) for load, generation, and intertie/intrastate resources on behalf of their customers.¹ To maintain the integrity and quality of meter data used in market settlements, SC's that elect to take advantage of this option will be required to complete and submit a SQMD Plan. This plan will provide the opportunity to demonstrate that the meter data submitted to the CAISO will be settlement quality. This plan will include a separate SQMD Resource Template capturing all metering components and supporting algorithms that clearly identify the relevant metering configuration associated with any given resource. The CAISO will reserve the right to review and approve such plan and may request additional information to ensure overall data accuracy and integrity. In addition to the SQMD Plan, the SC will be required to meet all existing SCME metering requirements including the submission of an annual self-assessment as noted in section 6.3.1 *Scheduling Coordinator Self-Audit Report* of the Business Practice Manual (BPM) Metering and will be subject to Rules of Conduct associated with late and/or inaccurate meter data submission.

This SQMD plan does not include Real-Time/Telemetry requirements, participants wishing to establish Metering Subsystems (MSS), separate Unaccounted For Energy (UFE) calculations and/or other related SCME affiliated participation.


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1.2 Definitions, Acronyms, and Abbreviation


Term	Description
Balancing Authority (BA)	The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.
Balancing Authority Area (BAA)	The collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.
Energy Management System (EMS)	A computer control system used by electric utility dispatchers to monitor the real-time performance of the various elements of an electric system and to control Generation and transmission facilities.
Generation	Energy delivered from a Generating Unit.
Intertie	A transmission corridor that interconnects the CAISO Balancing Authority Area with another Balancing Authority Area.
ISO	California Independent System Operator
Load	An end-use device of an End-Use Customer that consumes Power. Load should not be confused with Demand, which is the measure of Power that a Load receives or requires.
Local Regulatory Authority (LRA)	The state or local governmental authority, or the board of directors of an electric cooperative, responsible for the regulation or oversight of a utility.
Market Resource	Identification characters assigned by the CAISO to Generating Units, Loads, Participating Loads, System Units, Proxy Demand Resources, Reliability Demand Response Resources, and Physical Scheduling Plants.

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Meter Service Agreement for Scheduling Coordinators (MSA SC)	An agreement entered into between the CAISO and a Scheduling Coordinator consistent with the provisions of Section 10, a <i>pro forma</i> version of which is set forth in Appendix B.7.
Meter Subsystem (MSS)	A geographically contiguous system located within a single zone which has been operating as an electric utility for a number of years prior to the CAISO Operations Date as a municipal utility, water district, irrigation district, state agency or federal power marketing authority subsumed within the CAISO Balancing Authority Area and encompassed by CAISO certified revenue quality meters at each interface point with the CAISO Controlled Grid and CAISO certified revenue quality meters on all Generating Units or, if aggregated, each individual resource. Participating Load, Reliability Demand Response Resource, and Proxy Demand Resource internal to the system, which is operated in accordance with a MSS Agreement described in Section 4.9.1.
Metering Facilities	Revenue quality meters, instrument transformers, secondary circuitry, secondary devices, meter data servers, related communication facilities and other related local equipment
Resource Type	The type of the resource specified in the Bid Identification of a Bid. It can be one of the following: a Generating Unit, a System Resource (Non-Dynamic Resource-Specific System Resource, Dynamic Resource-Specific System Resource, Dynamic System Resource, Non-Dynamic System Resource) an Export Resource, a Participating Load, or a Non-Participating Load.
Revenue Quality Meter Data (RQMD)	Meter data meeting the standards and requirements established and maintained by the CAISO and LRA.

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Rules of Conduct	The rules set forth in CAISO Tariff Sections 37.2 through 37.7. These are guiding principles for participation in the markets administered by the CAISO. The specified Rules of Conduct are intended to provide fair notice to Market Participants of the conduct expected of them, to provide an environment in which all parties may participate on a fair and equal basis, to redress instances of gaming and other instances of anticompetitive behavior, and thereby to foster confidence of Market Participants, ratepayers and the general public in the proper functioning of the CAISO markets.
Scheduling Coordinator (SC)	An entity certified by the CAISO for the purposes of undertaking the functions specified in Tariff Section 4.5.3, including any entity certified by the CAISO as an EIM Entity Scheduling Coordinator or an EIM Participating Resource Scheduling Coordinator for the purposes of undertaking the functions specified in Section 29.
Scheduling Coordinator Agreement (SCA)	An agreement between a Scheduling Coordinator and the CAISO whereby the Scheduling Coordinator agrees to comply with all CAISO rules, protocols and instructions, as those rules, protocols and instructions may be amended from time to time, a <i>pro forma</i> version of which is set forth in Appendix B.1.
Scheduling Coordinator Metered Entity	A Generator, Eligible Customer, End-User, Reliability Demand Response Resource, or Proxy Demand Resource that is not a CAISO Metered Entity, an EIM Entity, or an EIM Participating Resource that elects to be a Scheduling Coordinator Metered Entity with regard to some or all of the EIM Resources it represents.
Scheduling Coordinator Self-Audit	Audits and tests that a Scheduling Coordinator is required by CAISO Tariff Section 10.3.10 to perform, at least annually, of the Metering Facilities it represents and the Settlement Quality Meter Data it provides to CAISO.
Settlement Quality Meter Data (SQMD)	Meter Data gathered, edited, validated, and stored in a settlement-ready format, for Settlement and auditing purposes.

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Settlement Quality Meter Data (SQMD) Resource Template	Required resource specific document submitted to CAISO by the Market Participant(s) containing the pertinent resource configuration information as part of the SQMD Plan.
Utility Distribution Company (UDC)	An entity that owns a Distribution System for the delivery of Energy to and from the CAISO Controlled Grid, and that provides regulated retail electric service to Eligible Customers, as well as regulated procurement service to those End-Use Customers who are not yet eligible for direct access, or who choose not to arrange services through another retailer
Unaccounted For Energy (UFE)	The difference in Energy, for each utility Service Area and Settlement Period, between the net Energy delivered into the utility Service Area, adjusted for utility Service Area Transmission Losses and the total Measured Demand within the utility Service Area adjusted for distribution losses using Distribution System loss factors approved by the Local Regulatory Authority. This difference is attributable to meter measurement errors, power flow modeling errors, energy theft, statistical Load profile errors, and distribution loss deviations. For EIM Market Participants, the CAISO will calculate Unaccounted For Energy based on the EIM Entity Balancing Authority Area instead of the utility Service Area.
Validation, Estimation and Editing (VEE)	The procedures set forth in Section 10 that the CAISO applies to Revenue Quality Meter Data in order to develop Settlement Quality Meter Data.

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1.3 References

Below is a list of document and other sources reference in the Metering Rules Enhancements Settlement Quality Meter Data Plan.

1. [Metering Business Practice Manual](#)
2. [Definitions and Acronyms Business Practice Manual](#)
3. [CAISO Tariff Section 10: Metering](#)
4. [CAISO Tariff Section 37: Rules of Conduct](#)
5. [Scheduling Coordinator Requirements](#)

2. Responsibility

The applicant shall be responsible for the establishment and execution of the settlement quality meter data plan and relevant documents including the SQMD Resource Template. The authority and duties of persons and organizations performing activities affiliated with this plan shall be clearly established and delineated in writing and is the sole responsibility of the applicant. Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that all related documents are reviewed for accuracy. Changes shall be reviewed and approved by the same organizations that performed the original review and submit a revised SQMD Resource Template for CAISO approval.

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3. Agreements


A Scheduling Coordinator for a Scheduling Coordinator Metered Entity must sign a Meter Service Agreement for Scheduling Coordinators (MSA SC) with the CAISO. The Scheduling Coordinator for a Scheduling Coordinator Metered Entity is responsible for providing SQMD for Scheduling Coordinator Metered Entities it represents. Such agreements specify that Scheduling Coordinators require their Scheduling Coordinator Metered Entities to adhere to the meter requirements of the CAISO Tariff applicable to Scheduling Coordinators for Scheduling Coordinator Metered Entities, which include those set forth in Section 6 of this BPM. A Meter Service Agreement entered into by a Scheduling Coordinator applies to the Scheduling Coordinator only in its capacity as Scheduling Coordinator for those Scheduling Coordinator Metered Entities. A *pro forma* version of the Meter Service Agreement for Scheduling Coordinators is set forth in Appendix B.7 of the CAISO Tariff and can be found on the CAISO Website at: www.caiso.com.

The following agreements are required for Scheduling Coordinator Metered Entities (SCMEs):

1. **Scheduling Coordinator Agreement (SCA)** - An agreement between a Scheduling Coordinator and the CAISO whereby the Scheduling Coordinator agrees to comply with all CAISO rules, protocols and instructions, as those rules, protocols and instructions may be amended from time to time, a *pro forma* version of which is set forth in Appendix B.1.
2. **Meter Service Agreement for Scheduling Coordinators (MSA SC)** - An agreement entered into between the CAISO and a Scheduling Coordinator consistent with the provisions of Section 10, a *pro forma* version of which is set forth in Appendix B.7.
 - i. **Schedule 1:** Meter Information – (1) Meter Number (not required field), (2) Name of the Facility, (3) Contact details for SCME
 - ii. **Schedule 3:** Exemptions from Metering Standards and other Requirements – Exemption, Name of LRA, Other Exemptions
 - iii. **Schedule 5:** Access to Meter Data (SQMD)

To initiate the agreement(s) as referenced above, the following documents will need to be completed prior and submitted to the designated Customer Service Representative:

- [Scheduling Coordinator Agreement Information Request Sheet](#)
- [Meter Service Agreement for SC Information Request Sheet](#)

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4. Market Participation

The applicant shall clearly define their proposed market participation in accordance with their proposed market resource(s) and their distinct relationships to the meter device(s) within the SQMD Resource Template. This includes but not limited to meter types (manufacture & models) other supporting devices such as transducers, accumulators etc.

4.1 Identification and Relationships

Market participation shall be delineated by the following attributes related to each market resource:


- “New” or “Existing” market resource
- Local Regulatory Agency (LRA) Affiliation if applicable
- Resource Type: Generation, Load, Intertie, Intratier
- Metering Device: Meter, Transducer, Accumulator, EMS, Other
- Compensation: Distribution Factor, Credits, Losses (Transformer, Line etc.)
- Shared Source(s): Device, Transformer, Transmission Line etc.
- Supporting Documentation –
 - Participating resources: Electric Schematics i.e. Single Line Diagrams (Issued for Construction, As-Built) with Professional Engineering (PE) stamp of approval or equivalent.
 - Non-Participating resources: Electric Schematics i.e. Single Line Diagrams (Issued for Construction, As-Built).

5. Quality Assurance

Measures shall be established to assure that applicable requirements and the design basis as specified for those structures, systems, and components to which this plan applies are correctly translated into specifications, drawings and procedures. Sufficient records shall be provided and maintained to support all relationships affecting quality including security measures and/or practices to ensure data integrity. ***Design changes, including equipment and/or data collection modifications shall be subject to CAISO review and approval prior to implementation via the submission of a revised SQMD Resource Template.***

5.1 Metering Devices

Scheduling Coordinators representing Scheduling Coordinator Metered Entities must ensure their metering equipment associated with their Scheduling Coordinator Metered Entities are certified in accordance with the certification requirements of the appropriate Local Regulatory Authority (LRA). In the absence of metering standards set by a Local Regulatory Authority, all

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related equipment/devices must meet or exceed the standards for CAISO Metered Entities listed within the Metering BPM Attachment A and B.

5.2 Facility Configurations


Measures shall be established to assure that applicable requirements and the design basis as specified for those structures and components to which this plan applies are correctly represented within supporting drawings and/or procedures. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

Detailed drawings, including Single Line diagrams that show the connection of the generator to the switchyard and then to the Utility connection. Elements should reflect how generators, transformers and aux transformers are connected, showing all breakers, disconnects, and metering devices to CAISO Point of Receipt (POR), where the CAISO POR differs from the meter location. Where a Scheduling Coordinator Metered Entity is connected to a UDC's Distribution System, the responsible Scheduling Coordinator shall ensure the adjusted compensation is reflected in the relevant SQMD. Such estimated compensation i.e. Distribution System loss factors shall be approved by the relevant Local Regulatory Authority.

5.3 Data Collection and Validation

Scheduling Coordinator will be responsible for the collection, validation and submission of SQMD according to the meter submission timelines outline within section 6.1 *Provision of Settlement Quality Meter Data* captured within the BPM for Metering. Measures shall be established to assure that any related data processing i.e. calculation algorithms are clearly identified in accordance with the given market resource via the SQMD Resource Template.

The following items are required: (1) processes and related applications affiliated with data processing including interrogation, collection, and validation of meter data, (2) Related steps to include Validation, Estimation and Editing (VEE) procedures to produce settlement quality meter data (SQMD). Scheduling Coordinators shall be responsible for obtaining any necessary approval of the relevant Local Regulatory Authority to its proposed security, validation, editing, and estimation procedures. The CAISO will not perform any Validation, Estimation and Editing on the Settlement Quality Meter Data it receives from Scheduling Coordinators.

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6. Audits

6.1 Audit and Testing

Subject to any applicable LRA requirements the Metering Facilities and data handling and processing procedures of SC's and SCME's are subject to audit and testing by the CAISO or a CAISO Authorized Inspector as noted within section 6.3.2 *Audit and Testing by CAISO* of the BPM for Metering.

6.2 Schedule Coordinator Self-Audit

Each SC for an SCME shall at least annually conduct (or engage an independent, qualified entity to conduct) audits and test of the Metering Facilities of the SCME that it represents and the Meter Data provided to the SC. SC's shall undertake any other actions that are reasonably necessary to ensure the accuracy and integrity of the SQMD beginning with the Validation, Estimation and Editing (VEE) provide by them to the CAISO.

Audit Review Period for the present year will be from August 1st of the previous year through July 31st of the current year and the report is due to the CAISO on October 31st of the present year and must include, as a minimum, five components outlined within section 6.3.1 *Scheduling Coordinator Self-Audit Report* of the BPM for Metering.

7. Corrective Actions

Measures shall be established by the SCME and their respected SC to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented within the SC-Self Audit.