




California ISO


EIM Track 5 Overview - Metering

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REVISION HISTORY

VERSION NO. (Must match header)	DATE	REVISED BY	DESCRIPTION
0.1	2/7/17	Joanne Alai	Initial draft
0.2	5/8/17	Joanne Alai	Incorporated customer feedback
1.0	5/17/17	Mike Russell / Joanne Alai	Incorporated updated processes and clarifications.
1.1	6/7/17	Mike Russell	Updated SQMD Plan disclaimer captured in section 4 part 3 “Submission of SQMD Plan(s)”
1.2	6/7/17	Mike Russell	Add clarification to section 4 part 3 “Submission of SQMD Plan(s)” to include “selecting to participate as an Scheduling Coordinator Metered Entity”
1.3	06/23/17	Mike Russell	Updated: Section 4.3a: included SQMD submission process Section 4.3b: added Project Loader Information and Link Section 4.4: Modified to reflect Review and “Acceptance” step Section 4.7: Updated verbiage “approval” to “accepted” Section 4.8: Inserted new step reflecting “Approval of EIM Metering Portfolio” step Section 6.0 (previously 5.0) “Cross Team Communication” removed “Accellion” references to capture NRI process. Section 7.0: Miscellaneous updates to captured Project Loader, SQMD Submission Process, SQMD Approval Letter timing etc.
1.4	08/01/17	Mike Russell	Combined sections 4.5 & 4.6 associated with EIM Metering Portfolio Validation incorporating existing SQMD Data mapping. Updated section 8 Metering Key Deliverables with modified EIM Metering Portfolio Design and Validation (4.5) and SQMD Data Mapping deliverables.
1.5	08/21/17	Mike Russell	Section 4.3(a): removed Pseudo Ties, Financial Interties, Dynamic Imports and added Intraties; Section 4.5: added “System” resource

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			Section 4.6: modified testing and validation parameters to include those of system resources. Section 8.0: EIM Metering Portfolio Testing & Validation: added “System” resources.
1.6	11/13/17	Mike Russell	Updated verbiage to sections 4.2.3 & 4.2.4 and added links to supporting documentation. Updated section 4.3 to captured the required Single Line Diagram (c).
1.7	9/18/2018	Nancy Strouse	Updated timeline.
1.8	4/29/19	Priyanka Namburi, Ayman Fattah, Cari Chenkin	Updated timeline, verbage updates. Updated formatting, punctuation, etc.
1.9	2/19/2020	Priyanka Namburi, Nancy Strouse	Minor corrections



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1.0 Purpose

This document is meant to provide entities who are joining the Energy Imbalance Market (EIM) with a summary of key metering related requirements and processes to ensure that their settlement quality meter data (SQMD) reflects a high level of meter data accuracy used in the settlement process. This document also identifies key deliverables and general timing to ensure successful Market Simulation and Parallel Operations testing.

2.0 Track 5 Metering Overview

Track 5 contains the various metering activities required to be successful within the EIM. There are two elements of metering that are key to ensuring successful metering integration: physical metering and meter data accuracy.


2.1 Physical Metering

Physical metering, associated with a market resource, is the identification and classification of relevant metering components that must be in alignment with Local Regulatory Authority (LRA) requirements, or meet existing California ISO (CAISO) metering standards and accuracy ratings. For resources that do not have LRA standards and have equipment that does not meet the CAISO accuracy requirement, a correction factor may be applied. In support of this effort, all EIM participants choosing to be a Scheduling Coordinator Metered Entity (SCME) for any market resource, must submit a settlement quality meter data (SQMD) plan for each market resource and obtain approval from the CAISO prior to bidding within CAISO markets.

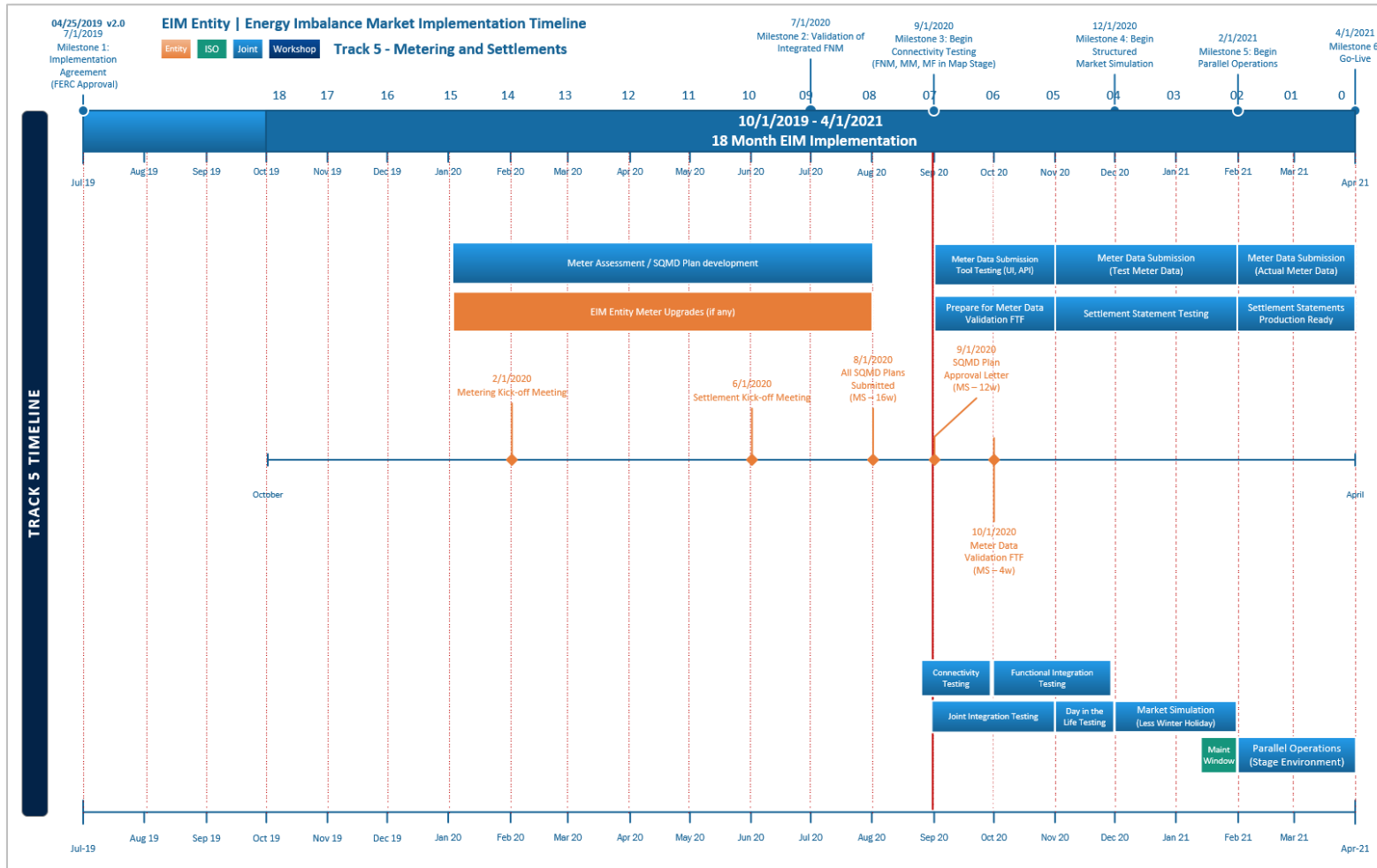
2.2 Meter Data Accuracy

The second element captures the steps and measures needed to support a high level of meter data accuracy. Within this section, processes are highlighted to identify validation measures addressing market resource configurations, auditing and testing practices and related metering components associated to the market resource and participation level within the EIM.

The elements described in Sections 2.1 and 2.2 are critical in the development and sustainability of accurate and timely submission of SQMD used in settlements.

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3.0 Track 5 Metering Timeline (April Go-Live)



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4.0 EIM Metering Onboarding

4.1 Introduction

To support accurate and timely submission of SQMD used in settlement processing, the CAISO has developed computer based training (CBT)* modules to assist customers.



*To obtain CBT access, work with your organization’s User Access Administrator.

4.2 Participation (Track Meetings)

In collaboration with assigned project managers and the EIM entity, the CAISO Metering team will participate in predesignated Track meetings designed to allow the new EIM entity to request clarification on the requirements, process and documentation, and ensure a mutual understanding of the entity’s metering configuration.

4.2.1 Kick-Off Meeting

The kick-off meeting will include:

- Introductions, discussion of overall objective, related expectations, and project outcomes
- Determination and establishment of frequency of meetings and required participation levels needed to be successful
- Discussion of past practices, i.e., lessons learned, potential cost saving measures, and best practices


4.2.2 EIM Participation

Discuss the EIM entity’s proposed market resources (EIM Portfolio) and participation role (CAISOME vs. SCME). Meetings will take an in-depth review and analysis in identifying participation types (market resources), i.e., generation, interties etc., and physical locations vs. modeled participation.

4.2.3 Metering Requirements

Identify and discuss physical metering requirements and options. Topics will include the various processes and related requirements based on participation role CAISO Meter Entity vs. Scheduling Coordinator Meter Entity (CAISOME vs. SCME).

Metering requirements associated with a CAISOME can be found in CAISO End Use Metering Standards and Technical Specifications located under Attachments A and B of the [Business Practice Manual for Metering](#).

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Those entities wishing to participate as a Scheduling Coordinator Metered Entity (SCME) must meet the metering standards outlined by their Local Regulatory Authority (LRA). In the absence of an LRA, prospective SCMEs are required to meet or exceed CAISO Metering Standards referenced above which can be found on the CAISO website at:

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Metering>


4.2.4 Meter Data Collection and Processing

Focus on the methods, processes, and supporting systems needed to submit SQMD with the highest level of accuracy in accordance with the [Business Practice Manual for Metering](#) Section 6.2, “Settlement Quality Meter Data”.

4.3 Submission of SQMD Plan(s)

EIM entities selecting to participate as an SCME must submit their SQMD plans for CAISO review and acceptance. SQMD plans must be approved before the Scheduling Coordinator may submit bids on its behalf into the CAISO Markets. *CAISOME are not subject to the submission of an SQMD Plan.*

- a. The EIM entity must submit an SQMD Plan for each SCME market resource identified within their EIM metering portfolio following the 5750 Settlement Quality Meter Data (SQMD) Plan – Submission and Approval Process (External). Market Resources include generation (participating and non-participating), interties, intraties, and load.
<http://www.caiso.com/Documents/5750.pdf>
- b. Each SQMD plan must be associated with a unique CAISO New Resource Implementation (NRI) project number (used in tracking and customer notifications).
- c. Each SQMD plan requires a supporting single line drawing excluding those associated with a “Load” market resource type, i.e., DLAP/ELAP.
- d. Single line drawings must have the revenue meter(s) clearly identified which are used for the Revenue Quality Meter Data (RQMD). Single line drawings should also have Transformers with the kV values noted, auxiliary loads that are greater than 1 MW. Refer to OP5750 for the file naming convention to submit single line diagrams.
- e. Single line drawings must be either “as-built” or should have a Professional Engineer (PE) stamp. In the absence of the PE stamp, CAISO accepts an attestation letter from one of the entity’s electrical engineers or engineering managers. Refer to OP5750 for the file naming convention to submit the PE stamp attestation letter.
- f. During EIM onboarding only, the EIM entity will be allowed to submit a spreadsheet (New Resource Implementation Energy Imbalance Market Onboarding Project Loader) representing all market resources IDs within their EIM metering portfolio. EIM entities will be notified by NRI with the related CAISO NRI Project Numbers associated with each Market Resource ID.

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<http://www.caiso.com/Documents/NewResourceImplementationEnergyImbalanceMarketOnboardingProjectLoader.xlsx>

4.3.1 Post Onboarding Updates/Additions

EIM entities must complete a [Project Details Form](#) and submit it to NRI@CAISO.COM for processing to obtain their unique CAISO NRI Project Number. This process will be followed for SQMD plan updates or if new SQMD plans are submitted after CAISO portfolio validation and approval.

<http://www.caiso.com/Documents/ProjectDetailsForm.docx>

SQMD plan templates are to reflect the actual equipment and related processes that will be in place at the time of the EIM metering portfolio testing and validation.

4.4 Review and Acceptance of SQMD Plans

(Must be completed 12 weeks prior to market simulation)

The CAISO metering team will review, validate, and accept the submitted SQMD Plan(s). Questions and clarifications can be addressed via email or during any one of the regularly scheduled Track 5 conference calls.

4.5 EIM Metering Portfolio Design and Validation

(Must be completed 6 weeks prior to market simulation)


Based on the market resource information obtained from the EIM entity, the CAISO metering team working in collaboration with the EIM entity will confirm all market and system-related resource information identified within the EIM entities’ metering portfolios. CAISO metering personnel will then compile and create a visual representation “Bubble Diagram” capturing the physical location vs. modeled participation of each individual resource associated with the EIM entity’s EIM metering portfolio to ensure a high level of meter data accuracy.

In preparation for the EIM metering portfolio testing and validation, the EIM entity shall provide documentation that represents a breakdown of data mapping and/or configurations of all data relationships. Information related to the data processing applications used in the creation of SQMD is also required.

4.6 EIM Metering Portfolio Testing and Validation

(Must be complete 4 weeks prior to market simulation)

Once the EIM metering portfolio has been confirmed and validated, the CAISO and the EIM entity will work together at the EIM entity’s facility to test, validate, and resolve any

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discrepancies associated with the collection and validation of EIM-related market resources. This includes, but is not limited to:

- Data relationships, supporting calculations, and/or algorithms affiliated with all identified market resources, i.e., load calculations, aggregations, etc.,
- Systems associated with the collection and processing of meter data, including Validation, Estimation, and Editing (VEE) practices,
- Unaccounted for Energy (UFE), with and without losses, and
- Procedures and controls related to the processing and submission of SQMD to ensure overall accuracy and timely submission in support of accurate settlement statements.

Testing and validation will include those market resources associated with an “accepted” SQMD plan and any system resources associated with the EIM metering portfolio.

4.7 Approval of EIM Metering Portfolio

(Prior to market simulation)

An “Approval” Letter will be provided to the EIM entity after all SQMD plans associated with their EIM metering portfolio have been “accepted” and they have successfully completed their EIM metering portfolio testing and validation.

4.8 Meter Data Submission

(Day in the Life, Market Simulation, and Parallel Operations)


Settlement statements will be created for the first time during Day in the Life testing, and statement creation will continue through Parallel Operations, but with different frequencies.

The EIM entity will be expected to submit meter data according to the predefined timeline outlined in the settlement statement calendar provided in the Market Simulation Plan (available 6 weeks prior to Market Simulation).

Meter data is submitted through the CAISO MRI-S system and can be submitted either through the user interface or API.

Prior to the submission of actual meter data to CAISO, EIM entities are required to have successfully completed their testing and validation (EIM Metering Portfolio Testing and Validation) and to have obtained CAISO “Approval” (SQMD plans) associated with their EIM Metering Portfolio. This will ensure a high level of meter data accuracy before settlement statements based on this actual meter data are generated.

Day in the Life: New EIM entities will typically not utilize actual meter data during the Day in the Life testing phase. However, they may opt to submit meter data as tests to validate the API and UI interfaces, fine-tune their market resource attributes (i.e., naming convention, interval-size, etc.), and ensure the data submitted is in the right format and successfully

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received and processed within settlements. Since this occurs before the EIM Metering Portfolio Testing and Validation, the data and settlement statements are expected to be less accurate.

- a. **Market Simulation:** Meter data for structured and unstructured scenarios will likely be test data to match the tests being conducted. However, *post-validation* actual meter data can be submitted for further validation of the submission process.
- b. **In Parallel Operations:** The SC representing the EIM entity is expected to submit SQMD that represents actual live production meter data. Settlement statements will be most accurate, as submissions will mimic production activity. As in production, the CAISO expects the EIM entity to submit meter data for all active market resources per Trade Date.

5.0 Support (Meter Data Processing)

The CAISO will provide assistance with meter data and system access related issues associated with processing of SQMD submitted during Day in the Life, Market Simulation, Parallel Operations, Go-Live, and post production support.

To facilitate such support, the EIM entities will submit CAISO CIDI (Customer Inquiry, Dispute and Information) tickets for each identified issue to ensure that their request receives proper tracking and visibility for a timely resolution.

6.0 Cross Team Communication


The CAISO and EIM entity metering teams will meet as needed to coordinate activity and deliverables and clarify expectations.

All questions and issues should be logged in the CAISO CIDI system.

7.0 Things to Consider

Ensuring a high level of accurate settlement statements requires the timely submission of SQMD plans. SQMD plans are to be supported by procedures that promote good data processing, controls, and knowledgeable meter data acquisition personnel. Listed below are some best practices:

- Set up a service level agreement (SLA) among internal business units, i.e., Meter Technicians, Communication Techs, IT Support, etc., to support the timely submission of meter data.
- Include mechanisms and controls to validate that meter data was submitted accurately and processed successfully within the Market Results Interface – Settlements (MRI-S).


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- Understand the meter data relationships within your supporting systems to ensure a high level of meter data accuracy.
- Resource ID and meter interval size that is used to submit the meter data in MRI-S must exactly match the Resource ID provided in the Generation Resource Data Template (GRDT) and Intertie Resource Data Template (IRDT).


8.0 Track 5 Metering Key Deliverables

The following are key deliverables required by the EIM entity and the CAISO.

Deliverable	Responsible	Timing	Description of Deliverable	Format
New Resource Implementation Energy Imbalance Market Onboarding Project Loader	EIM entity	Prior to submission of SQMD plan	<p>During Onboarding of a new EIM entity, the entity may complete one New Resource Implementation Energy Imbalance Market Onboarding Project Loader spreadsheet in lieu of individual Project Detail Forms representing market resources IDs within their EIM Metering Portfolio. Submit to NRI@CAISO.COM for processing to obtain their unique CAISO NRI Project Number for each resource.</p> <p>Expect 2-5 Business days for Project Number to be generated.</p> <p>http://www.aiso.com/Documents/NewResourceImplementationEnergyImbalanceMarketOnboardingProjectLoader.xlsx</p>	New Resource Implementation Energy Imbalance Market Onboarding Project Loader (Excel)
Project Details Form	EIM entity	Prior to submission of SQMD plan	<p>After initial Onboarding has been approved, the EIM entity must complete a Project Details Form for any subsequent SQMD plan changes or additions. Submit Project Details Forms to NRI@CAISO.COM for processing to obtain the unique CAISO NRI Project Number.</p> <p>Expect it to take 2-5 business days to generate the project number.</p> <p>http://www.aiso.com/Documents/ProjectDetailsForm.docx</p>	Project Details Form

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Submit SQMD Plan(s)	EIM entity	16 weeks prior to start of market simulation	<p>Per Tariff section 10.3.7.1, all Scheduling Coordinator Metered Entity's (SCME) associated resources are required to submit an SQMD plan via the 5750 Settlement Quality Meter Data (SQMD) plan – Submission and Approval Process (External) - for each market resource they plan to use within the EIM.</p> <p>http://www.aiso.com/Documents/SQMDPlanTemplate.docx</p> <p>SQMD plan tutorial http://www.aiso.com/Documents/SQMDResourceTemplateTutorial.pdf http://www.aiso.com/Documents/5750.pdf</p> <p>Those entities selecting to participate as a CAISO Metered Entity (CAISOME) will need to follow the current requirements associated with this role. See the Business Practice Manual for Metering for more details.</p>	SQMD plan tutorial Settlement Quality Meter Data (SQMD) plan-Submission and approval process (External) Business Practice Manual for Metering
Review and Acceptance of SQMD Plans	CAISO	12 weeks prior to start of market simulation	The CAISO Metering team will review, validate, and accept the submitted SQMD plans. Address any questions and clarification requests via email (NRI process) or during any one of the regularly scheduled Track 5 conference calls.	SQMD plan
EIM Metering Portfolio Design and Validation (Bubble Diagram)	EIM entity and CAISO	6 weeks prior to start of market simulation	Working in collaboration with the EIM entity, CAISO metering personnel will confirm all related market and system resource information identified within the EIM entities' Metering Portfolio. Based on this information, Metering personnel will compile and create a visual representation "Bubble Diagram" capturing each individual resource's physical location vs. modeled participation within their EIM metering portfolio, to ensure a high level of meter data accuracy.	MS Word

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SQMD Data Mapping	EIM entity	Before EIM metering portfolio testing and validation	In preparation for the EIM metering portfolio testing and validation, the EIM entity shall provide certain documentation. This needs to represent a breakdown of data mapping and/or configurations of all data relationships captured within the entity’s data processing application(s) used in the creation of SQMD associated with market resources identified within their EIM Metering Portfolio.	MS Excel or equivalent
EIM Metering Portfolio Testing and Validation	EIM entity and CAISO	4 weeks prior to start of market simulation	EIM entities must perform on-site testing and validation at their facilities. This should consist of all EIM market and system resources utilizing related systems, processes, and personnel responsible for the collection, validation, and submission of SQMD.	Face-to-face meeting
SQMD Plan Approval Letter	CAISO	Prior to start of market simulation	CAISO will provide an “Approval” Letter to the EIM entity after all SQMD plans associated with their EIM metering portfolio have been “accepted” and they have successfully completed their EIM Metering portfolio testing and validation. The CAISO must approve a Scheduling Coordinator Metered entity’s SQMD plan(s) before the Scheduling Coordinator may submit bids on its behalf into the CAISO markets.	Letter
Data Submission (Day in the Life, Market Simulation, and Parallel Operations)	EIM entity	Based on predefined settlement calendar	Provide test or SQMD according to predefined testing requirements and timelines. Submit this data via the MRI-S system API or user interface.	XML or CSV