



California ISO

Western EIM Sub-Entity Scheduling
Coordinator Role
Final Proposal

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Executive Summary

The CAISO is proposing to create a new EIM sub-entity scheduling coordinator (SESC) role that would allow for multiple scheduling coordinators within a single EIM entity balancing authority area (BAA) to schedule and financially settle non-participating loads and resources directly in the EIM. The current EIM rules require these non-participating loads and resources to be scheduled and settled through the EIM entity representing the BAA. This initiative seeks to create a direct relationship between these scheduling coordinators and the CAISO, allowing for more diverse and expanded participation within the EIM.

There are several entities embedded within a future EIM entity BAA that expressed interest in representing their own loads and non-participating resources within the EIM. This necessitates the creation of a new role within the EIM that allows for a relationship between these EIM sub-entities and the EIM entity responsible for the balancing authority area in which they reside within, as well as with the CAISO.

The EIM sub-entity scheduling coordinator would be responsible for scheduling and settling supply and load that would otherwise be the responsibility of their EIM entity scheduling coordinator. The EIM sub-entity scheduling coordinator would be responsible for submitting base schedules to the CAISO. Settlements and invoicing associated with loads and resources would be performed at the EIM entity and the EIM sub-entity scheduling coordinator level, depending on the scheduling coordinator responsible.

Stakeholder Comments and changes to the proposal

The CAISO appreciates the comments received from stakeholders on this initiative.

A number of stakeholders requested additional clarification on how intra-balancing authority area transfers would be accounted for, specifically how they would be settled with regard to potential over/under scheduling charges. The CAISO reiterates that it is not addressing this topic as it is outside the scope of this initiative. As a practice, CAISO only models intertie transfers between balancing authority areas. All settlement implications for intra-balancing authority area transactions should be resolved as part of the decision by an EIM entity to enable sub-entity participation, and the eligible entity's pursuit of EIM sub-entity participation. The CAISO does not propose enhancements that specifically account for intra-balancing authority area transfers beyond the functionality currently available to EIM market participants, or functionality that may otherwise be useful and made available as part of the sub-entity proposal.

Stakeholders expressed concern regarding the proposed ability for an EIM sub-entity to retain operational control and manually dispatch a resource for which it serves as the scheduling coordinator. The CAISO acknowledges that manual dispatch by an EIM sub-entity has the potential to impact the balancing function being performed by the EIM

entity and should be utilized for operational purposes. Given this potential impact, the CAISO is proposing to make revisions to only allow manual dispatch of a resource by an EIM sub-entity following prior agreement from the EIM entity. This agreement between the EIM entity and EIM sub-entity should be reached during the discussions for a potential sub-entity to pursue this functionality. The CAISO expects the primary reason this type of functionality would be pursued is participation by an EIM sub-entity in a reserve sharing group or similar operational obligation.

A stakeholder raised a concern that an EIM sub-entity submitting their own network model could lead to coordination and reliability issues. The CAISO would like to reiterate that this functionality is only permitted at the discretion of the EIM entity. Additionally, the CAISO would like to highlight that network model submission performed by an EIM sub-entity has to be coordinated with the CAISO as well as the EIM entity. In this way, the CAISO believes management of the network model may be improved through a more accurate and timely representation of the network topology.

Multiple stakeholders brought up a concern regarding how load would be settled should a potential EIM sub-entity have load spread within the service territories of other sub-entities. To avoid this condition, the CAISO in its eligibility criteria notes that a sub-entity “own a distribution system or transmission facilities directly connected to the transmission system of the EIM entity.” This criteria is designed to ensure the CAISO is able to accurately model an EIM sub-entity. To the extent that the model submitted by a potential EIM sub-entity allows the CAISO to accurately model the sub-entity’s load, settlement will be able to be performed directly with that sub-entity. Should this load be unable to be modeled, then the EIM sub-entity role may not be an appropriate means of participation in the CAISO real-time market for the entity in question. Alternatively, specific load serving obligations could be accounted for between the EIM entity and EIM sub-entity or among sub-entities outside of the EIM. It is unreasonable to expect that the EIM account for load serving obligations among entities unless they can be included in the network model and accounted for accordingly.

Stakeholders offered differing feedback on the granularity of settlement as well as the application of the resource sufficiency test. A stakeholder requested the CAISO consider continuing to assess the over/under scheduling test at the balancing authority level, but allocate costs related to a test failure to the EIM entity for sub-allocation per the EIM entity’s OATT. During the EIM foundational initiative work, metered demand was determined as the most appropriate variable for appropriating over/under scheduling funds. Under the EIM sub-entity paradigm, these funds will still be determined based on metered demand but will use the CLAP price native to each sub-entity. Summing these charges back to an EIM entity level for re-distribution per the entity’s OATT is inconsistent with cost causation principles and the foundational EIM design. Another stakeholder requested all elements of the resource sufficiency evaluation be performed at the EIM sub-entity level. On this point, the CAISO reiterates that the purpose of the resource sufficiency evaluation is to ensure each EIM entity balancing authority area can adequately balance their own net supply and demand prior

to engaging in transfers with other balancing authority areas; the EIM sub-entity functionality does not change this purpose.

The proposal is being updated to reflect that the submission of transmission outages can be performed by either the EIM entity, an EIM sub-entity that is also a transmission operator, or a transmission operator who resides within the EIM entity's control area. This optionality will be at the discretion of the EIM entity.

The CAISO clarifies in its final proposal that when EIM sub-entities are granted permission by the EIM entity, and are registered as transmission operators, they will have the ability to utilize the real-time market to preform congestion management.

The CAISO clarifies in its final proposal that an EIM sub-entity possesses the ability to include available balancing capacity (ABC) within the supply base schedules they submit. The ability for an EIM sub-entity to include ABC reduces the potential for price volatility due to the submission of infeasible base schedules within a balancing authority area. This will also help ensure accurate settlement of ancillary services and regulation energy within the base schedule. The CAISO expects the primary reason this functionality would be utilized would be to account for EIM sub-entity operational obligations within the EIM entity balancing authority area.

Scope of this proposal

This initiative is in response to the EIM implementation agreement between CAISO and PSCo.¹ In that agreement, the CAISO committed to pursuing in a stakeholder process, a new EIM role that will allow separate scheduling and settlement for entities within an EIM entity balancing authority area. The proposal details the delegation of authority and responsibilities between EIM entity scheduling coordinators and this new role.

Background

EIM Entity Responsibilities

Currently, EIM entities are responsible for the scheduling, bidding and settling of all loads, interchange transactions and non-participating resources within their balancing authority area. Each EIM entity, through its EIM scheduling coordinator, is responsible for all EIM area generation via the submission of generation base schedules for non-participating resources as well base schedules for participating resources. Each EIM entity is responsible for its area demand forecast should it choose not to use the

¹ Letter Order dated July 29, 2020 in FERC Docket No. ER20-1937 (accepting the EIM Implementation Agreement with the Public Service Company of Colorado, including principles for replacement of the Joint Dispatch Agreement).

forecast provided by the CAISO. The EIM entity scheduling coordinator is also responsible for the submission of base schedules for the base scheduling energy transfer system resource (ETSR). The resource sufficiency evaluation (RSE), which is used to validate that an EIM entity balancing authority area is able to meet its own capacity and flexible ramping requirements are also performed at a balancing authority area level. The ability to access EIM transfers is predicated on the EIM entity's ability to pass the RSE².

Under the current market paradigm, the CAISO market settles the energy differences between resource meter and the resource base schedule of participating resources, flexible ramp movement, bid cost recovery payments, flexible ramp uncertainty award and allocation, and relevant grid management charges with the participating resource scheduling coordinator(s) (PRSC). The participating resource scheduling coordinator receives daily/monthly statements as well as weekly invoices associated with the participating resources' charges and payments.

For non-participating resources, the ISO settles the energy difference between the resource meter and the resource base schedule with the EIM entity scheduling coordinator. In addition, the EIM entity scheduling coordinator is responsible for balancing area costs such as over-scheduling/under-scheduling charges and payments, real time market offsets, bid cost recovery allocations, flexible ramp movement allocation, flexible ramp uncertainty allocation, and non-participating grid management charges. The EIM entity scheduling coordinator receives daily/monthly statements as well as weekly invoices associated with the non-participating resources' charges and payments, as well as balancing authority areas costs.

The EIM entity then sub-allocates the payments and charges associated with the non-participating resources as well as BAA costs to its customers based upon its BAA's OATT.

Outage coordination is also performed at the EIM entity level. CAISO provides an outage management system that allows EIM entity scheduling coordinators to submit approved transmission and generation outages for the EIM entity BAA.

Proposal – EIM Sub-Entity Scheduling Coordinators

The CAISO proposes to create a new scheduling coordinator type for EIM participation by sub-entities within an EIM entity balancing authority area. In addition to the EIM entity scheduling coordinator role that is currently specified in the EIM design, the CAISO proposes that an EIM entity balancing authority area will have the ability to

² [EIM BPM Section 11.3.2.](#)

enable “sub-entity scheduling coordinators” within its EIM balancing authority area.³ These EIM sub-entity scheduling coordinators will interact both with the CAISO directly, as well as with the EIM entity scheduling coordinator representing the balancing authority area within which they have loads and resources. The registration as an EIM sub-entity scheduling coordinator must be supported by the EIM entity and agreed to by the sub-entity; an entity can neither unilaterally decide to become a sub-entity nor be compelled to become a sub-entity.

An EIM sub-entity scheduling coordinator must:

- be an electric utility embedded within an EIM entity balancing authority area and not receive long-term wholesale full requirements services from the EIM Entity;
- own a distribution system or transmission facilities directly connected to the transmission system of the EIM entity for the purpose of providing (a) regulated electric service to eligible retail or wholesale customers, or (b) serve eligible customers in its capacity as a local publicly owned electric utility; and
- own or control one or more resources for the primary purpose of serving its eligible customers.

The EIM sub-entity proposal is limited to electric utilities located in an EIM entity balancing authority area that own a distribution or transmission system and serve eligible customers from resources they own.⁴ These entities, at least in part, depend upon transmission service from the host EIM entity to meet their regulatory obligations; i.e., they may be transmission dependent utilities. This in turn means that they are more likely to have a well-defined service territory bounded by distribution-transmission interfaces, which will allow for more accurate forecasting, modeling, scheduling, and accounting for their associated loads and non-participating resources in the EIM. The CAISO will work through an implementation process with the EIM entity and each EIM sub-entity to implement all of the associated technical requirements for participation prior to participation by the EIM sub-entity scheduling coordinator.

Limiting the scope of the EIM sub-entity proposal to electric utilities with these characteristics is critical because disaggregation of the load within an EIM entity balancing authority area has financial and operational consequences. Having separate load forecasts within a balancing authority area may reduce the accuracy of the aggregated EIM entity load forecast, which is the baseline for the resource sufficiency evaluation. This occurs because the aggregation of individual sub-entity forecasts can diverge from a forecast at the balancing authority area level that the EIM entity is ultimately responsible for financially and operationally. The potential for differences between the forecasted load and the measured demand can in turn lead to cost shifting among the transmission customers within an EIM entity balancing authority area.

³ An EIM sub-entity may be an EIM sub-entity scheduling coordinator or may appoint a third party EIM sub-entity scheduling coordinator to represent its CAISO market participation as a sub-entity. See, *infra.*, discussion of the CAISO required agreements for EIM sub-entity participation.

⁴ The sub-entity may either be a distribution or transmission owner, or both, and provide wholesale or retail service to eligible customers, or both.

Should a mismatch arise between the load base schedule and the measured demand it could lead to generation schedules from one sub-entity serving another, higher uninstructed imbalance energy (UIE) and flexible uncertainty allocation, as well as inappropriate penalty charges following a failure of the balancing test. Moreover, the EIM entity is responsible for reliability within its balancing authority area and must have some level of assurance that the sub-entity will meet its obligations without leaning on other entities within the balancing authority area. This can occur because the resource sufficiency evaluation is performed at the balancing authority area level and the sub-entities will be focused on serving their own forecasted load. Further, any penalties associated with failure of the balancing test will be assessed to metered demand which may not correlate to the entity whose inaccurate forecast may have resulted in failure.

In addition to the criteria outlined above, EIM sub-entity participation must be available within the EIM entity balancing authority area; i.e., an EIM entity must first authorize sub-entity participation within its balancing authority area. Authorization of participation by sub-entities within an EIM entity balancing authority area should be developed through the regulatory process applicable to each EIM entity, most likely by amendment of the EIM entity OATT, prior to such services being implemented by the CAISO. This would likely also require some form of written agreement between the EIM entity and sub-entity to govern matters specific to sub-entity participation within the EIM entity balancing authority area. If EIM sub-entity scheduling coordinator participation is authorized within an EIM entity balancing authority area, the sub-entity must agree to participate and meet all applicable EIM entity and CAISO requirements.

From the CAISO perspective, an EIM entity may choose one of three possible alternatives with respect to enabling participation by EIM sub-entity scheduling coordinators within its balancing authority area. Each EIM entity must determine whether to allow any, some, or allow no electric utilities within its balancing authority area that otherwise meet the CAISO definition of an EIM sub-entity scheduling coordinator to participate. This determination should be made through the associated EIM entity regulatory process for consideration of changes to its provision of imbalance energy services, much as it must do prior to its participation in the EIM.

The EIM entity may elect not to facilitate EIM sub-entity scheduling coordinator participation by electric utilities within its balancing authority area that otherwise meet the CAISO definition of an EIM sub-entity scheduling coordinator. There are legitimate reasons why an EIM entity may need to forgo entirely the financial and operational complexities associated with implementation of sub-entity participation within its balancing authority area—an EIM entity should not be compelled by the CAISO to do so. On the one hand, it may be that the EIM entity does not have the financial or operational capabilities to support participation by even a limited number of sub-entities within its balancing authority area. On the other hand, it may be that the number of eligible sub-entities within its balancing authority area is so numerous as to present unreasonable operational or financial risks to the EIM entity. The question of whether to enable sub-entity participation in the first instance concerns matters best decided by an

EIM entity as the balancing authority for electric utilities within its balancing authority area that otherwise meet the definition of an EIM sub-entity scheduling coordinator.

If an EIM entity determines that sub-entity participation should be permitted within its balancing authority area, the EIM entity will have two options with respect to participation by qualified electric utilities within its balancing authority area. First, the EIM entity may enable participation by any electric utilities within its balancing authority area that meet the CAISO definition of a sub-entity. This option would allow each qualified sub-entity to determine whether it was in its interest to participate as an EIM sub-entity scheduling coordinator. The sub-entity would then need to meet the obligations of the EIM entity and the CAISO with respect to such participation.

Alternatively, an EIM entity may limit participation by electric utilities within its balancing authority area that otherwise meet the CAISO definition of an EIM sub-entity scheduling coordinator. An EIM entity may limit sub-entity participation only if there is an existing and accepted contractual or tariff based practice for imbalance energy accounting within its balancing authority area that distinguishes among its transmission service customers in a manner that includes sub-entity like characteristics. This option would allow an EIM entity to participate in the EIM while preserving an existing and accepted practice among otherwise qualified sub-entities within its balancing authority area.

Implementation of the EIM changes the nature of imbalance energy services provided by the EIM entity. Today the EIM entity schedules and settles all load and non-participating resources with the CAISO. In some cases, the CAISO has recognized existing and accepted practices of imbalance energy accounting within an EIM entity balancing authority area that must be accommodated for the EIM entity to participate. To date these existing and accepted practices have been honored through the exclusion of some entities within the EIM entity balancing authority area with existing and accepted practices for imbalance energy accounting different from the EIM.⁵ Now it is necessary for the CAISO to honor an existing and accepted EIM entity practice that distinguishes how imbalance energy is accounted within its balancing authority area other than by exclusion. EIM entities with a contractual or tariff based practice of distinguishing among transmission customers should be permitted to participate in the EIM while continuing to honor their existing and accepted practices. At a minimum, any EIM entity with an existing and accepted contractual or tariff based practice documented in its EIM implementation agreement should be honored, but there may be other such practices that justify such a distinction.⁶ Ultimately, each EIM entity should have the

⁵ For example, the phase 1 implementation of the Balancing Authority of Northern California (BANC) and more recently the Los Angeles Department of Water and Power (LADWP) implementation agreements contemplated exclusion of certain entities within their balancing authority areas.

⁶ The CAISO recognizes that EIM sub-entity participation is a significant change that may take some time to implement. Therefore, implementation of any sub-entity within an EIM entity balancing authority area based on an existing and historic practice need not occur immediately upon implementation of the EIM entity. However, the sub-entity must be implemented within a reasonable period of time following implementation of the EIM entity. During this period, the CAISO and the EIM entity should confirm the intention of the EIM sub-entity, and may take appropriate steps towards

opportunity to determine whether to enable sub-entity participation for any, some or none of the electric utilities within its balancing authority area that otherwise meet the CAISO definition of an EIM sub-entity.

The following sections outline the CAISO's proposal.

Roles and Responsibilities

Each EIM sub-entity scheduling coordinator shall function as its own load serving entity (LSE) within its EIM sub-entity area. To facilitate this, each EIM sub-entity scheduling coordinator will have its own load aggregation point (LAP) and will be responsible for the submission of demand forecasts to both the CAISO and the EIM entity within whose balancing authority area it resides.

Each EIM sub-entity scheduling coordinator will also be responsible for the submission of base schedules through the CAISO base schedule aggregation portal (BSAP) for resources within its area for which it serves as the scheduling coordinator. **These base schedules can include available balancing capacity.** For supply resources within an EIM BAA to be settled directly with the CAISO, the resources will need to have either the EIM sub-entity scheduling coordinator or a participating resource scheduling coordinator as their registered scheduling coordinator. The scheduling coordinator will submit bids, or schedules where appropriate, to the CAISO using the scheduling infrastructure business rules (SIBR) application.

To the extent that EIM sub-entities are registered as transmission operators, and are granted permission by the EIM entity, they will have the ability to utilize the real-time market to perform congestion management. This authority involves the activation and deactivation of transmission contingences, as well as the conformance of transmission equipment they serve as the transmission operator for.

Resource Sufficiency Evaluation

The RSE will continue to be performed at the EIM entity level. This approach is consistent with the responsibility of the balancing authority to ensure supply and load balance for their area. While there is a potential for a EIM sub-entity to submit inaccurate or deficient base schedules while the EIM entity as a whole passes the test, the CAISO reiterates that the test is intended to ensure the balancing authority area as a whole remains balanced.

Within the proposed resource sufficiency evaluation design, base schedules can be submitted by participating resource scheduling coordinators and sub-entity scheduling coordinators prior to the T-55 RSE, with the exact timing being specified by the EIM

implementation including network model configurations and information sharing to facilitate the process should the sub-entity desire to move forward.

entity. Following the T-55 RSE, schedules can only be modified by the EIM entity scheduling coordinator; any modification should be communicated to the EIM sub-entity. The modifications can be viewed by the sub-entity within the CAISO BSAP applications. Any financial impact resulting from these modifications should be resolved between the EIM entity and sub-entity based on the EIM entities OATT or previously established bilateral contractual arrangements. This design allows for EIM sub-entity scheduling coordinators to maintain flexibility and control of their resources by updating their base schedules prior to the T-55 RSE, while also allowing the EIM entity scheduling coordinator to retain reliability control. EIM entities are ultimately responsible for the capacity and flexible ramping tests which are performed as part of the RSE at the EIM entity level and are generally associated with their balancing authority function.

Model Submission

CAISO maintains the full network model (FNM) for all EIM entities. The CAISO proposes to require EIM entities to submit full network model updates on behalf of their entire balancing authority area, or with the EIM entities' permission for EIM sub-entities to submit their own network model and network model updates. Should an EIM sub-entity submit their own model they will be responsible for updating the EIM entity of the changes as well as the CAISO. All model updates, performed by either an EIM entity or by a sub-entity will be subject to the already established CAISO FNM updating process. Any resource that the sub-entity is acting as the scheduling coordinator for is required to be modeled in the CAISO FNM. Additional details can be found in the BPM for Managing Full Network model⁷.

Dispatch Options

Automatic Dispatch System

Automatic Dispatch System (ADS) data is pulled on a resource specific level. The CAISO proposes to provide access for ADS resource data within the sub-entity to be pulled by both the sub-entity and the EIM entity. The CAISO will settle the resulting metered resource output. Any financial impact resulting from this action should be resolved between the EIM entity and EIM sub-entity.

Manual Dispatch

The CAISO proposes an EIM sub-entity will have the ability to perform manual dispatch on resources they are registered as the scheduling coordinator for, **with prior agreement from the EIM entity**. This **action** will be accomplished through an application programming interface that accesses BAAOP. Any manual dispatches performed by an EIM sub-entity will be settled as imbalance energy. **Given that a manual dispatch performed by an EIM sub-entity has the potential to impact the balancing function of the EIM entity, the CAISO expects the use of this functionality to be for reliability related**

⁷ [CAISO BPM for Full Network Model](#)

actions in accordance with previously agreed upon circumstances and conditions, such as participation within a reserve sharing group or similar operational purpose.

The CAISO also proposes EIM entities will also possess the ability issues manual dispatch instructions for resources within their balancing authority area as they retain ultimate responsibility for balancing. Financial impact resulting from a manual dispatch by the EIM entity should be resolved between the EIM entity and sub-entity based on the EIM entities OATT or previously established bilateral contractual arrangements.

Forecasting

Supply Forecast

The CAISO proposes that an EIM entity retain the ability to require an EIM sub-entity to use the CAISO provided forecast, or to allow the sub-entity to use its own forecast. Should an EIM sub-entity scheduling coordinator elect to use its own forecasting services for variable energy resources' supply output, the CAISO will treat the forecast similar to an EIM entity scheduling coordinator electing to use their own forecast⁸. The preference of the forecast used by the EIM sub-entity will be specified to the CAISO and the EIM entity. To enable this functionality, each resource within a EIM sub-entity scheduling coordinator will need its own unique resource ID, as well as telemetry. To ensure that the EIM entity is still able to perform its balancing function and pass the RSE, the CAISO proposes to provide the ability for the EIM entity to view, in a summed format, the forecast of all of the variable energy resources within its balancing authority area. Forecasts for variable energy resources submitted by third party services, or provided by the CAISO that are used in the RSE will be fixed after T-55 as is currently done within the EIM design, this serves to reduce the variability between RSE iterations.

Load Forecast

The CAISO proposal allows EIM entities to determine if they will be responsible for the load forecast for their entire area, or if they will allow the EIM sub-entities to determine their own load forecast. In addition, the EIM entity will retain the authority to allow an EIM sub-entity to use its own load forecast, or to require the sub-entity to use the CAISO provided forecast. If any EIM sub-entity within a balancing authority area elects to submit its own load forecast, the entire balancing authority area will automatically be subject to over/under scheduling charges. An example illustrating how an EIM sub-entity load forecast can impact the settlement of the entire balancing authority area can be seen in the example provided in Table 1 of the Meter Data, Settlements and Invoicing section of the proposal.

⁸ [CAISO Tariff Appendix Q – Eligible Intermittent Resource Protocol](#)

Meter Data, Settlements and Invoicing

The EIM sub-entity scheduling coordinator will submit meter data to the CAISO for the non-participating resources within its area. Additionally, each EIM sub-entity scheduling coordinator will be required to submit load meter data for its associated load serving entity in the same manner as the EIM entity scheduling coordinator.

The CAISO settlements process will create statements and invoices at the EIM sub-entity scheduling coordinator level for all charges and allocations associated with the EIM sub-entity's resources. CAISO settlements shall continue to create statements and invoices at the EIM entity level. The CAISO is proposing to continue allocating BCR charges and real time offset charges at the EIM entity level with sub-allocations to EIM sub-entity scheduling coordinators performed according to the EIM entity's OATT. The EIM entity shall have the ability to access the EIM entity statements and invoices as well as all EIM sub-entity statements and invoices for sub-entities within their balancing authority area. This approach will allow for flexibility between EIM entities and their potential sub-entity scheduling coordinators.

As described in the RSE section, the CAISO shall perform the RSE at balancing authority area level. Since the Balancing Test of the RSE is performed at the BAA level, the CAISO is proposing to continue to perform the over-scheduling and under-scheduling assessment at the balancing authority area level. The over/under scheduling assessment is determined based on the net balancing authority area load deviation. If the net balancing authority area load deviation exceeds any of the penalty thresholds, the CAISO settlement shall calculate the over-scheduling and under-scheduling charges at the EIM sub-entity level based on the sub-entity deviations at the associated over/under scheduling LAP penalty price. If the balancing authority area passes the balancing test or is within the threshold, the EIM sub-entity level will be allocated a portion of the over-scheduling and under-scheduling total costs based on the metered demand within the sub-entity and the sub-entity's submitted base schedule.

Table 1: Example of Over/under scheduling settlement allocation

| Area | T-40 Forecast (MW) | Net Supply (MW) | Hourly Base Schedule (MW) | Meter Demand (MW) | UIE Quantity (MW) | CLAP Price (\$/MW) | Penalty Price (\$) | Charge (\$) |
|------------|--------------------|-----------------|---------------------------|-------------------|-------------------|--------------------|--------------------|-------------|
| EIM SC 1 | 118 | 120 | 117.6 | 128.75 | 11.15 | 20 | 5 | 55.75 |
| EIM SESC 1 | 154 | 158 | 154.80 | 159.50 | 4.70 | 19 | 4.75 | 22.33 |
| EIM SESC 2 | 79 | 78 | 76.44 | 78.50 | 2.06 | 21 | 5.25 | 10.81 |

| | | | | | | | | |
|------|-----|------------------|--------|--------|---------------------|----|----|----|
| ELAP | 351 | 356 ⁹ | 348.84 | 366.75 | 17.91 ¹⁰ | NA | NA | NA |
|------|-----|------------------|--------|--------|---------------------|----|----|----|

Flexible Ramp Movement shall be settled with the EIM sub-entity for all resources the sub-entity is serving as the scheduling coordinator for. Flexible ramp movement allocation and flexible ramp uncertainty allocation will also be settled at the EIM sub-entity level for resources the sub-entity is serving as the scheduling coordinator for, as they are calculated at a resource specific level.

Each EIM sub-entity scheduling coordinator will be responsible for ensuring all generation and load within its area is metered in accordance with Section 29.10¹¹ of the CAISO tariff. Each sub-entity scheduling coordinator will also submit settlement quality meter data (SQMD) as described in Section 8 of the CAISO BPM for the Energy Imbalance Market.

System Access

The proposed EIM sub-entity scheduling coordinator role will have access to the following CAISO systems:

Automatic Dispatch System (ADS)

- EIM entity and EIM sub-entity scheduling coordinators will both have access to ADS for resources within their respective areas.

Balancing Authority Area Operations Portal (BAAOP)

- **If permissioned by the EIM entity and acting as a transmission operator, the EIM sub-entity scheduling coordinator will have access to BAAOP for the purposes of viewing market solutions and performing transmission conformance as part of their responsibilities as a transmission operator.**
- **If permissioned by the EIM entity,** the EIM sub-entity scheduling coordinator will have the ability to submit manual dispatch instructions via an API (automated programming interface) for resources they are the registered scheduling coordinator for.

Base Aggregation Scheduling Portal (BSAP)

- EIM sub-entity scheduling coordinators will have access to BSAP to submit base schedules at for the T-75 and T-55 RSE.

⁹ The over/under scheduling requirement of 1% of forecast is exceed. 5MW > 3.51MW

¹⁰ The metered UIE exceeded the 5% test applied to the hourly base schedule. 17.91 MW > 17.44 MW

¹¹ [CAISO TARIFF. Section 29 - Energy Imbalance Market](#)

Customer Market Results Interface (CMRI)

- EIM sub-entity scheduling coordinators will have access to CMRI for the purposes of viewing submitted load, generation, as well as the results of the T-75 resource sufficiency evaluation.

Market Results Interface for Settlements (MRI-S)

- EIM sub-entity scheduling coordinators will have access to invoices of load, generation and interties that are associated with the EIM sub-entity scheduling coordinator. An invoice reflecting these values will also be available at the balancing authority area level for review by the EIM entity scheduling coordinator.
- EIM sub-entity scheduling coordinators will have access to MRI-S for the purposes of submitting required meter data for the non-participating resources within its area and for its associated load serving entity.

CAISO webOMS

- EIM sub-entity scheduling coordinators will have access to webOMS where appropriate. This will be determined based on their agreement with an EIM entity to submit generation outages for resources they are the scheduling coordinator for as well as transmission outages for equipment they serve as the transmission operator for. EIM sub-entities who are RC West participants will continue to submit transmission outages via CAISO webOMS.

Energy Transfers

The EIM entity scheduling coordinator will be responsible for the submission of all intertie transfers used by EIM sub-entity scheduling coordinators as part of their base schedule. The EIM entity is responsible for ensuring balanced schedules, net interchange, and tagging within its balancing authority area. The EIM entity will retain responsibility for the scheduling of base ETSTRs representing interchange from the balancing authority area as a whole. Allowing EIM sub-entities to represent an intertie transaction on their base schedule creates the potential for conflict with another sub-entity or the EIM entity should the submitted schedules exceed the intertie limit. This initiative does not seek to standardize solutions to resolve a potential exceedance; instead, it proposes this conflict be resolved **according to previous** agreements between the EIM entity schedule coordinators and EIM sub-entities within their control area. **These intertie schedules should be reflected on the base schedule submitted by the EIM entity.**

The CAISO is not proposing to specify how intra-EIM area transfers are conducted, rather the CAISO leaves that to agreement between the EIM and EIM sub-entities. The CAISO will settle the base schedules submitted against metered demand as described above.

Outage Management

All outages submitted to the CAISO will be through the webOMS application. EIM entities that are RC West members will submit outages in accordance with the Reliability Coordinator Services BPM and the Outage Coordination RC0320 and RC0630 operating procedures.¹² Outage data submitted by the EIM sub-entity scheduling coordinator will be available within the CAISO webOMS system for review by the EIM entity.

For EIM entities that are that are not members of RC West, the EIM entity scheduling coordinator will be responsible for the submission of all generation outages for their area. The CAISO will provide the option for an EIM entity scheduling coordinator to delegate authority to EIM sub-entities to submit generation outages for resources they are acting as the scheduling coordinator for; these outages will be viewable by the EIM entity scheduling coordinator.

The responsibility for transmission outage submission will remain with the EIM entity, however with their approval an EIM sub-entity, or a transmission operator within the EIM entity's control area will be able to submit outages; these outages will be viewable to the EIM entity scheduling coordinator. The outage submission process does not replace the balancing authority area and transmission operator coordination required by neighboring Reliability Coordinator (RC) areas.¹³ The CAISO will block all outages submitted by the neighboring RC for EIM entities, and the EIM entity scheduling coordinator will be responsible for ensuring outages submitted to the CAISO are consistent with outages submitted to their respective RC.

Onboarding of EIM Sub-Entities

Should an entity elect to pursue sub-entity functionality they must notify the CAISO that the entity:

- (a) has been authorized by the EIM entity to participate as an EIM sub-entity Scheduling Coordinator,
- (b) meets the CAISO qualifications for participation as an EIM sub-entity, and

¹² [RC WEST Outage Coordination Process](#)

¹³ [NERC IRO-017-1 – Outage Coordination](#)

(c) has executed the applicable *pro forma* service agreement.

The CAISO proposes that it shall then, at its discretion, determine the EIM sub-entity implementation date based on the complexity and compatibility of the associated transmission and technology systems; the date must be not less than twelve months and not more than twenty-four months after the date that the CAISO receives the sub-entity notice.

The CAISO proposes to charge new EIM sub-entities for their implementations at cost of service¹⁴. For projection purposes, an hourly rate of \$200 was used for all tracks; this fully burdened rate was calculated based on the recent cost of service study. However, for billing purposes, hourly bill rates per track will be determined on an annual basis; the CAISO does not project the hourly rates will exceed \$200 per hour for any track. The preliminary projections to onboard an EIM sub-entity is between \$216,000 and \$304,000 and is based on the implementation tracks detailed within this section. The actual implementation costs per EIM sub-entity will vary depending on factors such as, but not limited to, if the BAA is already an EIM participant and the level of independence that the EIM entity gives the sub-entity in relation to FNM submission/maintenance, forecasting and outage submission. A \$260,000 deposit is required to initiate implementation. The CAISO proposes each EIM sub-entity's implementation project deposit(s), actual costs incurred, and applicable interest earnings will be tracked and managed independently from other implementations. The EIM sub-entity will be responsible for actual costs incurred by the CAISO in conducting the sub-entity's implementation. The CAISO proposes to draw from the implementation deposit to cover actual costs incurred during implementation. Whenever the implementation costs exceed the deposit, the CAISO proposes for additional deposits in \$25,000 increments; the EIM sub-entity would be expected to pay the invoice no later than thirty (30) days after the date of receipt. Any invoice payment past due will accrue interest, per annum, calculated in accordance with 5 C.F.R. 1315.10.

At the end of the implementation, the CAISO proposes to provide a report that details deposit(s) received, actual costs incurred, and applicable interest earnings (on deposit balance) for each implementation project. Interest will be calculated at the end of the implementation project, from the time the deposit(s) was received. The calculation will be based on the average earning of the bank account, in which the deposit is held, on the remaining amount of the deposit. Any unused deposit remaining after the implementation is completed plus interest on the remaining deposit will be returned to the EIM sub-entity within ninety (90) calendar days after implementation is completed and approved by both the CAISO and EIM sub-entity.

¹⁴ These costs are separate from the EIM entity implementation costs unless the EIM Implementation Agreement already contemplates sub-entity participation within the EIM entity balancing authority area, in which case the sub-entities previously identified in the EIM Implementation Agreement will not be assessed these additional costs. These costs are also separate from the EIM administrative charge, which the CAISO will monitor for the additional burden to support the sub-entity functionality.

In the event an agreement is terminated by either party or both parties after the EIM sub-entity's implementation has begun then the CAISO will make every attempt to halt work and related costs on the implementation as soon as practical. Any costs incurred related to the implementation will be drawn against the deposit provided. Any unused deposit will be returned to the EIM sub-entity within ninety (90) calendar days after the implementation costs are reconciled.

The CAISO then proposes to implement the EIM sub-entity scheduling coordinator agreement according to the general outline of the following steps. The implementation process takes approximately 18 months and includes several activities, which often run in parallel. **The CAISO expects the prospective EIM sub-entity to keep informed and coordinate where necessary with the EIM entity regarding the status of the sub-entity's implementation.** These efforts are typically managed as six distinct work streams, or tracks. The six tracks are described below:

Track 1: Planning and Program Management

CAISO staff will assist the EIM sub-entity's project management team to plan and track all implementation tasks, issues and risks through regular meetings and status reports. The ISO will help the EIM sub-entity to define a detailed project schedule outlining all the steps leading to the market simulation, parallel operations and full participation. The EIM sub-entity is encouraged to determine their staffing and project roles to manage EIM preparations as part of this track.

Track 2: Policy, Legal, and Contracts

CAISO staff will support the EIM sub-entity's policy and legal staff to conduct any formal or informal outreach to stakeholders, make any applicable tariff or OATT changes, and enter into the required agreements for participation. As an EIM sub-entity, your organization must enter into contracts with the ISO. Likewise, all resources that plan to participate and provide bids must become an EIM participating resource by entering into standard contracts. Both your organization and participating resources will need to select scheduling coordinators, who will directly bid or self-schedule into EIM and handle the settlement process. Through this track, the EIM sub-entity will determine their participating resource strategy to determine which resources will participate in EIM through individual bids.

Track 3: Full Network Model and Resources

CAISO staff will work with the EIM sub-entity's energy management team to integrate the sub-entity's network model data with the CAISO's full network model for market purposes. This joint team will work together to accurately integrate the sub-entity's network model into the ISO full network model, which is essential for economic resource dispatching. The sub-entity will have an opportunity to test connectivity and see the market model prior to market simulation testing.

Track 4: System Integration and Testing

CAISO staff will provide the EIM sub-entity's implementation team with information and access to non-production environments to prepare for and execute integration and testing between CAISO systems and the sub-entity's systems for market data exchange. EIM sub-entities may be required to modify impacted system and you may want to whether or not to engage a third party to assist with systems development and integration. EIM sub-entities will need to modify their operating and bid-to-bill systems associated with EIM participation to enable reliable ISO control and accurate settlements. Affected systems include, but are not limited to, the energy management system, forecasting, scheduling, dispatch, outage management and settlements.

The integration and testing team will perform system integration, security and functional testing of all impacted systems and processes. During market simulations, the team will test both the system and market interplay between the ISO and your participating resources under simulated market conditions. The ISO will publish a market simulation test plan outlining scenarios, a timeline and expected actions prior to testing.

Track 5: Metering and Settlements

The ISO metering team assist you in implementing the various metering requirements and processes based on your selected participation role as either a CAISO Metered Entity (CAISOME) or a Scheduling Coordinator Metered Entity (SCME). Most EIM sub-entities will likely choose to be a Scheduling Coordinator Metered Entity (SCME) to meet metering requirements. Likewise, the ISO Settlement team will participate in regular Track 5 meetings designed to allow the EIM sub-entities an opportunity to discuss the Settlement process, Settlement calculations, and Settlements timelines.

Track 6: Operations Readiness and Training

Track 6 provides a series of training events throughout the EIM market timeline. The events include computer based training modules for various roles and responsibilities, train-the-trainer courses which include hands-on scenario trainings with application tools, and optional participation in modeling workshops other tracks. The CAISO will work in partnership with the EIM sub-entity project leads and their designated trainers to prepare the designated trainers to facilitate needed EIM training to sub-entity staff. Training support is provided for go-live initiation as needed.

Finally, this track will certify readiness and transition to binding EIM production. The ISO will work with you to develop an activation readiness plan that includes a "go-live" schedule, system activation steps, communication protocols and a robust support plan. This team will jointly track progress and report preliminary results during market simulation. The market simulation have demonstrated that systems and operations personnel are ready to operate as anticipated.

New Pro Forma EIM Sub-Entity Agreement and EIM Sub-Entity Scheduling Coordinator Agreement

Establishing the EIM sub-entity scheduling coordinator relationship will require two new *pro forma* agreements; one to define the sub-entity and another to represent the sub-entity.¹⁵ These agreements will conform to CAISO standards for *pro forma* service agreements and their companion scheduling coordinator agreements. As such, these agreements will be similar to the *pro forma* EIM entity agreement and EIM entity scheduling coordinator agreement with modifications to account for the different roles and responsibilities associated with a sub-entity and representation of a sub-entity. As with other CAISO *pro forma* agreements, the EIM sub-entity agreement and companion EIM sub-entity scheduling coordinator agreement will reference the CAISO tariff provisions that support the roles and responsibilities outlined in this proposal. **In addition, the CAISO will require execution of a *pro forma* implementation agreement that establishes the commitment of a sub-entity within an existing EIM entity balancing authority area to compensate the CAISO for its implementation costs.** The details of these new *pro forma* agreements will be developed as part of the tariff stakeholder process associated with this initiative.

Stakeholder engagement and next steps

Energy Imbalance Market Governing Body

The CAISO believes the EIM Governing Body should have primary authority in the approval of the proposed changes.

The rules that govern decisional classification were amended in 2019 when the Board adopted changes to the Charter for EIM Governance and the Guidance Document. An initiative proposing to change rules of the real-time market now falls within the primary authority of the EIM Governing Body either if the proposed new rule is EIM-specific in the sense that it applies uniquely or differently in the balancing authority areas of EIM entities, as opposed to a generally applicable rule, or for proposed market rules that are generally applicable, if “an issue that is specific to the EIM balancing authority areas is the primary driver for the proposed change.”

This initiative satisfies both tests. The tariff rules to create a new type of scheduling coordinator role would be EIM-specific, because it would be available only to represent market participants within the balancing authority areas of EIM entities and not across the entire market footprint. In addition, the primary driver for addressing this topic is to

¹⁵ The EIM sub-entity agreement must be executed by the EIM sub-entity, while the EIM sub-entity may also execute the EIM sub-entity scheduling coordinator agreement or designate a third party scheduling coordinator to represent its participation in the CAISO markets as an EIM sub-entity. This approach is consistent with scheduling coordinator representation in CAISO markets generally.

resolve an issue that was initiated by one EIM balancing authority area. Accordingly, this initiative would fall within the primary authority of the EIM Governing Body.

Based on stakeholder comments to both the straw and revised straw proposal, and the nature of the changes included in the draft final proposal the CAISO will proceed under the assumption that this initiative resides within the EIM Governing body's primary approval authority. Stakeholders are encouraged to submit written comments should they disagree or have questions.

Schedule

The schedule for stakeholder engagement is provided below. The CAISO targets the June 30, 2021 EIM Governing Body and July 14-15, 2021 CAISO Board of Governors' meeting.

| Date | Event |
|------------------|---|
| May 18, 2021 | Post final proposal |
| May 26, 2021 | Comments due on final proposal |
| June 2, 2021 | Post revised draft tariff language |
| June 11, 2021 | Comments due on revised draft tariff language |
| June 16, 2021 | Stakeholder call on revised draft tariff language |
| June 30, 2021 | EIM Governing Body Meeting |
| July 14-15, 2021 | CAISO Board Meeting (Consent Agenda) |