January 27, 2021

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20246

Re: California Independent System Operator Corporation
Real-Time Settlement and Base Schedule Timeline Enhancements
Docket No. ER21-____-000

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO)[1] respectfully requests the Commission accept changes to its tariff that enhance real-time settlement and base schedule submission in the energy imbalance market (EIM).[2] The changes will support new EIM entity onboarding efforts in 2021 and increase the efficiency of EIM outcomes. The CAISO requests an effective date of April 1, 2021 for the first tranche of changes, and a tentative October 1, 2021 effective date concurrent with the fall 2021 release for the second tranche of changes. The CAISO will submit a subsequent filing in this proceeding five business days after the actual implementation date that specifies the effective date associated with the second tranche of changes. Filing these revisions together at this time and staggering the effective dates will assist the CAISO and stakeholders by providing continuity and certainty.

I. Summary of Tariff Changes

The first tranche of tariff changes to be effective April 1, 2021 includes changes that are distinct and severable into three independent groups.[3] The first set applies when EIM participants elect to modify an energy transfer between balancing authority areas scheduled in the EIM as a base schedule after the hourly deadline for submitting EIM base schedules. The CAISO proposes to use the pricing node at the location of the schedule changes to settle the imbalance energy resulting from these schedule

[1] Capitalized terms not otherwise defined herein have the meanings set forth in the Master Definitions Supplement, Appendix A to the currently effective CAISO tariff.

[2] CAISO submits this filing pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d, and Part 35 of the Commission's regulations, 18 C.F.R. Part 35.

[3] These three sets of tariff changes are not interdependent and reflected in different tariff sections. Commission action on one set of proposed tariff revisions will not affect whether the remaining revisions are just and reasonable.

changes, rather than the ratio of both the sending and receiving balancing authority area energy prices it uses today. This requires EIM participants to utilize the CAISO's settlement process to settle any imbalance energy resulting from these transfer schedule changes. This will address inappropriate cost shifting between balancing authority areas that can occur under the current CAISO settlement rules.

The second set involves a change in how the CAISO allocates costs for real-time market bid cost recovery payments among balancing authority areas. Currently, the CAISO allocates the cost of these payments to the balancing authority area in which they were incurred, with a portion of these costs allocated between balancing authority areas to account for costs incurred to support energy transfers. This allocation between balancing authority areas is currently based on energy transfers, uninstructed imbalance energy, and unaccounted for energy quantities. Under its proposal, the CAISO will no longer consider uninstructed imbalance energy and unaccounted energy in this allocation, and will only base the adjustment on energy transfer quantities and measured demand, *i.e.*, demand including exports. This approach is more consistent with cost causation principles because transfer quantities relative to measured demand fully reflect the portion of bid cost recovery payment costs incurred in one balancing authority area to support energy transfers to another.

The final change in the first tranche involves base schedules submitted by EIM participants. Base schedules reflect an EIM entity's planned supply resource schedules and demand forecast for their balancing authority area. They are the baseline for imbalance energy settlement in the EIM and an important component of the EIM entity's hourly resource sufficiency evaluation, which ensures EIM entities schedule sufficient supply resources. The CAISO proposes to allow EIM participants to submit base schedules for energy production below an EIM resource's minimum load so that base schedules can reflect the energy produced when a resource is starting up. This change will enable the resource sufficiency evaluation to consider this additional energy production and decrease the EIM participating resource's uninstructed imbalance energy.

The second tranche includes two sets of tariff changes that are severable from and independent of each other and the tariff changes in the first tranche.[4] The first group of changes will allow an EIM entity to elect not to have the CAISO settle unaccounted for energy for its balancing authority area if the EIM entity reports its load based upon its supply production and assumed transmission losses. This approach contrasts with the practice used by balancing authorities with load serving entities that base their load on end-use load meter readings (*e.g.*, the CAISO balancing authority area). Unaccounted for energy is a useful settlement category for balancing authorities with load serving entities that base their load on end-use load meters because it can

[4] Each of these tariff changes in the second tranche is reflected in different tariff sections than the other proposed changes. Commission action on one set of these tariff revisions will not affect the justness and reasonableness of the other tariff revisions.

produce differences between supply adjusted for losses and metered load. There is no such difference for balancing authorities that derive their load from supply production and assumed losses. For these balancing authorities, unaccounted for energy settlement can double count losses and cause cost shifts that can be avoided by not settling unaccounted for energy in the balancing authority area.

The CAISO also proposes to change the timeline for submitting EIM base schedules in this second tranche. This proposal moves the final hourly base schedule submission deadline from 40 minutes before each hour to 30 minutes before each hour. This timeline shift will allow EIM entities to submit more accurate base schedules because the schedules will reflect updated resource and interchange information closer to the hour. An example of the information the CAISO expects may be updated in this timeframe is the "slice" schedules administered by the Bonneville Power Administration to reflect the hydroelectric production forecast after 40 minutes prior to the operating hour. The CAISO will continue to run the resource sufficiency evaluation 40 minutes before the start of each hour, and it will conduct the final resource sufficiency evaluation run 30 minutes before the start of each hour to align with the proposal and assess whether EIM entities have scheduled sufficient supply resources.

II. First Tranche of Tariff Changes

The first tranche of changes the CAISO proposes consists of three servable and independent sets of tariff changes. The CAISO proposes to implement these changes on April 1, 2021 so they would be available for the five EIM entities onboarding in the spring of 2021 in addition to the entities already participating in the EIM.

A. Settlement of EIM Base Transfer Schedule Changes

Base schedules reflect EIM entities' planned system operation and are the baseline for imbalance energy settlement in the EIM. The CAISO real-time market settlement process does not settle the energy production or demand reflected in a base schedule. Rather, the EIM settlement process settles imbalance energy, which is the difference between the base schedule and the actual energy produced or consumed.

In addition to submitting base schedules for individual supply resources' planned output and for demand, EIM entities submit base schedules for energy transfers between balancing authority areas, which typically facilitate bilateral energy sales between balancing authorities that settle outside of the CAISO market. These transactions can involve a transfer schedule from one balancing authority area to another or a wheeling schedule that transfers energy across multiple EIM balancing authority areas.

The EIM does not optimize base transfer schedules—they are kept constant and not settled by the CAISO—and no one has suggested base transfers schedules should

be optimized in the EIM. However, EIM entities can modify their base EIM transfer schedules after the final opportunity to adjust base schedules in the EIM and before the e-tag submission deadline. These changes to EIM base transfer schedules, or "base ETSR changes," are what concern the proposal to require settlement of base ETSR changes.

At the start of the EIM, there was no CAISO settlement associated with base ETSR changes.[5] Through a stakeholder initiative in 2017, the CAISO developed an enhancement to allow EIM entities the option to settle base ETSR schedule changes through the CAISO market instead of bilaterally.[6] EIM entities would have the option to settle base ETSR changes if they agreed upon the pricing location on each side of the transaction and a ratio for sharing of the settlement prices at those locations. Stakeholders viewed this option as a means to simplify the process of EIM entity bilateral settlement of base ETSR changes, which the CAISO agreed was a worthwhile enhancement. In 2018, the Commission accepted the CAISO's proposal,[7] and this enhancement has since facilitated CAISO settlement of base ETSR changes for EIM entities desiring such CAISO action.

Following implementation of optional base ETSR change settlement, the CAISO identified a potential settlement issue when the energy associated with EIM base schedules wheels through multiple EIM balancing authority areas. Under the current rules, if some EIM entities choose to not settle these transfer base schedule changes through the CAISO settlement process, costs may shift between EIM entities because the CAISO settlements process may pay or charge one EIM entity for a transfer into or out of its balancing authority area but not pay or charge for the opposite leg.

Accordingly, the CAISO proposes herein to require that EIM entities settle base ETSR changes through the CAISO market at a common location and price.[8] By requiring all EIM entities to settle base ETSR schedule changes, the CAISO will appropriately charge and pay for all of the imbalance energy involved in a wheeling schedule change. The proposed settlement rule changes in this filing address the inappropriate cost shifting between EIM balancing authority areas that currently can

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5 For more information about energy transfer system resources, *see* https://www.westerneim.com/Documents/EIMProcessOverview-FacilitatingETSRs.pdf.

6 CAISO Consolidated Energy Imbalance Market initiatives. http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=6097710F-BBDF-4EB8-BE56-7139453C7420.

7 *Cal. Indep. Sys. Operator Corp.*,162 FERC ¶ 61,120 (2018), at p. 25 (finding that CAISO's proposal to settle imbalances between base ETSRs upon request will benefit EIM entities by providing greater transparency and additional options for settling imbalance energy).

8 *See* proposed changes to CAISO Tariff section 29.11(r).

occur when some EIM entities elect to settle base ETSR changes and others do not, particularly when the EIM base schedule involves wheeling energy across multiple EIM balancing authority areas.

The following example describes the differences between the existing practice and the proposed revised practice. As an example of a simple EIM base schedule for an energy transfer between two adjacent balancing authority areas (BAA), assume BAA 1 enters into a bilateral agreement to sell 100 MW of energy to BAA 2. In this case, the balancing authority areas submit base schedules to the CAISO for the 100 MW transfer amount (along with base schedules for the corresponding supply and demand).[9] These base schedules are not settled in the CAISO settlements process today—settlement occurs in the bilateral market. As noted above, cost shifting issues arise because EIM entities have the ability to increase or decrease the scheduled energy transfer after the hourly deadline for submitting base schedules. The existing CAISO settlement process settles the difference between the final scheduled transfer and the base schedule for the transfer as imbalance energy.

Continuing the example, if BAA 1 and BAA 2 increased their transfer schedule from 100 MW to 125 MW after the base schedule submission deadline, the CAISO settlement process would settle the additional 25 MW as imbalance energy. BAA 1 would pay for 25 MW of imbalance energy for the increased transfer out of BAA 1 (because the increased transfer out of its BAA is increased demand). BAA 2 would be paid for 25 MW of imbalance energy because for the increased transfer into BAA 2 (because the increased transfer into its BAA is increased supply). In this situation, although BAA 1 would pay imbalance energy charges for the 25 MW increased transfer out, it would presumably also increase the output of a supply resource by 25 MW to provide the energy that supported the transfer out. In this case, the CAISO settlement process would pay BAA 1 for 25 MW of imbalance energy provided by the supply resource. Similarly, the CAISO settlement process would pay BAA 2 for the increased transfer into its balancing authority area and charge it for imbalance energy for its balancing authority area's increased demand.[10]

The example above demonstrates how cost shifting can occur under the existing approach because of the optional settlement of base ETSR changes. However, even if all entities settled these transactions through the CAISO settlement process, cost

[9] More specifically, BAA1 would submit a 100 MW base schedule for a supply resource (internal supply or import), a 100 MW base schedule for the export to BAA 2, and BAA 2 would submit a 100 MW base schedule for the import to BAA 2, and a 100 MW demand base schedule (internal demand or export).

[10] Note that this situation is different from transfers between balancing authority areas that result from market dispatches. The CAISO settlements process does not directly settle those exports and imports. Rather, it settles transfers dispatched by the market through an imbalance energy payment to supply resources in the sending BAA and an imbalance energy charge to load or resources in the receiving BAA. *See, supra,* n. 5 (providing a reference to additional information concerning the settlement of EIM transfers).

shifting could still occur based on the application of pricing the CAISO uses to settle these transactions. Specifically, the CAISO settles base ETSR changes at a ratio of the source and sink balancing authority areas' internal prices. This ratio is agreed upon by the EIM entities that share the bilateral transfer. The typical arrangement is a 50/50 split.

Expanding on the example above, if the energy transferring from BAA 1 to BAA 2 wheels through another balancing authority area, BAA 3, and there is a power balance constraint violation associated with the energy transfer from BAA 1 to BAA 2, there can be costs shifted between the EIM entities. Assume the system marginal energy price in each BAA is $30 but there is a power balance constraint violation in BAA 3 with an associated penalty price of $500, making the price of energy in BAA 3 $530. Under these conditions, BAA 1 would receive $30/MWh for the imbalance energy supplied by a resource in its boundary and would be charged $280/MWh[11] for the export to BAA 3. BAA 3 would receive $280/MWh for the import from BAA 1 and would be charged $280/MWh for the export to BAA 2. BAA 2 would be paid $280/MWh for the import from BAA 3 and would be charged $30/MWh for the BAA's increased demand. This example shows how costs can be shifted between BAA 1 and BAA 2 because the prices of the import and export legs of this wheeling transaction are not consistent with their internal prices.

To remedy this, the CAISO proposes herein to settle the imbalance energy resulting from these schedule changes using the pricing node at the location of the schedule changes, rather than the ratio of both the sending and receiving balancing authority area energy prices as it does today. This change will result in a symmetrical settlement where the payment for the import and the charge for the export are consistent with the balancing authority area's internal prices, thus avoiding the cost shift that otherwise could occur as in the example above.

Making this settlement mandatory will avoid inappropriate and differential treatment that can result in cost shifting between balancing authority areas, particularly for schedule changes that involve a transfer that is part of a wheeling schedule across multiple balancing authority areas. The CAISO also proposes to establish a pricing location for base EIM transfer changes and require EIM entities submit e-tag changes at that location. This will support formation of a common price for the base EIM transfer changes at that location, which would be the locational marginal price at that unique location. These changes will reduce the potential for cost shifting between balancing authority areas because settling base EIM transfer changes will no longer be optional, the CAISO will establish the location for pricing the changes, and the intertie price at that location will apply to both sides of the transaction. Stakeholders do not oppose this change.

[11] $280/MWh = ($30/MWh + $530/MWh) / 2

B. EIM Transfer Bid Cost Recovery Adjustment

The CAISO issues bid cost recovery (BCR) payments to ensure resources scheduled in the market recover their costs when the market does not provide sufficient revenues to cover their bid-in costs. For example, energy payments at the locational marginal price may be insufficient to cover the commitment costs of a resource the market starts, and a corresponding BCR payment makes up for this shortfall. BCR payments are funded through uplift costs allocated to market participants. In the real-time market, the CAISO calculates bid cost recovery payments based on the costs and market revenues of resources committed in the real-time market or dispatched incremental to their day-ahead schedules.

The CAISO allocates uplift costs associated with real-time BCR payments to load and exports within the CAISO balancing authority area because they benefit from real-time unit commitment or incremental dispatch. The CAISO also allocates a portion of these costs between balancing authorities in the EIM area to account for BCR costs incurred to support energy transfers between balancing authority areas. EIM entities allocate BCR uplift within their balancing authority areas pursuant to their open access transmission tariffs (OATTs). In the real-time market, the CAISO considers EIM transfers and adjusts BCR uplift to fairly allocate the uplift across balancing authorities in the EIM area. In addition to the EIM transfers resulting from the real-time market's dispatch of resources, the CAISO currently adjusts the BCR uplift allocation between balancing authority areas based on uninstructed imbalance energy and unaccounted for energy quantities.

For example, if a resource in one balancing authority area is committed in the real-time market to meet load changes in another balancing authority area, the cost of any BCR uplift payments received by the generator in the first balancing authority area should be allocated to the other balancing authority area as the beneficiary of that unit commitment. For balancing authority areas supporting net EIM transfers out of their balancing authority area, the CAISO currently adjusts the real-time BCR uplift between balancing authority areas based on uninstructed imbalance energy and unaccounted for energy quantities. However, the CAISO has determined including these determinants in the BCR adjustment formulation does not track with cost causation.[12]

Unaccounted for energy is merely a post-market accounting of energy–the CAISO market does not commit or dispatch resources based on unaccounted for energy. Unaccounted for energy does not directly cause one balancing authority area

[12] The CAISO explored these principles in its recent *Bid Cost Recovery Enhancements* stakeholder initiative. *See* CAISO Bid Cost Recovery Enhancements at: http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=4E892DE3-5FE0-46E4-84DA-1396391CF8BE. The initiative generally concluded that allocating real-time BCR uplift costs by cost causation is difficult because resources are committed in the real-time market for many reasons that cannot easily be linked with specific actions.

to incur bid cost recovery costs to serve load in another because it does not result in the real-time market committing or dispatching resources. In other words, unaccounted for energy has no impact on real-time unit commitment, so including it does not align with cost causation. Furthermore, the CAISO has concluded there does not appear to be a strong correlation between uninstructed imbalance energy and real-time BCR uplift because real-time unit commitment is driven primarily by differences between the two market runs that conduct unit commitment and that were not reflected in the day-ahead market, not deviations causing in imbalance energy.[13] Thus, including unaccounted for energy and uninstructed imbalance energy in the calculation to determine adjustments to BCR uplift to account for EIM transfers does not align with cost causation principles. The CAISO seeks to allocate costs to the identified cause when it can isolate the cost driver. However, when many factors drive costs, as is the case with real-time bid cost recovery for resources dispatched or committed in the real-time market, the most equitable means of allocating such costs is to the beneficiaries, which are load, exports, and the balancing authority area receiving an energy transfer from another balancing authority area.

The CAISO therefore proposes to no longer consider uninstructed imbalance energy and unaccounted for energy quantities in the BCR uplift transfer adjustment formulation. Instead, the CAISO proposes to allocate a portion of a balancing authority area's BCR uplift to transfers out of that balancing authority area only in proportion to the ratio of the transfers out to the sum of the balancing authority area's load, exports, and transfers out.[14] This change will align the calculation for adjusting BCR uplift charges associated with EIM transfers with the CAISO's established methodology for allocation of real-time BCR uplift costs within its own balancing authority area. As stated above, real-time uplift costs should be allocated to load and exports because they are the beneficiaries of any real-time unit commitment or incremental dispatch. Changing the adjustment calculation in this manner better aligns with existing established cost causation principles of bid cost recovery cost allocation. The CAISO requests the Commission accept removing these determinants from the formulation that adjusts real-time BCR costs to account for transfers between balancing authority areas, thus avoiding potential cost shifting and better aligning the formulation with cost causation principles. Stakeholders do not oppose this change.

C. Settlement of EIM Base Schedules Below Minimum Load

As explained above, base schedules reflect EIM entities' planned system operation and are the baseline for imbalance energy settlement in the EIM. However, base schedule submissions do not allow resources to include start-up energy below minimum load. The CAISO produces balanced day-ahead schedules via its integrated forward market, whereas EIM entities are responsible for creating their own balanced

[13] *Supra*. at fn. 12.

[14] *See* proposed changes to CAISO Tariff, Section 11.8.6.3.2.

base schedules. All energy shown in the CAISO day-ahead schedules is settled, but for EIM entities only deviations from base schedules are settled.

EIM base schedules are not settled and, without any accounting for energy below a resources minimum load, there is no imbalance energy settlement of deviations during start up. Thus, start-up energy is not included in the resource sufficiency evaluation, which is problematic for EIM entities with large resources and long start up times. Resources can have multi-hour start times and minimum loads in the hundreds of MW. Many EIM entities rely upon start-up energy from these resources. Not accounting for energy below minimum load limits an EIM scheduling coordinator's ability to accurately account for startup energy in its base schedule submission, and results in no deviation settlement or inclusion in the resource sufficiency evaluation. It would be more efficient for EIM entities to accurately capture a potentially significant amount of energy produced when a resource is starting.

The CAISO proposes to allow all EIM entities' hourly resource plans to include resources' start-up energy. To accommodate this, the CAISO plans to modify the logic of the base schedule aggregation portal and the resource sufficiency evaluation to allow start-up energy to be submitted as part of a resource's base schedule; current validation rules reject schedules below a resource's minimum load. For EIM entities, submitting more accurate base schedules will minimize uninstructed imbalance energy settlement, because the startup energy can be reflected in a base schedule. Base scheduled energy below minimum load will be counted as part of an EIM entity's resource sufficiency balancing test only—no changes will be made to the capacity and flexible ramp sufficiency tests themselves because the startup energy does not represent an energy bid.

Ancillary services will not be permitted on a resource during intervals the resource is shown on an EIM base schedule below its minimum load. The CAISO assumes that when a resource is producing energy below its minimum load, it will ramp in a linear manner up to its minimum load, and thus would be unavailable to provide any ancillary services. To ensure this functionality is not misused, the CAISO proposes to perform after-the-fact monitoring on the submitted EIM base schedules that contain resources with startup energy.[15] The CAISO understands resources may have unique characteristics and that actions such as resource tripping during startup are not uncommon occurrences. As such, the CAISO will examine operator logs, outage cards and other available records to resolve any potential questions concerning potential observed patters of misuse.

[15] Examples of conditions the CAISO proposes to monitor include: (i) base schedule below minimum load in an hour when there is a base schedule at or above minimum load in the previous hour, (ii) a non-monotonically increasing pattern of base schedules below minimum load over consecutive hours, (iii) lack of a base schedule in an hour when there is a base schedule below minimum load in the previous hour, and (iv) base schedules below minimum load for an unreasonably long multi-hour period based on the resource's registered technology and startup profile.

The CAISO recognizes this proposal will result in different treatment of startup energy for EIM resources than for CAISO resources. However, to provide similar treatment for startup energy for CAISO resources, the CAISO would need to develop a new energy class with its own rules and settlement and the integrated forward market would need to include this startup energy within its optimization. Because CAISO day-ahead schedules are already balanced, the CAISO does not believe this additional flexibility is worth accounting for outside of its day-ahead optimization. The inclusion of startup energy within the day-ahead market should only be considered holistically, possibly through a future initiative such as the CAISO's ongoing extended day ahead market stakeholder initiative or a separate initiative, not through this this initiative. This initiative addresses a narrow issue that EIM entities seek to address in their role as the balancing authority operating in the EIM without significant design changes to the real-time market. Allowing this difference will enable EIM entities to include this information in the submission of their base schedules now without waiting for the CAISO to address comprehensive structure changes until a more appropriate time. Stakeholders understood this distinction and do not oppose this proposal.

III. Second Tranche of Changes

This section describes two groups of proposed changes the CAISO will implement as part of its fall 2021 release planned for October 1, 2021. The first set would allow an EIM entity to choose whether to have the CAISO settle unaccounted for energy within its balancing authority area. The second set would move the deadline for the submission of changes to EIM base schedules from 40 minutes before the hour to 30 minutes before the hour. These changes will enhance the efficiency and accuracy of the EIM by creating more accurate base schedules and avoiding unnecessary settlement of unaccounted for energy.

A. EIM Entity Option Unaccounted for Energy Settlement Option

Under the current rules, the CAISO settles unaccounted for energy in all EIM entity balancing authority areas, which results in a charge or credit to the EIM entity. Unaccounted for energy settlement results in a charge or credit based on the difference between the total metered demand in a service area and the energy delivered into a service area, which in the EIM correspond to EIM entity balancing authority areas. The CAISO proposes to allow EIM entities the option not to have the CAISO settle unaccounted for energy within their balancing authority area.[16] This settlement rule change addresses potential cost shifting that can currently occur in an EIM entity's "unaccounted for energy" settlement.

[16] *See* proposed changes to CAISO Tariff, Sections 29.11(c) and 29.34(e)-(f).

The option for an EIM entity to choose whether to have the CAISO settle unaccounted for energy within its balancing authority area will depend on how the EIM entity obtains its load meter values. EIM entities determine their load meter values in two basic ways, the "load aggregation" meter approach and the "load derivation" meter approach. Under the load aggregation approach, the EIM entity scheduling coordinator collects measurements from end-use load meters and aggregates those measurements into a total value. These meter values accurately measure the demand, including loop flow, inadvertent flow, excess behind the meter, and distribution system losses. Using a load aggregation approach provides a basis for settlement of unaccounted for energy because there can be differences between metered load consumption and losses.[17]

On the other hand, the CAISO proposes to allow an EIM entity the option not to settle unaccounted for energy in its balancing authority area if it reports its demand to the CAISO based on an approved load profile that is not based on end-use load meters, *i.e*., it uses a load derivation approach. EIM entities using a load derivation approach calculate their load by subtracting a loss amount specified in their OATT from their metered supply amounts. The CAISO cannot accurately account for an EIM entity's losses when it calculates that entity's unaccounted for energy if the EIM entity calculates its load based on supply meters and OATT losses because the OATT-defined losses are used to both schedule supply and demand and to account for losses when reporting demand to the CAISO. This is different from entities that report their demand using end-use meters, *i.e*., the load aggregation approach, whose scheduled losses can differ from actual losses reflected in their meter readings.

For example, assume an EIM entity using load derivation approach (*i.e*., calculating its load based on supply meters and OATT losses) submits base schedules for 104 MW of supply and 100 MW of demand because its OATT specifies it calculates its end-use load using a four percent loss factor. There should be no unaccounted for energy if the metered supply and metered demand turn out to be the same as scheduled. There is no revenue shortfall to collect as unaccounted for energy charges. However, the CAISO may inaccurately account for losses if it settles unaccounted for energy for this EIM entity. For example, assume the CAISO applies a three percent loss factor in settling the unaccounted for energy, the EIM entity would incur a charge for 1 MW of unaccounted energy in this same situation (104 MW supply – 3 MW losses – 100 MW demand = 1 MW unaccounted for energy).

[17] EIM entities using a load aggregation approach will continue to have the CAISO calculate their unaccounted for energy settlement. This is also how the CAISO settles unaccounted for energy in its balancing authority area, which will continue.

This example reflects cost shifting in two ways. First, because the CAISO may collect an unaccounted for energy charge with no corresponding revenue shortfall to pay, the CAISO would allocate this revenue to offset cost allocation accounts. However, an EIM entity's OATT may specify it allocates offset allocation revenues to different customers than unaccounted for energy charges. Second, because the CAISO calculates the unaccounted for energy charges based on energy prices within the balancing authority area, if these prices are influenced by congestion charges resulting from energy transfers from another balancing authority area, the CAISO will allocate a portion of the congestion revenue collected as unaccounted for energy to another balancing authority area.

If the EIM entity elects not to have the CAISO settle unaccounted for energy, the EIM entity will account for base schedule losses outside of the CAISO market.[18] The EIM entity and CAISO settlements will not incorporate losses by assuming an OATT loss factor of zero. The CAISO will apply a zero-percent OATT loss factor when calculating the hourly load base schedule. In addition, the EIM entity will apply a zero-percent OATT loss factor when calculating its load using the load derivation approach. The CAISO will then exclude the EIM entity from calculation of the unaccounted for energy amount and avoid potential cost shifts. This avoids the potential cost shifting.

The CAISO understands some EIM entities using the load derivation approach may not have the CAISO include unaccounted for energy settlement for their balancing authority area, while others may continue to have the CAISO account for it. These varied approaches to the question are appropriate because EIM entities are not required by the CAISO to allocate unaccounted for energy under their OATT in the same manner. Moreover, the primary impact of any cost shifting occurs in their balancing authority area, which may not be significant, whereas the costs of making the associated changes to support the shift may be relatively significant. The CAISO believes that this is not something the CAISO should mandate because the decision primarily concerns matters involving and affecting the EIM entity and its transmission customers, and is thus appropriate for their consideration. This decision is best determined through the regulatory process applicable to the EIM entity's allocation of unaccounted for energy charges in its balancing authority area. No stakeholders oppose this proposal.

[18] If the EIM entity makes no election, settlement of unaccounted for energy remains the same as today. Today the EIM entity provides the CAISO its OATT loss factor, and the CAISO applies the OATT loss factor when calculating the hourly load base schedule. The CAISO calculates the unaccounted for energy settlement quantity as the product of the real-time market hourly load aggregation price and the sum of the generation meter readings and the intertie import meter readings, less the sum of intertie export meter readings, load derivation meter calculations, and real-time market losses.

B. EIM Base Schedule Submission Timeline Change

The CAISO proposes to move the final hourly base schedule submission deadline from 40 to 30 minutes before the start of each hour.[19] In conjunction with this change, the CAISO also proposes to conduct an additional resource sufficiency test evaluation run, which would be at 30 minutes before the start of each hour.

Base schedules reflect an EIM entity's planned supply resource schedules and demand forecast for its balancing authority area. They are the baseline for imbalance energy settlement in the EIM and are an important component of the EIM entity's hourly resource sufficiency evaluation, which ensures EIM entities schedule sufficient supply resources. Moving the timeline for submitting final base schedules 10 minutes closer to the start of each operating hour allows base schedules to include information from closer to the operating hour. Consequently, the EIM's resource sufficiency test will use more timely and accurate information than it currently uses. This more accurate information will also lead to lower amounts of uninstructed imbalance energy.

This revised deadline also better aligns with Bonneville Power Administration's timeline for designating its customers' hourly energy schedules based on its hydroelectric production forecast.[20] The CAISO currently requires EIM entities to submit base schedules by 40 minutes before the start of each hour because the fifteen-minute market optimization for the first interval of the hour begins running at 37.5 minutes before the hour. Technology improvements now allow the CAISO to configure the market systems to complete this fifteen-minute market run in a shorter time. Consequently, the CAISO can move the start of the market run to after 30 minutes before the hour without impacting system performance.[21]

EIM entities submit base schedules for each operating hour to the CAISO at multiple intervals. They submit initial base schedules at 75 minutes before the hour. The CAISO systems then run the EIM resource sufficiency evaluation and provide advisory results back to EIM entities. This process repeats at 55 minutes before the hour, and then final base schedules are currently due at 40 minutes before the hour. This iterative process enables EIM entities to update their base schedules with more accurate information, such as resource output, load forecasts, and bilateral transaction

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[19] *See* proposed changes to CAISO Tariff, Sections 29.34(k)-(n).

[20] Bonneville Power Administration is planning to join the EIM in fall 2021. *See Cal. Indep. Sys. Operator Corp.*, 170 FERC ¶ 61,168 (2020) (accepting the EIM Implementation Agreement with the Bonneville Power Administration including a commitment for the CAISO to pursue with stakeholders a change in the EIM base schedule timeline).

[21] *See* proposed changes to CAISO Tariff, Sections 30.5.7, 34.1.6, 34.3, and 34.4. The EIM base schedule timeline adjustment changes the timing of related market processes.

schedules. It also allows EIM entities to view advisory results produced by the resource sufficiency evaluation, and permits them time to correct any resource sufficiency evaluation failure. This is important because EIM rules specify the EIM cannot dispatch additional transfers into (or potentially, out of) a balancing authority area that fails a final resource sufficiency evaluation.

In conjunction with moving the final base schedule submission deadline to 30 minutes before each hour, CAISO proposes its systems conduct an additional resource sufficiency evaluation at 30 minutes before the start of each hour. This will become the final resource sufficiency evaluation run that determines whether a balancing authority area can participate in additional EIM energy transfers. The resource efficiency evaluation currently run at 40 minutes before the hour will remain and become an additional advisory run. Adding the additional resource sufficiency evaluation at 40 minutes before the hour addressed the concerns raised by some stakeholders.

CAISO also proposes an additional feature to increase the usefulness of the advisory resource sufficiency evaluation that will run at 40 minutes before the hour. The resource sufficiency evaluations currently conducted at 55 and 40 minutes before the hour use different resource initial conditions produced by different advisory market optimization runs. CAISO proposes to run the two resource sufficiency evaluations at 40 and 30 minutes before the hour, respectively, using the same resource initial conditions so that the target remains the same. This will increase the likelihood an EIM entity whose balancing authority area fails the resource sufficiency evaluation run at 40 minutes before the hour can take corrective actions and then pass the final resource sufficiency evaluation at 30 minutes before the hour. Stakeholders do not oppose this change.

IV. Stakeholder Process

The CAISO hosted two separate processes to obtain stakeholder input concerning the proposed tariff changes included in this filing. The CAISO published several proposals and accepted written comments that shaped the elements included in this filing.[22] The CAISO appreciates the efforts of stakeholders to provide input to this process and help develop these proposed rules. The stakeholder process resulted in several changes to the CAISO's proposal reflected in this filing and helped clarify the proposals. With these changes and clarifications, stakeholders did not oppose and the Department of Market Monitoring supported the changes included in the real-time settlements review and the EIM base schedule deadline stakeholder initiatives. The proposed tariff changes were thus approved by both the EIM Governing Body and the CAISO Governing Board.

[22] A record of the CAISO's stakeholder process and comments received is available at the following website: https://www.westerneim.com/Pages/Initiatives/Default.aspx. Refer to the "real-time settlements review" and "western EIM base schedule deadline" stakeholder initiatives located on this page—this filing combines the proposals from these two initiatives.

During the stakeholder process, stakeholders raised some concerns the CAISO addressed. Stakeholders requested additional examples to illustrate and explain the impact of the proposed changes, particularly regarding the requirement for settlement of EIM base transfer schedule changes. The CAISO provided several examples and walked stakeholders through each of them to foster a deeper common understanding of the proposed changes.

Stakeholders also requested consideration of the impact on bid cost recovery transfer adjustments triggered by the mandatory settlement of EIM base transfer schedule changes and the option for unaccounted for energy to not be settled. The CAISO addressed this by providing additional explanation and aligning the proposed bid cost recovery changes in both initiatives. As it turned out, the bid cost recovery change proposed in the first tranche also addresses the potential for bid cost recovery impacts from the unaccounted for energy proposal in the second tranche of changes.

Stakeholders also expressed a need to maintain the resource sufficiency evaluation at 40 minutes before the operating hour for informational purposes when the final opportunity for adjustment to EIM base schedule moves to 30 minutes before the operating hour. As discussed above, the CAISO agreed to maintain the resource sufficiency evaluation at 40 minutes before the operating hour, and it includes mechanisms to ensure comparable inputs between that resource sufficiency evaluation and the final resource sufficiency evaluation at 30 minutes before the operating hour. These adjustments addressed the operational concerns from some of the EIM entities with the proposed change to the base schedule submission deadline and corresponding resource sufficiency timeline.

V. Effective Date

The CAISO requests the Commission issue an order accepting the first tranche of tariff changes effective April 1, 2021 and the second tranche of tariff amendments tentatively effective on October 1, 2021 coincident with the CAISO's fall 2021 release. The requested effective date for the first tranche of tariff amendments will support new EIM entities' planned participation in the EIM in the spring of 2021. The requested October 1, 2021 effective date for the second tranche of changes proposed in this filing will be confirmed by CAISO submission through a filing that identifies the actual effective date for these changes within five business days of the implementation date. Having a Commission order by April 1, 2021 for both tranches of changes will help the CAISO and EIM entities configure their systems and establish business process changes to support EIM implementation activities during 2021. Having a Commission order by April 1, 2021 will provide the necessary certainty for the EIM entities and the CAISO concerning the implementation of these provisions.

The CAISO respectfully requests the Commission waive its notice requirement and accept the second tranche of changes effective October 1, 2021 subject to

confirmation by the CAISO within 5 business days of the actual effective date.[23] Good cause exists for this later effective date. The later requested effective date will support certainty of upcoming changes for EIM entities with planned participation in the spring of 2022. These entities are in the midst of integration activities that will lead to significant system changes necessary for market simulation and parallel operation that begin late in 2021. Having assurance now that the scope of their integration and configuration activities is acceptable will help them through this process. Granting these requests will also provide certainty for all stakeholders. Therefore, good cause exists for the Commission to grant the requests.

VI. Communications

Please address communications regarding this filing to the following individuals, whose names the CAISO requests the Commission place on the official service list established with respect to this submittal:

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*Individuals designated for service pursuant to Rule 203(b)(3).[24]

VII. Service

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, and parties with effective scheduling coordinator service agreements under the CAISO tariff. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO Web site.

[23] Specifically, pursuant to Section 35.11 of the Commission's regulations (18 C.F.R. § 35.11), the CAISO respectfully requests waiver of the notice requirement set forth in Section 35.3(a)(1) of the Commission's regulations (18 C.F.R. § 35.3(a)(1)).

[24] 18 C.F.R. § 385.203(b)(3).

VIII. Materials Provided In This Filing

The following documents, in addition to this transmittal letter, support this filing:

Attachment A	Clean tariff sheets incorporating the first tranche of revisions described in this filing
Attachment B	Sheets showing, in redline format, the first tranche of changes to the currently effective tariff described in this filing
Attachment C	Clean tariff sheets incorporating the second tranche of revisions described in this filing[25]
Attachment D	Sheets showing, in redline format, the second tranche of changes to the currently effective tariff described in this filing[26]
Attachment E:	EIM Governing Body memoranda dated November 25, 2020
Attachment F	CAISO Board of Governors memorandum dated December 9, 2020

[25] Clean tariff sheets for the second tranche revisions include the changes from the first tranche as accepted, black text.

[26] Redline tariff sheets for the second tranche revisions include the changes from the first tranche as accepted, black text.

IX. Conclusion

The CAISO requests that the Commission accept the first tranche of tariff amendments effective April 1, 2021, and the second tranche of tariff amendments effective October 1, 2021 subject to confirmation of the actual effective date within five business days of the actual effective date.

Please do not hesitate to contact the undersigned if you have any questions.

Respectfully submitted,

By: *<u>/s/ John C. Anders</u>*
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Counsel for the California Independent
System Operator Corporation

Dated: January 27, 2021

Attachment A – Clean tariff sheets of First Tranche of revisions

with an effective date of April 1, 2021

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

****First tranche – clean tariff with proposed effective date of 4/1/2021****

Section 11

* * * * *

11.8.6.3 Determination of Total Positive CAISO Markets Uplifts

11.8.6.3.1 Total Positive IFM Uplifts

Any positive Net IFM Bid Cost Uplifts are reduced by scaling them with the uplift ratio in Section 11.8.6.3.1(iii) to determine the Total IFM Uplift (for a Settlement Interval) as follows:

(i) The Total IFM Uplift is the Net IFM Bid Cost Uplift for all Settlement Intervals in the IFM Market.

(ii) The Total Positive IFM Uplift is determined as the sum of the positive IFM Bid Cost Uplift for all Settlement Intervals in the IFM Market.

(iii) The uplift ratio is equal to the Total IFM Uplift divided by the Total Positive IFM Uplift.

11.8.6.3.2 Net RUC Bid Cost Uplift and RTM Bid Cost Uplift

The CAISO will determine the Net RUC Bid Cost Uplift and the Net RTM Bid Cost Uplift to be allocated to each Balancing Authority Area in the EIM Area as follows:

(i) For each Balancing Authority Area separately, the CAISO will calculate a combined RUC Bid Cost Uplift and RTM Bid Cost Uplift amount based on the RUC Bid Cost Shortfall, RUC Bid Cost Surplus, RTM Bid Cost Shortfall, and RTM Bid Cost Surplus of each supply resource located within the Balancing Authority Area for each Settlement Interval.

(ii) For each Balancing Authority Area separately, for each Trading Day, the CAISO will calculate a daily combined total RUC Bid Cost Uplift and RTM Bid Cost Uplift amount as the sum of all the Settlement Interval values calculated according to Section 11.8.6.3.2(i).

(iii) For each Balancing Authority Area separately, for each Trading Day, the CAISO will calculate a combined total positive RUC Bid Cost Uplift and RTM Bid Cost Uplift amount as the sum of the positive Settlement Interval values calculated according to Section

11.8.6.3.2(i).

(iv) The CAISO will calculate the daily uplift ratio for the RUC and RTM, for each Balancing Authority Area in the EIM Area, as the daily combined total RUC Bid Cost Uplift and RTM Bid Cost Uplift amount, calculated according to Section 11.8.6.2(ii), divided by the daily combined total positive RUC Bid Cost Uplift and RTM Bid Cost Uplift, calculated according to Section 11.8.6.2(iii).

(v) For each Settlement Interval and each Balancing Authority Area in the EIM Area, the CAISO will multiply the applicable daily uplift ratio with each combined total positive RUC Bid Cost Uplift and each combined total RTM Bid Cost Uplift to determine the Net RUC Bid Cost Uplift and the preliminary Net RTM Bid Cost Uplift, respectively, for each Balancing Authority Area.

(vi) The CAISO shall adjust the preliminary Net RTM Bid Cost Uplift amounts calculated in Section 11.8.6.3.2(v) by –

(a) dividing the sum of net EIM Transfers out of a Balancing Authority Area by that Balancing Authority Area's EIM Measured Demand and the net EIM Transfer out of the Balancing Authority Area;

(b) multiplying the preliminary Net RTM Bid Cost Uplift amounts by the ratio calculated in Section 11.8.6.3.2(vi)(a); and

(c) reducing the preliminary Net RTM Bid Cost Uplift amounts of the EIM Entity Balancing Authority Area with the net transfer out by the amount calculated in Section 11.8.6.3.2(vi)(b) and adding that amount to the EIM Entity Balancing Authority Area with the net transfer in to determine the final preliminary Net RTM Bid Cost Uplift amounts.

(vii) For each Settlement Interval, the Net RUC Bid Cost Uplift and final Net RTM Bid Cost Uplift apportionment by Settlement Interval for each Balancing Authority Area in the EIM Area will be the sum of the amounts calculated in Sections 11.8.6.3.2(v) and, for Net RTM Bid Cost Uplift only, 11.8.6.3.2(vi) for each Balancing Authority Area in the EIM Area.

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Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(a) **Applicability.** Section 29.11, rather than Section 11, shall apply to the CAISO Settlement with EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators, except as otherwise provided, but not to other Scheduling Coordinators.

(b) **Imbalance Energy.**

(1) **FMM Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's FMM Instructed Imbalance Energy in the same manner as it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(ii) **Non-Participating Resources.** The CAISO will calculate the FMM Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner as it calculates FMM Instructed Imbalance Energy under Section

11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(B) **Settlement.** The CAISO will settle –

(i) the FMM Instructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(2) **RTD Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's RTD Instructed Imbalance Energy in the same manner in which it calculates RTD Instructed Imbalance Energy under Sections 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(ii) **Non-Participating Resources.** The CAISO will calculate the RTD Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner in which it calculates RTD Instructed Imbalance Energy under Section 11.5.1.2 and 11.5.5, except that the CAISO will include

any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(B) **Settlement.** The CAISO will settle the RTD Instructed Imbalance Energy –

(i) with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(3) **Uninstructed Imbalance Energy.**

(A) **EIM Participating Resources.**

(i) **Calculation.** For EIM Participating Resources and an EIM Entity Balancing Authority Area's dynamic import/export schedules with external resources, the CAISO will calculate Uninstructed Imbalance Energy in the same manner in which it calculates Uninstructed Imbalance Energy under Section 11.5.2.1.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator or the EIM Entity Scheduling Coordinator, as applicable.

(B) **Non-Participating Resources.**

(i) **Calculation.** For non-participating resources in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule and the CAISO will treat an EIM Manual Dispatch and an EIM Auto-Match as a Dispatch Instruction.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy for non-participating resources in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(C) **Non-Participating Load.**

(i) **Calculation.** For non-participating Load in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2.2, except that the CAISO will determine deviations based on the EIM Base Load Schedule.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for non-participating Load in an EIM Entity Balancing Authority Area at the applicable Default LAP Hourly Real-Time Price in accordance with Section 11.5.2.2 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(D) **EIM Base Schedules Below PMin.**

(i) **Calculation.** For deviations from an EIM Base Schedule below PMin submitted by an EIM Entity Scheduling Coordinator or an EIM Participating Resource Scheduling Coordinator, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2 as if the EIM Resource had received a Dispatch Instruction to PMin.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance

Energy for deviations from an EIM Base Schedule below PMin in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator.

(c) **Unaccounted For Energy of EIM Entities.**

(1) **Calculation.** The CAISO will calculate Unaccounted For Energy for each EIM Entity Balancing Authority Area as the difference between metered Demand, and the sum of the metered Supply and the metered values at the interties, adjusted for losses.

(2) **Settlement.** The CAISO will settle Unaccounted For Energy with the applicable EIM Entity Scheduling Coordinator at the applicable Hourly Real-Time LAP price.

(d) **Charges for Over- and Under-Scheduling of EIM Entities.**

(1) **Under-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 125% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 200% of the Hourly Real-Time LAP price.

(2) **Over-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 75% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 50% of the Hourly Real-Time LAP Price.

(3) **Distribution of Revenues.**

(A) **Apportionment.** The CAISO will calculate the total daily excess revenues received from under-scheduling charges and over-scheduling charges under Section 29.11(d)(1) and (2) and apportion them to Balancing Authority Areas in the EIM Area that were not subject to either under-scheduling or over-scheduling charges during the Trading Day according to metered Demand.

(B) **Allocation.** The CAISO will allocate –

(i) the amounts apportioned to EIM Entity Balancing Authority Areas pursuant to Section 29.11(d)(3)(A) to the applicable EIM Entity Scheduling Coordinator; and

(ii) the amounts apportioned to the CAISO Balancing Authority Area pursuant to Section 29.11(d)(3)(A) to Scheduling Coordinators in

the CAISO Balancing Authority Area according to metered Demand.

(4) **Exemption.** An EIM Entity will be exempt from under-scheduling and over-scheduling charges under Section 29.11(d)(1) and (2) if it uses the Demand Forecast prepared by the CAISO in its EIM Resource Plan and it approves EIM Base Schedules for its resources within +/- 1% of the CAISO Demand Forecast, as determined according to the Business Practice Manual for the Energy Imbalance Market.

(e) **Neutrality Accounts.**

(1) **In General.** The CAISO will collect neutrality amounts from EIM Market Participants to recover differences in Real-Time Market payments made and Real-Time Market payments received.

(2) **Real-Time Congestion Offset.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Congestion Offset allocation calculated pursuant to Section 11.5.4.1.1.

(3) **Real-Time Imbalance Energy Offset Allocation.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Imbalance Energy Offset allocation calculated pursuant to Section 11.5.4.1.

(4) **Real-Time Marginal Cost of Losses Offset.** The CAISO will allocate the Real-Time Marginal Cost of Losses Offset to EIM Entity Scheduling Coordinators pursuant to Section 11.5.4.1.2.

(5) **Other Neutrality Adjustments.** The CAISO will levy additional charges on or make additional payments to EIM Market Participants as adjustments in accordance with Section 11.14.

(f) **Real-Time Bid Cost Recovery.**

(1) **In General.** The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery.** The CAISO will calculate Real-

Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and the corresponding intervals as IFM self-commitment intervals.

(3) **Application of Real-Time Performance Metric.**

The CAISO will adjust the RTM Energy Bid Cost, the RTM Market Revenues, and RTM Minimum Load Costs determined pursuant to Section 29.11(f)(2) by multiplying the Real-Time Performance Metric with those amounts for the applicable Settlement Interval pursuant to the rules specified in Section 11.8.4.4 and its subsections, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(4) **Allocation of EIM Entity RTM Bid Cost Uplift.**

(A) **Calculation of Charge.** The Net RTM Bid Cost Uplift will be determined for each EIM Entity Balancing Authority Area in accordance with the methodology set forth in Section 11.8.6.

(B) **Settlement.** The CAISO will assess the Net RTM Bid Cost Uplift calculated for each EIM Entity Balancing Authority Area to the applicable EIM Entity Scheduling Coordinator in accordance with Section 11.8.6.6.(ii).

(g) **[Not Used]**

(h) **EIM Initial Fee.** The CAISO will charge Balancing Authority Areas that enter into an EIM Implementation Agreement pursuant to Section 29.2(b) an initial fee to cover a share of the capital and operations and maintenance costs associated with setting up the Real-Time Market to accommodate the participation of the Balancing Authority as an EIM Entity. The fee will be established by the EIM Implementation Agreement entered into pursuant to Section 29.2(b)(1) as accepted by FERC.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM

Administrative Charge consisting of the real-portions of the Market Services Charge and the System Operations Charge.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** The System Operations Charge shall be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study conducted according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum of the real-time activities associated with market services charge and the real-time activities chart associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(5) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section

29.4(b)(4), the CAISO will charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(6) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

(j) **Variable Energy Resource Forecast Charge.**

(1) **In General.** The CAISO will charge EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators a fee for the Variable Energy Resource forecasting services in accordance with Appendix F, Schedule 4.

(2) **Waiver.** The CAISO will waive the Variable Energy Resource forecast charge if an EIM Entity has an independent forecast for its Variable Energy Resources and provides the independent forecast to the CAISO.

(k) **Transmission Service.** The CAISO will charge EIM Market Participants for transmission service according to Section 29.26.

(l) **Settlement.** With regard to the CAISO's assessment and payment of charges to, and collection of charges from, EIM Market Participants pursuant to Sections 11 and 29.11, the CAISO shall assess, pay and collect such charges, address disputed invoices, assess, pay and collect Settlement-related fees and charges, including those under Sections 11.21, 11.28, and 11.29, and make any financial adjustments in accordance with the terms and schedule set forth in Section 11.

(m) **Charges Related to RTM Participation of Interties.** In the event that an EIM Entity enables participation in the Real-Time Market on EIM External Interties, the EIM Entity Scheduling Coordinator shall also be subject to any applicable charges under Sections 11.31 and 11.32.

(n) **EIM Transfers and Settlement for Contingency Reserve Obligations.** The CAISO shall allocate Operating Reserve Obligations to EIM Entity Scheduling Coordinators for EIM Transfers as follows –

(1) EIM Entity Scheduling Coordinators will receive a payment equal to three (3)

percent of the hourly MW EIM Transfer into the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively; and

(2) EIM Entity Scheduling Coordinators will receive a charge equal to three (3) percent of the hourly MW EIM Transfer out of the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively.

(o) **Application of Persistent Deviation Metric.**

The CAISO will modify the Bid Cost Recovery calculations described in Section 29.11(f) and Residual Imbalance Energy payments in Section 11.5.5 as described in Section 11.17, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(p) **Flexible Ramping Product.** The CAISO will allocate and settle payments and charges for the Flexible Ramping Product according to Section 11.25, where the CAISO will consider EIM Base Schedules of non-participating resources as Self-Schedules.

(q) **EIM Transfer System Resource Settlement Information.** The CAISO will provide EIM Entities with non-binding Settlement information associated with Energy transfer schedule changes from their respective base schedules between EIM Entity Balancing Authority Areas.

(r) **EIM Transfer System Resource Settlement.**

(1) **EIM Transfer System Resource Registration.** The CAISO will provide each EIM Entity with financially binding Settlement of Energy transfer schedule changes from its respective base schedules between EIM Entity Balancing Authority Areas, and will –

(A) establish for each EIM Entity that shares an EIM Internal Intertie a to/from EIM Transfer system resource pricing location in their respective EIM Entity Balancing Authority Area;

(B) associate with each to/from EIM Transfer system resource pricing location a unique base EIM Transfer system resource that accounts for

Energy transfer schedule changes between EIM Entity Balancing Authority Areas;

(C) require each EIM Entity Scheduling Coordinator to submit EIM Base Schedules and E-Tags that identifies Energy transfer schedule changes at the registered base EIM Transfer system resource; and

(D) reject EIM Base Schedule changes at the to/from EIM Transfer system resource pricing location not associated with the registered base EIM Transfer system resource.

(2) **Settlement for EIM Transfer System Resource Changes.** The CAISO will settle EIM Transfer system resource changes established pursuant to Section 29.11(r)(1) as –

(A) FMM Instructed Imbalance Energy or RTD Instructed Energy based on the Settlement Interval in which the E-Tag is received, without regard for other Energy types identified in Sections 11.5.1.1 or 11.5.2.2, or as an Operational Adjustment if the E-Tag is received after the end of the Operating Hour for purposes of Energy accounting in accordance with the applicable WECC business practices;

(B) based on the difference between the E-Tag and the EIM Transfer system resource base schedule;

(C) at the relevant FMM or RTD Locational Marginal Price at each unique EIM Transfer system resource pricing location associated with the base EIM Transfer system resource; and

(D) including any contribution that the base EIM Transfer system resource might have on the RTM Bid Cost Recovery pursuant to Section 29.11(f).

* * * * *

29.34 EIM Operations

(a) **In General.** Section 34, as supplemented by provisions in Section 29.34, will govern the operation of the Real-Time Market within the EIM Area.

(b) **Applicability.** EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators will submit EIM Base Schedules and other necessary information to the CAISO for use in the Real-Time Market pursuant to Section 29.34 and not pursuant to Section 34.

(c) **Submission Deadlines.** If an EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator fails to submit an EIM Base Schedule according to the timelines established in this Section 29.34, the CAISO will not accept the EIM Base Schedule or use it in the Real-Time Market.

(d) **Demand Forecast.**

(1) **In General.** In accordance with procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO shall develop short-term and mid-term Demand Forecasts by Demand Forecast zone within each EIM Entity Balancing Authority Area, separately from the CAISO Balancing Authority Area.

(2) **Short Term Forecast.** The CAISO's short-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce a value every five minutes for the duration of the CAISO's Dispatch horizon, which has five-minute granularity and extends several Dispatch Intervals.

(3) **Mid-Term Forecast.** The CAISO's mid-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce hourly values for the next hour through the next 7 days.

(4) **EIM Entity Scheduling Coordinator Demand Forecast.**

(A) **In General.** An EIM Entity Scheduling Coordinator may opt to provide a non-binding EIM Entity Demand Forecast, net of behind-the-meter Generation that is not registered as an EIM Resource, as part of the

hourly EIM Base Schedules.

(B) **Timing and Scope.** The EIM Entity Scheduling Coordinator must provide any such Demand Forecasts by 10:00 a.m. for the next 7 days.

(C) **Updates.** The EIM Entity Scheduling Coordinator must update any such Demand Forecast for each Operating Hour and the following 6 to 10 hours and submit the update to the CAISO no later than 75 minutes prior to the start of that Operating Hour, as part of its hourly EIM Base Schedule submission.

(D) **Effect on Bid Requirement.** If the EIM Entity Demand Forecast is less than the CAISO Demand Forecast, then the EIM Entity's EIM Resource Plan must include sufficient Bids to cover the difference in Demand Forecasts.

(5) **Posting.** Between 6:00 p.m. of the seventh day prior to the start of the Operating Day and 6:00 p.m. of the day prior to the Operating Day, the CAISO shall post and update hourly Demand Forecasts by Demand Forecast zone.

(e) **EIM Resource Plan.**

(1) **In General.** By 10:00 a.m. of the day preceding the Operating Day, the EIM Entity Scheduling Coordinators on behalf of non-participating resources and EIM Participating Resource Scheduling Coordinators on behalf of EIM Participating Resources, must submit all applicable components of the EIM Resource Plan as set forth in Section 29.34(e)(3).

(2) **Scope.** The EIM Resource Plan components must cover a seven day horizon (with hourly detail for each resource) beginning with the Operating Day.

(3) **Contents.** The EIM Resource Plan shall comprise –

(A) EIM Base Schedules of EIM Entities and EIM Participating Resources;

(B) Energy Bids (applicable to EIM Participating Resources only);

(C) EIM Upward Available Balancing Capacity;

(D) EIM Downward Available Balancing Capacity;

(E) EIM Reserves to Meet NERC/WECC Contingency Reserves Requirements; and

(F) if the EIM Entity Scheduling Coordinator is not relying on the CAISO's Demand Forecast, a Demand Forecast.

(4) **Contents of EIM Base Schedules.** EIM Base Schedules of EIM Entities must include hourly-level Demand Forecasts for EIM Demand, hourly-level schedules for resources, including any hourly-level schedules below PMin that the EIM Entity seeks an accounting for, and hourly-level scheduled Interchanges.

(5) **Adjustment Prior to Submission of Real-Time EIM Base Schedules.** The EIM Entity Scheduling Coordinator may adjust the components of the EIM Resource Plan prior to the submission of Real-Time EIM Base Schedules up to 75 minutes before the Operating Hour.

(f) **Real-Time EIM Base Schedules.**

(1) **In General.**

(A) **Initial Submission.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating resources in the EIM Entity Balancing Authority Area that wish to submit real-time hourly EIM Base Schedules, or, with regard to non-participating resources, wish to submit EIM Base Schedule information pursuant to Section 29.34(f)(4), must submit such schedules or other information consistent with the requirements of the Business Practice Manual for the Energy Imbalance Market and at least 75 minutes before the start of the Operating Hour.

(B) **Interim Revisions.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating resources in the EIM Entity Balancing Authority Area may revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to

Section 29.34(f)(4), meeting the requirements of the Business Practice Manual for the Energy Imbalance Market at or before 55 minutes before the start of the Operating Hour.

(C) **Final Revision.** EIM Entity Scheduling Coordinators may further revise hourly Real-Time EIM Base Schedules, including EIM Base Schedules for EIM Participating Resources, at or before 40 minutes before the start of the Operating Hour.

(2) **EIM Base Schedule for EIM Participating Resources.** The EIM Base Schedule for each EIM Participating Resource must be within the Economic Bid range of the submitted Energy Bids for each Operating Hour for EIM Resources, which the CAISO will make available to the EIM Entity without price information, provided that an EIM Participating Resource Scheduling Coordinator may also include Energy below PMin in an EIM Base Schedule.

(3) **EIM Base Schedule for Imports and Exports.** EIM Base Schedules must –

(A) disaggregate Day-Ahead import/export schedules between the EIM Entity Balancing Authority Area and the CAISO Balancing Authority Area;

(B) identify the relevant EIM Interties for imports and exports to an EIM Entity Balancing Authority Area from Balancing Authority Areas other than the CAISO Balancing Authority Area; and

(C) include approved, pending, and adjusted E-Tags for imports and exports.

(4) **EIM Base Schedule Aggregation.** In response to a request by an EIM Entity Scheduling Coordinator, the CAISO will establish an electronic interface by which non-participating resources, Loads, and other customers of the EIM Entity may submit EIM Base Schedule information to the EIM Scheduling Coordinator and the CAISO.

(g) **Initial EIM Base Load Schedule.** The CAISO will derive an initial EIM Base Load Schedule for each EIM Entity from the Demand Forecast used for the EIM Entity Balancing Authority Area, estimated Transmission Losses, and an assumed Load

distribution, pursuant to the methodology set forth in the Business Practice Manual for the Energy Imbalance Market.

(h) **Energy Bids.** EIM Participating Resource Scheduling Coordinators may submit Energy Bids in accordance with the timelines, processes, and requirements applicable to other resources submitting Energy Bids under Section 34.

(i) **Interchange Schedules with Other Balancing Authorities.**

(1) **In General.** EIM Entity Scheduling Coordinators must submit Interchange Schedules with other Balancing Authority Areas at the relevant EIM Interties and must update these Interchange Schedules with any adjustments, when applicable, as part of the hourly EIM Resource Plan revision.

(2) **Economic Bidding of EIM Intertie Transactions.** An EIM Participating Resource Scheduling Coordinator may bid a transaction at an EIM External Intertie into the FMM if the EIM Entity supports economic bidding of EIM External Intertie transactions and the relevant transmission service providers or path operators support 15-minute scheduling at the EIM External Intertie under FERC Order No. 764.

(j) **CAISO Validation.** The CAISO Markets systems will validate the initial EIM Resource Plan by 1:00 p.m. on the day before the Operating Day, and within 15 minutes of the submission of EIM Base Schedules or adjustments to EIM Base Schedules, the CAISO will validate the EIM Resource Plan and notify the EIM Entity Scheduling Coordinator-

(1) if the EIM Resource Plan is not balanced;

(2) if the EIM Resource Plan provides insufficient Flexible Ramping Product capacity to meet requirements determined pursuant to Section 29.34(m); and

(3) if the CAISO anticipates Congestion based on the submitted EIM Resource Plans.

(k) **EIM Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules according to Section 29.34(f)(1)(c), Supply in the EIM Base Schedules does not balance the Demand Forecast, the CAISO will adjust the

Demand in the EIM Base Schedule to equal Supply.

(l) **EIM Resource Plan Evaluation.**

(1) **Requirement.** The EIM Base Schedules for resources included in the EIM Resource Plan must balance the Demand Forecast for each EIM Entity Balancing Authority Area.

(2) **Insufficient Supply.** An EIM Resource Plan shall be deemed to have insufficient Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the highest quantity offers in the Energy Bid range from EIM Participating Resources, including Interchange with other Balancing Authority Areas, is less than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(3) **Excess Supply.** An EIM Resource Plan shall be deemed to have excessive Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the lowest quantity Bids in the Energy Bid range from EIM Participating Resources is greater than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(4) **Additional Hourly Capacity Requirements.**

(A) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that a Balancing Authority Area in the EIM Area has historically high import or export schedule changes between forty minutes and twenty minutes before the start of the Trading Hour, the CAISO will add to the Balancing Authority Area in the EIM Area's capacity requirements an additional requirement.

(B) **Additional Capacity Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy

Imbalance Market, the CAISO will calculate for each Balancing Authority Area in the EIM Area histograms of the percentage of the difference between imports and exports scheduled at forty minutes before the start of the Trading Hour and the final imports and exports at twenty minutes before the start of the Trading Hour based on the submitted E-Tags at those times and calculate additional upward and downward requirements for the capacity test component of the resource sufficiency evaluation.

(m) **Flexible Ramping Sufficiency Determination.**

(1) **Review.**

(A) **EIM Entity Balancing Authority Areas.** The CAISO will review the EIM Resource Plan pursuant to the process set forth in the Business Practice Manual for the Energy Imbalance Market and verify that it has sufficient Bids for Ramping capability to meet the EIM Entity Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), and (5).

(B) **CAISO Balancing Authority Area.** The CAISO will review the Day-Ahead Schedules in the CAISO Balancing Authority Area and verify that it has sufficient Bids for Ramping capability to meet the CAISO Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), (5), and (6).

(2) **Determination of EIM Diversity Benefit.** The CAISO will calculate separately the upward and downward EIM diversity benefit as the difference between the sum of the upward and downward Uncertainty Requirements for all Balancing Authority Areas in the EIM Area, and the Uncertainty Requirement for the EIM Area.

(3) **Effects of EIM Diversity Benefit.** For each Balancing Authority Area in the EIM Area, the CAISO will reduce the upward and downward Uncertainty Requirements by the Balancing Authority Area's pro rata share of the upward

and downward EIM diversity benefit in the EIM Area as may be limited by –

(A) the available net import EIM Transfer capability into that Balancing Authority Area in the case of an upward Uncertainty Requirement; and

(B) the available net export EIM Transfer capability from that Balancing Authority Area in the case of a downward Uncertainty Requirement.

(4) **Determination of Flexible Ramping Sufficiency Credit.** The CAISO will calculate for each Balancing Authority Area in the EIM Area, the upward flexible Ramping sufficiency credit as the outgoing EIM Transfer from that area and the downward flexible Ramping sufficiency credit as the incoming EIM transfer into that area.

(5) **Effect of Flexible Ramping Sufficiency Credit.** The CAISO will reduce the upward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its upward flexible Ramping sufficiency credit, and will reduce the downward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its downward flexible Ramping sufficiency credit.

(6) **Incremental Requirements.**

(i) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that an EIM Balancing Authority Area has historically high import or export schedule changes between T-40 and T-20, the CAISO will add to the EIM Entity's flexible capacity requirement an additional incremental requirement.

(ii) **Additional Incremental Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each EIM Entity Balancing Authority Area histograms of the percentage of the difference between imports and exports scheduled at T-40 and the final imports at T-20 based on the E-Tags submitted at T-40 and T-20 and calculate

additional incremental and decremental requirements for the capacity test component of the resource sufficiency evaluation.

(n) **Effect of Resource Plan Insufficiency.**

(1) **Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(c), the EIM Resource Plan has insufficient supply as determined according to Section 29.34(l)-

(A) the CAISO will not include the EIM Entity Balancing Authority Area in the Uncertainty Requirement of the EIM Area;

(B) the CAISO will hold the EIM Transfer limit into or from the EIM Entity Balancing Authority Area, as specified in Section 29.34(n)(2), at the value for the last 15-minute interval.

(2) **Flexible Ramping Insufficiency.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(c), the CAISO determines-

(i) that an EIM Entity Balancing Authority Area has insufficient upward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the upward and into the EIM Entity BAA direction; and

(ii) that an EIM Entity Balancing Authority Area has insufficient downward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the downward and from the EIM Entity BAA direction.

(o) **Transmission Constraint Relaxation.** If an EIM Entity Scheduling Coordinator's approved EIM Resource Plan does not have sufficient Bids to resolve Congestion, the CAISO will relax the relevant Transmission Constraints in the Market Clearing and the EIM Entity will become responsible for managing its congested Transmission Constraints through other means, and the CAISO will determine prices for Congestion consistent with

Transmission Constraint relaxation parameters established in the Business Practice Manual for the Energy Imbalance Market until the Transmission Constraint is no longer binding in the Real-Time Market.

(p) **Operating Reserves.**

(1) **Schedules.**

(A) **EIM Entity Responsibility.** Each EIM Entity is responsible for its contingency reserves, or share of such contingency reserves under the terms of a reserve sharing group agreement, and it and the reserve sharing group are responsible for deploying operating reserves, including regulating reserves, in conformance with NERC and WECC requirements.

(B) **EIM Entity Scheduling Coordinator Responsibility.** The EIM Entity Scheduling Coordinator shall –

(i) include any Energy deployed from reserves in the hourly EIM Base Schedules, if time permits, in which case they will be settled in the Real-Time Market;

(ii) otherwise include the Energy deployed from reserves as EIM Manual Dispatches, if time does not permit;

(iii) immediately inform the CAISO of events requiring Dispatch of operating reserves and resource EIM Base Schedule adjustments in response to contingencies;

(iv) if a resource's actual response differs from the resource EIM Base Schedule adjustment, provide a resource EIM Base Schedule update showing the actual resources dispatched during the event by no later than 1:00 a.m. seven days after the Operating Day in which the event occurred; and

(v) inform the CAISO of the amount of resource capacity that is reserved for contingency reserve responsibility by either

ensuring that an Energy Bid for the resource is below the maximum operating limit of the resource or reducing the maximum operating limit of the resource.

(C) **CAISO Actions.**

(i) **Prior to Update.** Until the CAISO receives resource operating limit updates from an EIM Entity Scheduling Coordinator, the CAISO will continue to send Dispatch Instructions based upon pre-event operating limits.

(ii) **After Update.** After EIM Base Schedule updates are received and Dispatches in the Real-Time Market reflect the updated Self-Schedules and operating limits, the CAISO shall account for the Dispatches in the net scheduled Interchange values that it provides to EIM Entity Scheduling Coordinators.

(2) **Updates to Data for Reserve Sharing Event.**

(A) **Responsibilities.** Immediately following a reserve sharing event impacting the EIM Entity Balancing Authority Area-

(i) the EIM Entity must submit information regarding the assistance provided, including impacts to Balancing Authority Area Load schedules for each participant involved in the reserve sharing event; and

(ii) the EIM Entity Scheduling Coordinator must submit to the CAISO EIM Manual Dispatch instructions for resources in the EIM Entity Balancing Authority Area deployed in response to the reserve sharing event, pursuant to the reserve sharing group's criteria.

(B) **Offsets.** Until 1:00 a.m. seven days following the reserve sharing event impacting the EIM Entity Balancing Authority Area, the EIM Entity may offset the Load schedules created by the reserve sharing event by entering resource to Load schedules, reflecting generation resources

actually utilized to assist in the event.

(q) **Variable Energy Resources.** Provisions of Section 34 specifically applicable to Variable Energy Resources and Eligible Intermittent Resources appear in Sections 34.1.3, 34.1.6, 34.2.2, 34.5.1. 34.13.2.

(r) **Use of EIM Available Balancing Capacity.**

(1) **In General.** The CAISO will use EIM Available Balancing Capacity identified in the EIM Resource Plan to address power balance constraint infeasibilities in the EIM Balancing Authority Area for which the EIM Available Balancing Capacity is designated by the responsible EIM Entity Scheduling Coordinator, while simultaneously participating in Congestion Management.

(2) **Resource Sufficiency Evaluations.** The CAISO will not apply the EIM Available Balancing Capacity towards its evaluation of the resource sufficiency tests specified in Section 29.34(k), (l), and (m).

(3) **Real-Time Market Scheduling Run.** In each interval of the Real-Time Market, the CAISO will use the EIM Available Balancing Capacity in the run of the market optimization used to establish scheduling priorities by-

(A) adding a penalty price factor to EIM Available Balancing Capacity Energy Bid prices so that the EIM Available Balancing Capacity is dispatched to address power balance violations, after Effective Economic Bids submitted for EIM Participating Resources in the respective EIM Balancing Authority Area not associated with the EIM Available Balancing Capacity have cleared, while respecting the economic merit order of the EIM Available Balancing Capacity Energy Bid prices;

(B) enforce a constraint that prevents the release of EIM Upward Available Balancing Capacity in excess of the difference between the EIM Entity's demand and the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area, minus the import transfer into that EIM Balancing Authority Area; and

(C) enforce a constraint that prevents the release of EIM Downward Available Balancing Capacity in excess of the difference between the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area and the EIM Entity's demand, minus the export transfer out of that EIM Balancing Authority Area.

(4) **Real-Time Market Pricing Run.** For each interval of the Real-Time Market, in the run of the market optimization used to set binding schedules and prices, the CAISO will –

(A) use the EIM Available Balancing Capacity released in the run of the market optimization to establish scheduling priorities based on the Energy Bid Curves for EIM Participating Resources and non-participating resources created pursuant to Sections 29.30(c) and (d), respectively;

(B) change the load forecast for the EIM Balancing Authority Area by a small tolerance to allow for price determination;

(C) clear the Real-Time Market and establish prices based on the pricing parameters in Sections 27.4.3.2 and 27.4.3.4, if the amount of EIM Available Balancing Capacity released in the scheduling run is not sufficient to clear the potential infeasibility identified in the scheduling run.

(s) **EIM Auto-Match.**

(1) **Designation.** An EIM Entity may submit a designation to the Master File of EIM non-participating resources, up to the number specified in the Business Practice Manual, in its Balancing Authority Area to automatically match import/export schedule changes outside of the Market Clearing of the Real-Time Market because of changes to E-Tags at one or more designated EIM Interties or Scheduling Points, up to the number designated in the Business Practice Manual for the Energy Imbalance Market.

(2) **Duration of Designation.** Any designation under paragraph (1) of this

subsection shall remain in effect until the EIM Entity notifies the CAISO that it is terminating the designation by a submission to the Master File.

(3) **CAISO Actions in Response to Intertie Schedule Change.** If an EIM Entity designates a non-participating resource under paragraph (1) of this subsection, the CAISO, upon identification of an associated EIM Intertie or Scheduling Point schedule change outside of the Market Clearing of the Real-Time Market, shall –

(A) reflect a matching schedule change to the EIM non-participating resource in the Real-Time Market using the EIM Auto-Match feature; and

(B) omit the EIM Intertie or Scheduling Point schedule change from the historical intertie schedule over/under-scheduling histogram for the determination of additional capacity test requirements for relevant EIM Balancing Authority Area(s) under Sections 29.34(l)(4)(B) and 29.34(m)(6)(ii) that are registered for EIM Auto-Match in accordance with the procedures specified in the Business Practice Manual for the Energy Imbalance Market.

Attachment B – Marked tariff sheets of First Tranche of revisions

with an effective date of April 1, 2021

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

****First tranche – tariff redlines with proposed effective date of 4/1/2021****

Section 11

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11.8.6.3 Determination of Total Positive CAISO Markets Uplifts

11.8.6.3.1 Total Positive IFM Uplifts

Any positive Net IFM Bid Cost Uplifts are reduced by scaling them with the uplift ratio in Section 11.8.6.3.1(iii) to determine the Total IFM Uplift (for a Settlement Interval) as follows:

(i) The Total IFM Uplift is the Net IFM Bid Cost Uplift for all Settlement Intervals in the IFM Market.

(ii) The Total Positive IFM Uplift is determined as the sum of the positive IFM Bid Cost Uplift for all Settlement Intervals in the IFM Market.

(iii) The uplift ratio is equal to the Total IFM Uplift divided by the Total Positive IFM Uplift.

11.8.6.3.2 Net RUC Bid Cost Uplift and RTM Bid Cost Uplift

The CAISO will determine the Net RUC Bid Cost Uplift and the Net RTM Bid Cost Uplift to be allocated to each Balancing Authority Area in the EIM Area as follows:

(i) For each Balancing Authority Area separately, the CAISO will calculate a combined RUC Bid Cost Uplift and RTM Bid Cost Uplift amount based on the RUC Bid Cost Shortfall, RUC Bid Cost Surplus, RTM Bid Cost Shortfall, and RTM Bid Cost Surplus of each supply resource located within the Balancing Authority Area for each Settlement Interval.

(ii) For each Balancing Authority Area separately, for each Trading Day, the CAISO will calculate a daily combined total RUC Bid Cost Uplift and RTM Bid Cost Uplift amount as the sum of all the Settlement Interval values calculated according to Section 11.8.6.3.2(i).

(iii) For each Balancing Authority Area separately, for each Trading Day, the CAISO will calculate a combined total positive RUC Bid Cost Uplift and RTM Bid Cost Uplift amount as the sum of the positive Settlement Interval values calculated according to Section

11.8.6.3.2(i).

(iv) The CAISO will calculate the daily uplift ratio for the RUC and RTM, for each Balancing Authority Area in the EIM Area, as the daily combined total RUC Bid Cost Uplift and RTM Bid Cost Uplift amount, calculated according to Section 11.8.6.2(ii), divided by the daily combined total positive RUC Bid Cost Uplift and RTM Bid Cost Uplift, calculated according to Section 11.8.6.2(iii).

(v) For each Settlement Interval and each Balancing Authority Area in the EIM Area, the CAISO will multiply the applicable daily uplift ratio with each combined total positive RUC Bid Cost Uplift and each combined total RTM Bid Cost Uplift to determine the Net RUC Bid Cost Uplift and the preliminary Net RTM Bid Cost Uplift, respectively, for each Balancing Authority Area.

(vi) The CAISO shall adjust the preliminary Net RTM Bid Cost Uplift amounts calculated in Section 11.8.6.3.2(v) by –

(a) dividing the sum of net EIM Transfers out of a Balancing Authority Area by that Balancing Authority Area's EIM Measured Demand ~~the sum of the absolute value of Uninstructed Imbalance Energy due to Demand, the absolute value of Uninstructed Imbalance Energy due to Supply, the absolute value of Unaccounted For Energy,~~ and the net EIM Transfer out of the Balancing Authority Area;

(b) multiplying the preliminary Net RTM Bid Cost Uplift amounts by the ratio calculated in Section 11.8.6.3.2(vi)(a); and

(c) reducing the preliminary Net RTM Bid Cost Uplift amounts of the EIM Entity Balancing Authority Area with the net transfer out by the amount calculated in Section 11.8.6.3.2(vi)(b) and adding that amount to the EIM Entity Balancing Authority Area with the net transfer in to determine the final preliminary Net RTM Bid Cost Uplift amounts.

(vii) For each Settlement Interval, the Net RUC Bid Cost Uplift and final Net RTM Bid Cost Uplift apportionment by Settlement Interval for each Balancing Authority Area in the EIM

Area will be the sum of the amounts calculated in Sections 11.8.6.3.2(v) and, for Net RTM Bid Cost Uplift only, 11.8.6.3.2(vi) for each Balancing Authority Area in the EIM Area.

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Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(a) **Applicability.** Section 29.11, rather than Section 11, shall apply to the CAISO Settlement with EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators, except as otherwise provided, but not to other Scheduling Coordinators.

(b) **Imbalance Energy.**

(1) **FMM Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's FMM Instructed Imbalance Energy in the same manner as it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(ii) **Non-Participating Resources.** The CAISO will calculate the

FMM Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner as it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(B) **Settlement.** The CAISO will settle –

(i) the FMM Instructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(2) **RTD Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's RTD Instructed Imbalance Energy in the same manner in which it calculates RTD Instructed Imbalance Energy under Sections 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(ii) **Non-Participating Resources.** The CAISO will calculate the RTD Instructed Imbalance Energy of non-participating resources

in an EIM Entity Balancing Authority Area in the same manner in which it calculates RTD Instructed Imbalance Energy under Section 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(B) **Settlement.** The CAISO will settle the RTD Instructed Imbalance Energy –

(i) with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(3) **Uninstructed Imbalance Energy.**

(A) **EIM Participating Resources.**

(i) **Calculation.** For EIM Participating Resources and an EIM Entity Balancing Authority Area's dynamic import/export schedules with external resources, the CAISO will calculate Uninstructed Imbalance Energy in the same manner in which it calculates Uninstructed Imbalance Energy under Section 11.5.2.1.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator or the EIM Entity Scheduling Coordinator, as applicable.

(B) **Non-Participating Resources.**

(i) **Calculation.** For non-participating resources in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2, except that

the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule and the CAISO will treat an EIM Manual Dispatch and an EIM Auto-Match as a Dispatch Instruction.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy for non-participating resources in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(C) **Non-Participating Load.**

(i) **Calculation.** For non-participating Load in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2.2, except that the CAISO will determine deviations based on the EIM Base Load Schedule.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for non-participating Load in an EIM Entity Balancing Authority Area at the applicable Default LAP Hourly Real-Time Price in accordance with Section 11.5.2.2 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(D) **EIM Base Schedules Below PMin.**

(i) **Calculation.** For deviations from an EIM Base Schedule below PMin submitted by an EIM Entity Scheduling Coordinator or an EIM Participating Resource Scheduling Coordinator, the CAISO will calculate Uninstructed Imbalance Energy in accordance with

Section 11.5.2 as if the EIM Resource had received a Dispatch Instruction to PMin.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for deviations from an EIM Base Schedule below PMin in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator.

(c) **Unaccounted For Energy of EIM Entities.**

(1) **Calculation.** The CAISO will calculate Unaccounted For Energy for each EIM Entity Balancing Authority Area as the difference between metered Demand, and the sum of the metered Supply and the metered values at the interties, adjusted for losses.

(2) **Settlement.** The CAISO will settle Unaccounted For Energy with the applicable EIM Entity Scheduling Coordinator at the applicable Hourly Real-Time LAP price.

(d) **Charges for Over- and Under-Scheduling of EIM Entities.**

(1) **Under-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 125% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity

Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 200% of the Hourly Real-Time LAP price.

(2) **Over-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 75% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 50% of the Hourly Real-Time LAP Price.

(3) **Distribution of Revenues.**

(A) **Apportionment.** The CAISO will calculate the total daily excess revenues received from under-scheduling charges and over-scheduling charges under Section 29.11(d)(1) and (2) and apportion them to Balancing Authority Areas in the EIM Area that were not subject to either under-scheduling or over-scheduling charges during the Trading Day according to metered Demand.

(B) **Allocation.** The CAISO will allocate –

(i) the amounts apportioned to EIM Entity Balancing Authority Areas pursuant to Section 29.11(d)(3)(A) to the applicable EIM Entity

Scheduling Coordinator; and

(ii) the amounts apportioned to the CAISO Balancing Authority Area pursuant to Section 29.11(d)(3)(A) to Scheduling Coordinators in the CAISO Balancing Authority Area according to metered Demand.

(4) **Exemption.** An EIM Entity will be exempt from under-scheduling and over-scheduling charges under Section 29.11(d)(1) and (2) if it uses the Demand Forecast prepared by the CAISO in its EIM Resource Plan and it approves EIM Base Schedules for its resources within +/- 1% of the CAISO Demand Forecast, as determined according to the Business Practice Manual for the Energy Imbalance Market.

(e) **Neutrality Accounts.**

(1) **In General.** The CAISO will collect neutrality amounts from EIM Market Participants to recover differences in Real-Time Market payments made and Real-Time Market payments received.

(2) **Real-Time Congestion Offset.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Congestion Offset allocation calculated pursuant to Section 11.5.4.1.1.

(3) **Real-Time Imbalance Energy Offset Allocation.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Imbalance Energy Offset allocation calculated pursuant to Section 11.5.4.1.

(4) **Real-Time Marginal Cost of Losses Offset.** The CAISO will allocate the Real-Time Marginal Cost of Losses Offset to EIM Entity Scheduling Coordinators pursuant to Section 11.5.4.1.2.

(5) **Other Neutrality Adjustments.** The CAISO will levy additional charges on or make additional payments to EIM Market Participants as adjustments in accordance with Section 11.14.

(f) **Real-Time Bid Cost Recovery.**

(1) **In General.** The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery.** The CAISO will calculate Real-Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and the corresponding intervals as IFM self-commitment intervals.

(3) **Application of Real-Time Performance Metric.**

The CAISO will adjust the RTM Energy Bid Cost, the RTM Market Revenues, and RTM Minimum Load Costs determined pursuant to Section 29.11(f)(2) by multiplying the Real-Time Performance Metric with those amounts for the applicable Settlement Interval pursuant to the rules specified in Section 11.8.4.4 and its subsections, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(4) **Allocation of EIM Entity RTM Bid Cost Uplift.**

(A) **Calculation of Charge.** The Net RTM Bid Cost Uplift will be determined for each EIM Entity Balancing Authority Area in accordance with the methodology set forth in Section 11.8.6.

(B) **Settlement.** The CAISO will assess the Net RTM Bid Cost Uplift calculated for each EIM Entity Balancing Authority Area to the applicable EIM Entity Scheduling Coordinator in accordance with Section 11.8.6.6.(ii).

(g) **[Not Used]**

(h) **EIM Initial Fee.** The CAISO will charge Balancing Authority Areas that enter into an EIM Implementation Agreement pursuant to Section 29.2(b) an initial fee to cover a share of the capital and operations and maintenance costs associated with setting up the Real-Time Market to accommodate the participation of the Balancing Authority as an EIM Entity. The fee will be established by the EIM Implementation Agreement entered into

pursuant to Section 29.2(b)(1) as accepted by FERC.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM Administrative Charge consisting of the real-portions of the Market Services Charge and the System Operations Charge.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** The System Operations Charge shall be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study conducted according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum of the real-time activities associated with market services charge and the real-time activities chart associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(5) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section 29.4(b)(4), the CAISO will charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(6) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

(j) **Variable Energy Resource Forecast Charge.**

(1) **In General.** The CAISO will charge EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators a fee for the Variable Energy Resource forecasting services in accordance with Appendix F, Schedule 4.

(2) **Waiver.** The CAISO will waive the Variable Energy Resource forecast charge if an EIM Entity has an independent forecast for its Variable Energy Resources and provides the independent forecast to the CAISO.

(k) **Transmission Service.** The CAISO will charge EIM Market Participants for transmission service according to Section 29.26.

(l) **Settlement.** With regard to the CAISO's assessment and payment of charges to, and collection of charges from, EIM Market Participants pursuant to Sections 11 and 29.11, the CAISO shall assess, pay and collect such charges, address disputed invoices, assess, pay and collect Settlement-related fees and charges, including those under Sections 11.21, 11.28, and 11.29, and make any financial adjustments in accordance with the terms and schedule set forth in Section 11.

(m) **Charges Related to RTM Participation of Interties.** In the event that an EIM Entity enables participation in the Real-Time Market on EIM External Interties, the EIM Entity Scheduling Coordinator shall also be subject to any applicable charges under Sections 11.31 and 11.32.

(n) **EIM Transfers and Settlement for Contingency Reserve Obligations.** The CAISO

shall allocate Operating Reserve Obligations to EIM Entity Scheduling Coordinators for EIM Transfers as follows –

(1) EIM Entity Scheduling Coordinators will receive a payment equal to three (3) percent of the hourly MW EIM Transfer into the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively; and

(2) EIM Entity Scheduling Coordinators will receive a charge equal to three (3) percent of the hourly MW EIM Transfer out of the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively.

(o) **Application of Persistent Deviation Metric.**

The CAISO will modify the Bid Cost Recovery calculations described in Section 29.11(f) and Residual Imbalance Energy payments in Section 11.5.5 as described in Section 11.17, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(p) **Flexible Ramping Product.** The CAISO will allocate and settle payments and charges for the Flexible Ramping Product according to Section 11.25, where the CAISO will consider EIM Base Schedules of non-participating resources as Self-Schedules.

(q) **EIM Transfer System Resource Settlement Information.** The CAISO will provide EIM Entities with non-binding Settlement information associated with Energy transfer schedule changes from their respective base schedules between EIM Entity Balancing Authority Areas. ~~if –~~

~~(1) the EIM Entities provide the CAISO with a mutually agreed upon location for the settlement of such schedule changes; and~~

~~(2) the EIM Entities request that the CAISO provide such information.~~

(r) **EIM Transfer System Resource Settlement.**

(1) **EIM Transfer System Resource Registration.** The CAISO will provide each EIM Entity with financially binding Settlement of Energy transfer schedule changes from its respective base schedules between EIM Entity Balancing

Authority Areas, and will ~~if~~ –

(A) establish for each EIM Entity that shares an EIM Internal Intertie ~~and desires such Settlement agrees upon~~ a to/from EIM Transfer system resource pricing location in their respective EIM Entity Balancing Authority Area;

(B) associate with each ~~EIM Entity Scheduling Coordinator registers the agreed upon~~ to/from EIM Transfer system resource pricing location~~s,~~ a unique base EIM Transfer system resource that accounts for Energy transfer schedule changes between EIM Entity Balancing Authority Areas;~~including the ratio of the pricing at each location to be shared among them, in accordance with the procedures in the Business Practice Manual for the Energy Imbalance Market; and~~

(C) require each EIM Entity Scheduling Coordinator to submit~~s~~ EIM Base Schedules and E-Tags that identifies~~associate~~ Energy transfer schedule changes ~~with~~at the registered base EIM Transfer system resource;~~.~~ and

(D) reject EIM Base Schedule changes at the to/from EIM Transfer system resource pricing location not associated with the registered base EIM Transfer system resource.

(2) **Settlement for EIM Transfer System Resource Changes.** The CAISO will settle EIM Transfer system resource changes established pursuant to Section 29.11(r)(1) as –

(A) FMM Instructed Imbalance Energy or RTD Instructed Energy based on the Settlement Interval in which the E-Tag is received, without regard for other Energy types identified in Sections 11.5.1.1 or 11.5.2.2, or as an Operational Adjustment if the E-Tag is received after the end of the Operating Hour for purposes of Energy accounting in accordance with the applicable WECC business practices;

(B) based on the difference between the E-Tag and the EIM Transfer system

resource base schedule;

(C) at the relevant FMM or RTD Locational Marginal Price at each unique EIM Transfer system resource pricing location associated with the base EIM Transfer system resource~~ratio of the Locational Marginal Prices for each registered financial EIM Transfer system resource location~~; and

(D) in~~ex~~cluding any contribution that the base EIM Transfer system resource might have ~~otherwise had~~ on the ~~Real-Time Imbalance Energy Offset pursuant to Section 29.11(e)(3) and~~ RTM Bid Cost Recovery pursuant to Section 29.11(f).

* * * * *

29.34 EIM Operations

(a) **In General.** Section 34, as supplemented by provisions in Section 29.34, will govern the operation of the Real-Time Market within the EIM Area.

(b) **Applicability.** EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators will submit EIM Base Schedules and other necessary information to the CAISO for use in the Real-Time Market pursuant to Section 29.34 and not pursuant to Section 34.

(c) **Submission Deadlines.** If an EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator fails to submit an EIM Base Schedule according to the timelines established in this Section 29.34, the CAISO will not accept the EIM Base Schedule or use it in the Real-Time Market.

(d) **Demand Forecast.**

(1) **In General.** In accordance with procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO shall develop short-term and mid-term Demand Forecasts by Demand Forecast zone within each EIM Entity Balancing Authority Area, separately from the CAISO Balancing Authority

Area.

(2) **Short Term Forecast.** The CAISO's short-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce a value every five minutes for the duration of the CAISO's Dispatch horizon, which has five-minute granularity and extends several Dispatch Intervals.

(3) **Mid-Term Forecast.** The CAISO's mid-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce hourly values for the next hour through the next 7 days.

(4) **EIM Entity Scheduling Coordinator Demand Forecast.**

(A) **In General.** An EIM Entity Scheduling Coordinator may opt to provide a non-binding EIM Entity Demand Forecast, net of behind-the-meter Generation that is not registered as an EIM Resource, as part of the hourly EIM Base Schedules.

(B) **Timing and Scope.** The EIM Entity Scheduling Coordinator must provide any such Demand Forecasts by 10:00 a.m. for the next 7 days.

(C) **Updates.** The EIM Entity Scheduling Coordinator must update any such Demand Forecast for each Operating Hour and the following 6 to 10 hours and submit the update to the CAISO no later than 75 minutes prior to the start of that Operating Hour, as part of its hourly EIM Base Schedule submission.

(D) **Effect on Bid Requirement.** If the EIM Entity Demand Forecast is less than the CAISO Demand Forecast, then the EIM Entity's EIM Resource Plan must include sufficient Bids to cover the difference in Demand Forecasts.

(5) **Posting.** Between 6:00 p.m. of the seventh day prior to the start of the Operating Day and 6:00 p.m. of the day prior to the Operating Day, the CAISO shall post and update hourly Demand Forecasts by Demand Forecast zone.

(e) **EIM Resource Plan.**

(1) **In General.** By 10:00 a.m. of the day preceding the Operating Day, the EIM Entity Scheduling Coordinators on behalf of non-participating resources and EIM Participating Resource Scheduling Coordinators on behalf of EIM Participating Resources, must submit all applicable components of the EIM Resource Plan as set forth in Section 29.34(e)(3).

(2) **Scope.** The EIM Resource Plan components must cover a seven day horizon (with hourly detail for each resource) beginning with the Operating Day.

(3) **Contents.** The EIM Resource Plan shall comprise –

(A) EIM Base Schedules of EIM Entities and EIM Participating Resources;

(B) Energy Bids (applicable to EIM Participating Resources only);

(C) EIM Upward Available Balancing Capacity;

(D) EIM Downward Available Balancing Capacity;

(E) EIM Reserves to Meet NERC/WECC Contingency Reserves Requirements; and

(F) if the EIM Entity Scheduling Coordinator is not relying on the CAISO's Demand Forecast, a Demand Forecast.

(4) **Contents of EIM Base Schedules.** EIM Base Schedules of EIM Entities must include hourly-level Demand Forecasts for EIM Demand, hourly-level schedules for resources, including any hourly-level schedules below PMin that the EIM Entity seeks an accounting for, and hourly-level scheduled Interchanges.

(5) **Adjustment Prior to Submission of Real-Time EIM Base Schedules.** The EIM Entity Scheduling Coordinator may adjust the components of the EIM Resource Plan prior to the submission of Real-Time EIM Base Schedules up to 75 minutes before the Operating Hour.

(f) **Real-Time EIM Base Schedules.**

(1) **In General.**

(A) **Initial Submission.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating

resources in the EIM Entity Balancing Authority Area that wish to submit real-time hourly EIM Base Schedules, or, with regard to non-participating resources, wish to submit EIM Base Schedule information pursuant to Section 29.34(f)(4), must submit such schedules or other information consistent with the requirements of the Business Practice Manual for the Energy Imbalance Market and at least 75 minutes before the start of the Operating Hour.

(B) **Interim Revisions.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating resources in the EIM Entity Balancing Authority Area may revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to Section 29.34(f)(4), meeting the requirements of the Business Practice Manual for the Energy Imbalance Market at or before 55 minutes before the start of the Operating Hour.

(C) **Final Revision.** EIM Entity Scheduling Coordinators may further revise hourly Real-Time EIM Base Schedules, including EIM Base Schedules for EIM Participating Resources, at or before 40 minutes before the start of the Operating Hour.

(2) **EIM Base Schedule for EIM Participating Resources.** The EIM Base Schedule for each EIM Participating Resource must be within the Economic Bid range of the submitted Energy Bids for each Operating Hour for EIM Resources, which the CAISO will make available to the EIM Entity without price information, provided that an EIM Participating Resource Scheduling Coordinator may also include Energy below PMin in an EIM Base Schedule.

(3) **EIM Base Schedule for Imports and Exports.** EIM Base Schedules must –

(A) disaggregate Day-Ahead import/export schedules between the EIM Entity Balancing Authority Area and the CAISO Balancing Authority Area;

(B) identify the relevant EIM Interties for imports and exports to an EIM Entity Balancing Authority Area from Balancing Authority Areas other than the CAISO Balancing Authority Area; and

(C) include approved, pending, and adjusted E-Tags for imports and exports.

(4) **EIM Base Schedule Aggregation.** In response to a request by an EIM Entity Scheduling Coordinator, the CAISO will establish an electronic interface by which non-participating resources, Loads, and other customers of the EIM Entity may submit EIM Base Schedule information to the EIM Scheduling Coordinator and the CAISO.

(g) **Initial EIM Base Load Schedule.** The CAISO will derive an initial EIM Base Load Schedule for each EIM Entity from the Demand Forecast used for the EIM Entity Balancing Authority Area, estimated Transmission Losses, and an assumed Load distribution, pursuant to the methodology set forth in the Business Practice Manual for the Energy Imbalance Market.

(h) **Energy Bids.** EIM Participating Resource Scheduling Coordinators may submit Energy Bids in accordance with the timelines, processes, and requirements applicable to other resources submitting Energy Bids under Section 34.

(i) **Interchange Schedules with Other Balancing Authorities.**

(1) **In General.** EIM Entity Scheduling Coordinators must submit Interchange Schedules with other Balancing Authority Areas at the relevant EIM Interties and must update these Interchange Schedules with any adjustments, when applicable, as part of the hourly EIM Resource Plan revision.

(2) **Economic Bidding of EIM Intertie Transactions.** An EIM Participating Resource Scheduling Coordinator may bid a transaction at an EIM External Intertie into the FMM if the EIM Entity supports economic bidding of EIM External Intertie transactions and the relevant transmission service providers or path operators support 15-minute scheduling at the EIM External Intertie under FERC Order No. 764.

(j) **CAISO Validation.** The CAISO Markets systems will validate the initial EIM Resource Plan by 1:00 p.m. on the day before the Operating Day, and within 15 minutes of the submission of EIM Base Schedules or adjustments to EIM Base Schedules, the CAISO will validate the EIM Resource Plan and notify the EIM Entity Scheduling Coordinator-

(1) if the EIM Resource Plan is not balanced;

(2) if the EIM Resource Plan provides insufficient Flexible Ramping Product capacity to meet requirements determined pursuant to Section 29.34(m); and

(3) if the CAISO anticipates Congestion based on the submitted EIM Resource Plans.

(k) **EIM Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules according to Section 29.34(f)(1)(c), Supply in the EIM Base Schedules does not balance the Demand Forecast, the CAISO will adjust the Demand in the EIM Base Schedule to equal Supply.

(l) **EIM Resource Plan Evaluation.**

(1) **Requirement.** The EIM Base Schedules for resources included in the EIM Resource Plan must balance the Demand Forecast for each EIM Entity Balancing Authority Area.

(2) **Insufficient Supply.** An EIM Resource Plan shall be deemed to have insufficient Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the highest quantity offers in the Energy Bid range from EIM Participating Resources, including Interchange with other Balancing Authority Areas, is less than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(3) **Excess Supply.** An EIM Resource Plan shall be deemed to have excessive Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the lowest quantity Bids in the Energy Bid range from EIM Participating Resources is greater than the total Demand Forecast that the EIM

Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(4) **Additional Hourly Capacity Requirements.**

(A) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that a Balancing Authority Area in the EIM Area has historically high import or export schedule changes between forty minutes and twenty minutes before the start of the Trading Hour, the CAISO will add to the Balancing Authority Area in the EIM Area's capacity requirements an additional requirement.

(B) **Additional Capacity Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each Balancing Authority Area in the EIM Area histograms of the percentage of the difference between imports and exports scheduled at forty minutes before the start of the Trading Hour and the final imports and exports at twenty minutes before the start of the Trading Hour based on the submitted E-Tags at those times and calculate additional upward and downward requirements for the capacity test component of the resource sufficiency evaluation.

(m) **Flexible Ramping Sufficiency Determination.**

(1) **Review.**

(A) **EIM Entity Balancing Authority Areas.** The CAISO will review the EIM Resource Plan pursuant to the process set forth in the Business Practice Manual for the Energy Imbalance Market and verify that it has sufficient Bids for Ramping capability to meet the EIM Entity Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), and (5).

(B) **CAISO Balancing Authority Area.** The CAISO will review the Day-

Ahead Schedules in the CAISO Balancing Authority Area and verify that it has sufficient Bids for Ramping capability to meet the CAISO Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), (5), and (6).

(2) **Determination of EIM Diversity Benefit.** The CAISO will calculate separately the upward and downward EIM diversity benefit as the difference between the sum of the upward and downward Uncertainty Requirements for all Balancing Authority Areas in the EIM Area, and the Uncertainty Requirement for the EIM Area.

(3) **Effects of EIM Diversity Benefit.** For each Balancing Authority Area in the EIM Area, the CAISO will reduce the upward and downward Uncertainty Requirements by the Balancing Authority Area's pro rata share of the upward and downward EIM diversity benefit in the EIM Area as may be limited by –

(A) the available net import EIM Transfer capability into that Balancing Authority Area in the case of an upward Uncertainty Requirement; and

(B) the available net export EIM Transfer capability from that Balancing Authority Area in the case of a downward Uncertainty Requirement.

(4) **Determination of Flexible Ramping Sufficiency Credit.** The CAISO will calculate for each Balancing Authority Area in the EIM Area, the upward flexible Ramping sufficiency credit as the outgoing EIM Transfer from that area and the downward flexible Ramping sufficiency credit as the incoming EIM transfer into that area.

(5) **Effect of Flexible Ramping Sufficiency Credit.** The CAISO will reduce the upward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its upward flexible Ramping sufficiency credit, and will reduce the downward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its downward flexible Ramping sufficiency credit.

(6) **Incremental Requirements.**

(i) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that an EIM Balancing Authority Area has historically high import or export schedule changes between T-40 and T-20, the CAISO will add to the EIM Entity's flexible capacity requirement an additional incremental requirement.

(ii) **Additional Incremental Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each EIM Entity Balancing Authority Area histograms of the percentage of the difference between imports and exports scheduled at T-40 and the final imports at T-20 based on the E-Tags submitted at T-40 and T-20 and calculate additional incremental and decremental requirements for the capacity test component of the resource sufficiency evaluation.

(n) **Effect of Resource Plan Insufficiency.**

(1) **Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(c), the EIM Resource Plan has insufficient supply as determined according to Section 29.34(l)-

(A) the CAISO will not include the EIM Entity Balancing Authority Area in the Uncertainty Requirement of the EIM Area;

(B) the CAISO will hold the EIM Transfer limit into or from the EIM Entity Balancing Authority Area, as specified in Section 29.34(n)(2), at the value for the last 15-minute interval.

(2) **Flexible Ramping Insufficiency.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(c), the CAISO determines-

(i) that an EIM Entity Balancing Authority Area has insufficient upward

Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the upward and into the EIM Entity BAA direction; and

(ii) that an EIM Entity Balancing Authority Area has insufficient downward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the downward and from the EIM Entity BAA direction.

(o) **Transmission Constraint Relaxation.** If an EIM Entity Scheduling Coordinator's approved EIM Resource Plan does not have sufficient Bids to resolve Congestion, the CAISO will relax the relevant Transmission Constraints in the Market Clearing and the EIM Entity will become responsible for managing its congested Transmission Constraints through other means, and the CAISO will determine prices for Congestion consistent with Transmission Constraint relaxation parameters established in the Business Practice Manual for the Energy Imbalance Market until the Transmission Constraint is no longer binding in the Real-Time Market.

(p) **Operating Reserves.**

(1) **Schedules.**

(A) **EIM Entity Responsibility.** Each EIM Entity is responsible for its contingency reserves, or share of such contingency reserves under the terms of a reserve sharing group agreement, and it and the reserve sharing group are responsible for deploying operating reserves, including regulating reserves, in conformance with NERC and WECC requirements.

(B) **EIM Entity Scheduling Coordinator Responsibility.** The EIM Entity Scheduling Coordinator shall –

(i) include any Energy deployed from reserves in the hourly EIM Base Schedules, if time permits, in which case they will be settled in the Real-Time Market;

(ii) otherwise include the Energy deployed from reserves as EIM Manual Dispatches, if time does not permit;

(iii) immediately inform the CAISO of events requiring Dispatch of operating reserves and resource EIM Base Schedule adjustments in response to contingencies;

(iv) if a resource's actual response differs from the resource EIM Base Schedule adjustment, provide a resource EIM Base Schedule update showing the actual resources dispatched during the event by no later than 1:00 a.m. seven days after the Operating Day in which the event occurred; and

(v) inform the CAISO of the amount of resource capacity that is reserved for contingency reserve responsibility by either ensuring that an Energy Bid for the resource is below the maximum operating limit of the resource or reducing the maximum operating limit of the resource.

(C) **CAISO Actions.**

(i) **Prior to Update.** Until the CAISO receives resource operating limit updates from an EIM Entity Scheduling Coordinator, the CAISO will continue to send Dispatch Instructions based upon pre-event operating limits.

(ii) **After Update.** After EIM Base Schedule updates are received and Dispatches in the Real-Time Market reflect the updated Self-Schedules and operating limits, the CAISO shall account for the Dispatches in the net scheduled Interchange values that it provides to EIM Entity Scheduling Coordinators.

(2) **Updates to Data for Reserve Sharing Event.**

(A) **Responsibilities.** Immediately following a reserve sharing event impacting the EIM Entity Balancing Authority Area-

(i) the EIM Entity must submit information regarding the assistance provided, including impacts to Balancing Authority Area Load schedules for each participant involved in the reserve sharing event; and

(ii) the EIM Entity Scheduling Coordinator must submit to the CAISO EIM Manual Dispatch instructions for resources in the EIM Entity Balancing Authority Area deployed in response to the reserve sharing event, pursuant to the reserve sharing group's criteria.

(B) **Offsets.** Until 1:00 a.m. seven days following the reserve sharing event impacting the EIM Entity Balancing Authority Area, the EIM Entity may offset the Load schedules created by the reserve sharing event by entering resource to Load schedules, reflecting generation resources actually utilized to assist in the event.

(q) **Variable Energy Resources.** Provisions of Section 34 specifically applicable to Variable Energy Resources and Eligible Intermittent Resources appear in Sections 34.1.3, 34.1.6, 34.2.2, 34.5.1. 34.13.2.

(r) **Use of EIM Available Balancing Capacity.**

(1) **In General.** The CAISO will use EIM Available Balancing Capacity identified in the EIM Resource Plan to address power balance constraint infeasibilities in the EIM Balancing Authority Area for which the EIM Available Balancing Capacity is designated by the responsible EIM Entity Scheduling Coordinator, while simultaneously participating in Congestion Management.

(2) **Resource Sufficiency Evaluations.** The CAISO will not apply the EIM Available Balancing Capacity towards its evaluation of the resource sufficiency tests specified in Section 29.34(k), (l), and (m).

(3) **Real-Time Market Scheduling Run.** In each interval of the Real-Time Market, the CAISO will use the EIM Available Balancing Capacity in the run of the market optimization used to establish scheduling priorities by-

(A) adding a penalty price factor to EIM Available Balancing Capacity Energy Bid prices so that the EIM Available Balancing Capacity is dispatched to address power balance violations, after Effective Economic Bids submitted for EIM Participating Resources in the respective EIM Balancing Authority Area not associated with the EIM Available Balancing Capacity have cleared, while respecting the economic merit order of the EIM Available Balancing Capacity Energy Bid prices;

(B) enforce a constraint that prevents the release of EIM Upward Available Balancing Capacity in excess of the difference between the EIM Entity's demand and the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area, minus the import transfer into that EIM Balancing Authority Area; and

(C) enforce a constraint that prevents the release of EIM Downward Available Balancing Capacity in excess of the difference between the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area and the EIM Entity's demand, minus the export transfer out of that EIM Balancing Authority Area.

(4) **Real-Time Market Pricing Run.** For each interval of the Real-Time Market, in the run of the market optimization used to set binding schedules and prices, the CAISO will –

(A) use the EIM Available Balancing Capacity released in the run of the market optimization to establish scheduling priorities based on the Energy Bid Curves for EIM Participating Resources and non-participating resources created pursuant to Sections 29.30(c) and (d), respectively;

(B) change the load forecast for the EIM Balancing Authority Area by a small tolerance to allow for price determination;

(C) clear the Real-Time Market and establish prices based on the pricing parameters in Sections 27.4.3.2 and 27.4.3.4, if the amount of EIM

Available Balancing Capacity released in the scheduling run is not sufficient to clear the potential infeasibility identified in the scheduling run.

(s) **EIM Auto-Match.**

(1) **Designation.** An EIM Entity may submit a designation to the Master File of EIM non-participating resources, up to the number specified in the Business Practice Manual, in its Balancing Authority Area to automatically match import/export schedule changes outside of the Market Clearing of the Real-Time Market because of changes to E-Tags at one or more designated EIM Interties or Scheduling Points, up to the number designated in the Business Practice Manual for the Energy Imbalance Market.

(2) **Duration of Designation.** Any designation under paragraph (1) of this subsection shall remain in effect until the EIM Entity notifies the CAISO that it is terminating the designation by a submission to the Master File.

(3) **CAISO Actions in Response to Intertie Schedule Change.** If an EIM Entity designates a non-participating resource under paragraph (1) of this subsection, the CAISO, upon identification of an associated EIM Intertie or Scheduling Point schedule change outside of the Market Clearing of the Real-Time Market, shall –

(A) reflect a matching schedule change to the EIM non-participating resource in the Real-Time Market using the EIM Auto-Match feature; and

(B) omit the EIM Intertie or Scheduling Point schedule change from the historical intertie schedule over/under-scheduling histogram for the determination of additional capacity test requirements for relevant EIM Balancing Authority Area(s) under Sections 29.34(l)(4)(B) and 29.34(m)(6)(ii) that are registered for EIM Auto-Match in accordance with the procedures specified in the Business Practice Manual for the Energy Imbalance Market.

Attachment C – Clean tariff sheets of Second Tranche of revisions

with an effective date in Fall 2021

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

****Second tranche – clean tariff with proposed tentative effective date of 10/1/2021****

Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(a) **Applicability.** Section 29.11, rather than Section 11, shall apply to the CAISO Settlement with EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators, except as otherwise provided, but not to other Scheduling Coordinators.

(b) **Imbalance Energy.**

(1) **FMM Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's FMM Instructed Imbalance Energy in the same manner as it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(ii) **Non-Participating Resources.** The CAISO will calculate the FMM Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner as

it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(B) **Settlement.** The CAISO will settle –

(i) the FMM Instructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(2) **RTD Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's RTD Instructed Imbalance Energy in the same manner in which it calculates RTD Instructed Imbalance Energy under Sections 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(ii) **Non-Participating Resources.** The CAISO will calculate the RTD Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner in which it calculates RTD Instructed Imbalance Energy under

Section 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(B) **Settlement.** The CAISO will settle the RTD Instructed Imbalance Energy –

(i) with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(3) **Uninstructed Imbalance Energy.**

(A) **EIM Participating Resources.**

(i) **Calculation.** For EIM Participating Resources and an EIM Entity Balancing Authority Area's dynamic import/export schedules with external resources, the CAISO will calculate Uninstructed Imbalance Energy in the same manner in which it calculates Uninstructed Imbalance Energy under Section 11.5.2.1.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator or the EIM Entity Scheduling Coordinator, as applicable.

(B) **Non-Participating Resources.**

(i) **Calculation.** For non-participating resources in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule and the CAISO will treat an EIM Manual Dispatch and

an EIM Auto-Match as a Dispatch Instruction.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy for non-participating resources in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(C) **Non-Participating Load.**

(i) **Calculation.** For non-participating Load in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2.2, except that the CAISO will determine deviations based on the EIM Base Load Schedule.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for non-participating Load in an EIM Entity Balancing Authority Area at the applicable Default LAP Hourly Real-Time Price in accordance with Section 11.5.2.2 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(D) **EIM Base Schedules Below PMin.**

(i) **Calculation.** For deviations from an EIM Base Schedule below PMin submitted by an EIM Entity Scheduling Coordinator or an EIM Participating Resource Scheduling Coordinator, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2 as if the EIM Resource had received a Dispatch Instruction to PMin.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for deviations from an EIM Base Schedule below PMin in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator.

(c) **Unaccounted For Energy of EIM Entities.**

(1) **Calculation.** The CAISO will calculate Unaccounted For Energy for each EIM Entity Balancing Authority Area as the difference between metered Demand, and the sum of the metered Supply and the metered values at the interties, adjusted for losses.

(2) **Settlement.**

(A) **Unaccounted for Energy Settlement.** The CAISO will settle Unaccounted For Energy with the applicable EIM Entity Scheduling Coordinator at the applicable Hourly Real-Time LAP price.

(B) **Election Not to Settle Unaccounted for Energy.** Annually, an EIM Entity Scheduling Coordinator that submits metered Demand through Meter Data calculated without End-Use Meters may elect to not settle Unaccounted For Energy through the CAISO Markets, in which case –

(i) the CAISO will apply a zero-percent Transmission Losses factor when calculating the Initial EIM base load schedule per section 29.34(g); and

(ii) the EIM Entity Scheduling Coordinator will apply a zero-percent Transmission Losses factor when calculating their metered Demand.

(d) **Charges for Over- and Under-Scheduling of EIM Entities.**

(1) **Under-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand

within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 125% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 200% of the Hourly Real-Time LAP price.

(2) **Over-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 75% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 50% of the Hourly Real-Time LAP Price.

(3) **Distribution of Revenues.**

(A) **Apportionment.** The CAISO will calculate the total daily excess revenues received from under-scheduling charges and over-scheduling charges under Section 29.11(d)(1) and (2) and apportion them to Balancing Authority Areas in the EIM Area that were not subject to either under-scheduling or over-scheduling charges during the Trading Day according to metered Demand.

(B) **Allocation.** The CAISO will allocate –

(i) the amounts apportioned to EIM Entity Balancing Authority Areas pursuant to Section 29.11(d)(3)(A) to the applicable EIM Entity Scheduling Coordinator; and

(ii) the amounts apportioned to the CAISO Balancing Authority Area pursuant to Section 29.11(d)(3)(A) to Scheduling Coordinators in the CAISO Balancing Authority Area according to metered Demand.

(4) **Exemption.** An EIM Entity will be exempt from under-scheduling and over-scheduling charges under Section 29.11(d)(1) and (2) if it uses the Demand Forecast prepared by the CAISO in its EIM Resource Plan and it approves EIM Base Schedules for its resources within +/- 1% of the CAISO Demand Forecast, as determined according to the Business Practice Manual for the Energy Imbalance Market.

(e) **Neutrality Accounts.**

(1) **In General.** The CAISO will collect neutrality amounts from EIM Market Participants to recover differences in Real-Time Market payments made and Real-Time Market payments received.

(2) **Real-Time Congestion Offset.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Congestion Offset allocation calculated pursuant to Section 11.5.4.1.1.

(3) **Real-Time Imbalance Energy Offset Allocation.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Imbalance Energy Offset allocation calculated pursuant to Section 11.5.4.1.

(4) **Real-Time Marginal Cost of Losses Offset.** The CAISO will allocate the Real-Time Marginal Cost of Losses Offset to EIM Entity Scheduling Coordinators pursuant to Section 11.5.4.1.2.

(5) **Other Neutrality Adjustments.** The CAISO will levy additional charges on or make additional payments to EIM Market Participants as adjustments in accordance with Section 11.14.

(f) **Real-Time Bid Cost Recovery.**

(1) **In General.** The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery.** The CAISO will calculate Real-Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and the corresponding intervals as IFM self-commitment intervals.

(3) **Application of Real-Time Performance Metric.**

The CAISO will adjust the RTM Energy Bid Cost, the RTM Market Revenues, and RTM Minimum Load Costs determined pursuant to Section 29.11(f)(2) by multiplying the Real-Time Performance Metric with those amounts for the applicable Settlement Interval pursuant to the rules specified in Section 11.8.4.4 and its subsections, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(4) **Allocation of EIM Entity RTM Bid Cost Uplift.**

(A) **Calculation of Charge.** The Net RTM Bid Cost Uplift will be determined for each EIM Entity Balancing Authority Area in accordance with the methodology set forth in Section 11.8.6.

(B) **Settlement.** The CAISO will assess the Net RTM Bid Cost Uplift calculated for each EIM Entity Balancing Authority Area to the applicable EIM Entity Scheduling Coordinator in accordance with Section 11.8.6.6.(ii).

(g) **[Not Used]**

(h) **EIM Initial Fee.** The CAISO will charge Balancing Authority Areas that enter into an EIM Implementation Agreement pursuant to Section 29.2(b) an initial fee to cover a share of the capital and operations and maintenance costs associated with setting up the Real-Time Market to accommodate the participation of the Balancing Authority as an EIM Entity. The fee will be established by the EIM Implementation Agreement entered into pursuant to Section 29.2(b)(1) as accepted by FERC.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM Administrative Charge consisting of the real-portions of the Market Services Charge and the System Operations Charge.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** The System Operations Charge shall be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study conducted

according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum of the real-time activities associated with market services charge and the real-time activities chart associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(5) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section 29.4(b)(4), the CAISO will charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(6) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

(j) **Variable Energy Resource Forecast Charge.**

(1) **In General.** The CAISO will charge EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators a fee for the Variable Energy Resource forecasting services in accordance with Appendix F, Schedule 4.

(2) **Waiver.** The CAISO will waive the Variable Energy Resource forecast charge if an EIM Entity has an independent forecast for its Variable Energy Resources and provides the independent forecast to the CAISO.

(k) **Transmission Service.** The CAISO will charge EIM Market Participants for transmission service according to Section 29.26.

(l) **Settlement.** With regard to the CAISO's assessment and payment of charges to, and

collection of charges from, EIM Market Participants pursuant to Sections 11 and 29.11, the CAISO shall assess, pay and collect such charges, address disputed invoices, assess, pay and collect Settlement-related fees and charges, including those under Sections 11.21, 11.28, and 11.29, and make any financial adjustments in accordance with the terms and schedule set forth in Section 11.

(m) **Charges Related to RTM Participation of Interties.** In the event that an EIM Entity enables participation in the Real-Time Market on EIM External Interties, the EIM Entity Scheduling Coordinator shall also be subject to any applicable charges under Sections 11.31 and 11.32.

(n) **EIM Transfers and Settlement for Contingency Reserve Obligations.** The CAISO shall allocate Operating Reserve Obligations to EIM Entity Scheduling Coordinators for EIM Transfers as follows –

(1) EIM Entity Scheduling Coordinators will receive a payment equal to three (3) percent of the hourly MW EIM Transfer into the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively; and

(2) EIM Entity Scheduling Coordinators will receive a charge equal to three (3) percent of the hourly MW EIM Transfer out of the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively.

(o) **Application of Persistent Deviation Metric.**

The CAISO will modify the Bid Cost Recovery calculations described in Section 29.11(f) and Residual Imbalance Energy payments in Section 11.5.5 as described in Section 11.17, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(p) **Flexible Ramping Product.** The CAISO will allocate and settle payments and charges for the Flexible Ramping Product according to Section 11.25, where the CAISO will consider EIM Base Schedules of non-participating resources as Self-Schedules.

(q) **EIM Transfer System Resource Settlement Information.** The CAISO will provide EIM

Entities with non-binding Settlement information associated with Energy transfer schedule changes from their respective base schedules between EIM Entity Balancing Authority Areas.

(r) **EIM Transfer System Resource Settlement.**

(1) **EIM Transfer System Resource Registration.** The CAISO will provide each EIM Entity with financially binding Settlement of Energy transfer schedule changes from its respective base schedules between EIM Entity Balancing Authority Areas, and will –

(A) establish for each EIM Entity that shares an EIM Internal Intertie a to/from EIM Transfer system resource pricing location in their respective EIM Entity Balancing Authority Area;

(B) associate with each to/from EIM Transfer system resource pricing location a unique base EIM Transfer system resource that accounts for Energy transfer schedule changes between EIM Entity Balancing Authority Areas;

(C) require each EIM Entity Scheduling Coordinator to submit EIM Base Schedules and E-Tags that identifies Energy transfer schedule changes at the registered base EIM Transfer system resource; and

(D) reject EIM Base Schedule changes at the to/from EIM Transfer system resource pricing location not associated with the registered base EIM Transfer system resource.

(2) **Settlement for EIM Transfer System Resource Changes.** The CAISO will settle EIM Transfer system resource changes established pursuant to Section 29.11(r)(1) as –

(A) FMM Instructed Imbalance Energy or RTD Instructed Energy based on the Settlement Interval in which the E-Tag is received, without regard for other Energy types identified in Sections 11.5.1.1 or 11.5.2.2, or as an Operational Adjustment if the E-Tag is received after the end of the

Operating Hour for purposes of Energy accounting in accordance with the applicable WECC business practices;

(B) based on the difference between the E-Tag and the EIM Transfer system resource base schedule;

(C) at the relevant FMM or RTD Locational Marginal Price at each unique EIM Transfer system resource pricing location associated with the base EIM Transfer system resource; and

(D) including any contribution that the base EIM Transfer system resource might have on the RTM Bid Cost Recovery pursuant to Section 29.11(f).

* * * * *

29.34 EIM Operations

(a) **In General.** Section 34, as supplemented by provisions in Section 29.34, will govern the operation of the Real-Time Market within the EIM Area.

(b) **Applicability.** EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators will submit EIM Base Schedules and other necessary information to the CAISO for use in the Real-Time Market pursuant to Section 29.34 and not pursuant to Section 34.

(c) **Submission Deadlines.** If an EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator fails to submit an EIM Base Schedule according to the timelines established in this Section 29.34, the CAISO will not accept the EIM Base Schedule or use it in the Real-Time Market.

(d) **Demand Forecast.**

(1) **In General.** In accordance with procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO shall develop short-term and mid-term Demand Forecasts by Demand Forecast zone within each EIM Entity Balancing Authority Area, separately from the CAISO Balancing Authority

Area.

(2) **Short Term Forecast.** The CAISO's short-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce a value every five minutes for the duration of the CAISO's Dispatch horizon, which has five-minute granularity and extends several Dispatch Intervals.

(3) **Mid-Term Forecast.** The CAISO's mid-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce hourly values for the next hour through the next 7 days.

(4) **EIM Entity Scheduling Coordinator Demand Forecast.**

(A) **In General.** An EIM Entity Scheduling Coordinator may opt to provide a non-binding EIM Entity Demand Forecast, net of behind-the-meter Generation that is not registered as an EIM Resource, as part of the hourly EIM Base Schedules.

(B) **Timing and Scope.** The EIM Entity Scheduling Coordinator must provide any such Demand Forecasts by 10:00 a.m. for the next 7 days.

(C) **Updates.** The EIM Entity Scheduling Coordinator must update any such Demand Forecast for each Operating Hour and the following 6 to 10 hours and submit the update to the CAISO no later than 75 minutes prior to the start of that Operating Hour, as part of its hourly EIM Base Schedule submission.

(D) **Effect on Bid Requirement.** If the EIM Entity Demand Forecast is less than the CAISO Demand Forecast, then the EIM Entity's EIM Resource Plan must include sufficient Bids to cover the difference in Demand Forecasts.

(5) **Posting.** Between 6:00 p.m. of the seventh day prior to the start of the Operating Day and 6:00 p.m. of the day prior to the Operating Day, the CAISO shall post and update hourly Demand Forecasts by Demand Forecast zone.

(e) **EIM Resource Plan.**

(1) **In General.** By 10:00 a.m. of the day preceding the Operating Day, the EIM Entity Scheduling Coordinators on behalf of non-participating resources and EIM Participating Resource Scheduling Coordinators on behalf of EIM Participating Resources, must submit all applicable components of the EIM Resource Plan as set forth in Section 29.34(e)(3).

(2) **Scope.** The EIM Resource Plan components must cover a seven day horizon (with hourly detail for each resource) beginning with the Operating Day.

(3) **Contents.** The EIM Resource Plan shall comprise –

(A) EIM Base Schedules of EIM Entities and EIM Participating Resources;

(B) Energy Bids (applicable to EIM Participating Resources only);

(C) EIM Upward Available Balancing Capacity;

(D) EIM Downward Available Balancing Capacity;

(E) EIM Reserves to Meet NERC/WECC Contingency Reserves Requirements; and

(F) if the EIM Entity Scheduling Coordinator is not relying on the CAISO's Demand Forecast, a Demand Forecast.

(4) **Contents of EIM Base Schedules.** EIM Base Schedules of EIM Entities must include hourly-level Demand Forecasts for EIM Demand, hourly-level schedules for resources, including any hourly-level schedules below PMin that the EIM Entity seeks an accounting for, and hourly-level scheduled Interchanges.

(5) **Adjustment Prior to Submission of Real-Time EIM Base Schedules.** The EIM Entity Scheduling Coordinator may adjust the components of the EIM Resource Plan prior to the submission of Real-Time EIM Base Schedules up to 75 minutes before the Operating Hour.

(f) **Real-Time EIM Base Schedules.**

(1) **In General.**

(A) **Initial Submission.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating

resources in the EIM Entity Balancing Authority Area that wish to submit real-time hourly EIM Base Schedules, or, with regard to non-participating resources, wish to submit EIM Base Schedule information pursuant to Section 29.34(f)(4), must submit such schedules or other information consistent with the requirements of the Business Practice Manual for the Energy Imbalance Market and at least 75 minutes before the start of the Operating Hour.

(B) **Interim Revisions.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating resources in the EIM Entity Balancing Authority Area may revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to Section 29.34(f)(4), meeting the requirements of the Business Practice Manual for the Energy Imbalance Market at or before 55 minutes before the start of the Operating Hour.

(C) **Additional Revisions.** EIM Entity Scheduling Coordinators may continue to revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to Section 29.34(f)(4), at or before 40 minutes before the start of the Operating Hour.

(D) **Final Revision.** EIM Entity Scheduling Coordinators may further revise hourly Real-Time EIM Base Schedules, including EIM Base Schedules for EIM Participating Resources, at or before 30 minutes before the start of the Operating Hour.

(2) **EIM Base Schedule for EIM Participating Resources.** The EIM Base Schedule for each EIM Participating Resource must be within the Economic Bid range of the submitted Energy Bids for each Operating Hour for EIM Resources, which the CAISO will make available to the EIM Entity without price information,

provided that an EIM Participating Resource Scheduling Coordinator may also include Energy below PMin in an EIM Base Schedule.

(3) **EIM Base Schedule for Imports and Exports.** EIM Base Schedules must –

(A) disaggregate Day-Ahead import/export schedules between the EIM Entity Balancing Authority Area and the CAISO Balancing Authority Area;

(B) identify the relevant EIM Interties for imports and exports to an EIM Entity Balancing Authority Area from Balancing Authority Areas other than the CAISO Balancing Authority Area; and

(C) include approved, pending, and adjusted E-Tags for imports and exports.

(4) **EIM Base Schedule Aggregation.** In response to a request by an EIM Entity Scheduling Coordinator, the CAISO will establish an electronic interface by which non-participating resources, Loads, and other customers of the EIM Entity may submit EIM Base Schedule information to the EIM Scheduling Coordinator and the CAISO.

(g) **Initial EIM Base Load Schedule.** The CAISO will derive an initial EIM Base Load Schedule for each EIM Entity from the Demand Forecast used for the EIM Entity Balancing Authority Area, estimated Transmission Losses, and an assumed Load distribution, pursuant to the methodology set forth in the Business Practice Manual for the Energy Imbalance Market.

(h) **Energy Bids.** EIM Participating Resource Scheduling Coordinators may submit Energy Bids in accordance with the timelines, processes, and requirements applicable to other resources submitting Energy Bids under Section 34.

(i) **Interchange Schedules with Other Balancing Authorities.**

(1) **In General.** EIM Entity Scheduling Coordinators must submit Interchange Schedules with other Balancing Authority Areas at the relevant EIM Interties and must update these Interchange Schedules with any adjustments, when applicable, as part of the hourly EIM Resource Plan revision.

(2) **Economic Bidding of EIM Intertie Transactions.** An EIM Participating

Resource Scheduling Coordinator may bid a transaction at an EIM External Intertie into the FMM if the EIM Entity supports economic bidding of EIM External Intertie transactions and the relevant transmission service providers or path operators support 15-minute scheduling at the EIM External Intertie under FERC Order No. 764.

(j) **CAISO Validation.** The CAISO Markets systems will validate the initial EIM Resource Plan by 1:00 p.m. on the day before the Operating Day, and within 15 minutes of the submission of EIM Base Schedules or adjustments to EIM Base Schedules, the CAISO will validate the EIM Resource Plan and notify the EIM Entity Scheduling Coordinator-

(1) if the EIM Resource Plan is not balanced;

(2) if the EIM Resource Plan provides insufficient Flexible Ramping Product capacity to meet requirements determined pursuant to Section 29.34(m); and

(3) if the CAISO anticipates Congestion based on the submitted EIM Resource Plans.

(k) **EIM Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules according to Section 29.34(f)(1)(D), Supply in the EIM Base Schedules does not balance the Demand Forecast, the CAISO will adjust the Demand in the EIM Base Schedule to equal Supply.

(l) **EIM Resource Plan Evaluation.**

(1) **Requirement.** The EIM Base Schedules for resources included in the EIM Resource Plan must balance the Demand Forecast for each EIM Entity Balancing Authority Area.

(2) **Insufficient Supply.** An EIM Resource Plan shall be deemed to have insufficient Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the highest quantity offers in the Energy Bid range from EIM Participating Resources, including Interchange with other Balancing Authority Areas, is less than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity

Balancing Authority Area.

(3) **Excess Supply.** An EIM Resource Plan shall be deemed to have excessive Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the lowest quantity Bids in the Energy Bid range from EIM Participating Resources is greater than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(4) **Additional Hourly Capacity Requirements.**

(A) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that a Balancing Authority Area in the EIM Area has historically high import or export schedule changes between thirty minutes and twenty minutes before the start of the Trading Hour, the CAISO will add to the Balancing Authority Area in the EIM Area's capacity requirements an additional requirement.

(B) **Additional Capacity Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each Balancing Authority Area in the EIM Area histograms of the percentage of the difference between imports and exports scheduled at thirty minutes before the start of the Trading Hour and the final imports and exports at twenty minutes before the start of the Trading Hour based on the submitted E-Tags at those times and calculate additional upward and downward requirements for the capacity test component of the resource sufficiency evaluation.

(m) **Flexible Ramping Sufficiency Determination.**

(1) **Review.**

(A) **EIM Entity Balancing Authority Areas.** The CAISO will review the EIM Resource Plan pursuant to the process set forth in the Business Practice

Manual for the Energy Imbalance Market and verify that it has sufficient Bids for Ramping capability to meet the EIM Entity Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), and (5).

(B) **CAISO Balancing Authority Area.** The CAISO will review the Day-Ahead Schedules in the CAISO Balancing Authority Area and verify that it has sufficient Bids for Ramping capability to meet the CAISO Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), (5), and (6).

(2) **Determination of EIM Diversity Benefit.** The CAISO will calculate separately the upward and downward EIM diversity benefit as the difference between the sum of the upward and downward Uncertainty Requirements for all Balancing Authority Areas in the EIM Area, and the Uncertainty Requirement for the EIM Area.

(3) **Effects of EIM Diversity Benefit.** For each Balancing Authority Area in the EIM Area, the CAISO will reduce the upward and downward Uncertainty Requirements by the Balancing Authority Area's pro rata share of the upward and downward EIM diversity benefit in the EIM Area as may be limited by –

(A) the available net import EIM Transfer capability into that Balancing Authority Area in the case of an upward Uncertainty Requirement; and

(B) the available net export EIM Transfer capability from that Balancing Authority Area in the case of a downward Uncertainty Requirement.

(4) **Determination of Flexible Ramping Sufficiency Credit.** The CAISO will calculate for each Balancing Authority Area in the EIM Area, the upward flexible Ramping sufficiency credit as the outgoing EIM Transfer from that area and the downward flexible Ramping sufficiency credit as the incoming EIM transfer into that area.

(5) **Effect of Flexible Ramping Sufficiency Credit.** The CAISO will reduce the

upward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its upward flexible Ramping sufficiency credit, and will reduce the downward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its downward flexible Ramping sufficiency credit.

(6) **Incremental Requirements.**

(i) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that an EIM Balancing Authority Area has historically high import or export schedule changes between T-30 and T-20, the CAISO will add to the EIM Entity's flexible capacity requirement an additional incremental requirement.

(ii) **Additional Incremental Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each EIM Entity Balancing Authority Area histograms of the percentage of the difference between imports and exports scheduled at T-30 and the final imports at T-20 based on the E-Tags submitted at T-30 and T-20 and calculate additional incremental and decremental requirements for the capacity test component of the resource sufficiency evaluation.

(n) **Effect of Resource Plan Insufficiency.**

(1) **Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(D), the EIM Resource Plan has insufficient supply as determined according to Section 29.34(l)-

(A) the CAISO will not include the EIM Entity Balancing Authority Area in the Uncertainty Requirement of the EIM Area;

(B) the CAISO will hold the EIM Transfer limit into or from the EIM Entity Balancing Authority Area, as specified in Section 29.34(n)(2), at the

value for the last 15-minute interval.

(2) **Flexible Ramping Insufficiency.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(D), the CAISO determines-

(i) that an EIM Entity Balancing Authority Area has insufficient upward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the upward and into the EIM Entity BAA direction; and

(ii) that an EIM Entity Balancing Authority Area has insufficient downward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the downward and from the EIM Entity BAA direction.

(o) **Transmission Constraint Relaxation.** If an EIM Entity Scheduling Coordinator's approved EIM Resource Plan does not have sufficient Bids to resolve Congestion, the CAISO will relax the relevant Transmission Constraints in the Market Clearing and the EIM Entity will become responsible for managing its congested Transmission Constraints through other means, and the CAISO will determine prices for Congestion consistent with Transmission Constraint relaxation parameters established in the Business Practice Manual for the Energy Imbalance Market until the Transmission Constraint is no longer binding in the Real-Time Market.

(p) **Operating Reserves.**

(1) **Schedules.**

(A) **EIM Entity Responsibility.** Each EIM Entity is responsible for its contingency reserves, or share of such contingency reserves under the terms of a reserve sharing group agreement, and it and the reserve sharing group are responsible for deploying operating reserves, including regulating reserves, in conformance with NERC and WECC requirements.

(B) **EIM Entity Scheduling Coordinator Responsibility.** The EIM Entity Scheduling Coordinator shall –

(i) include any Energy deployed from reserves in the hourly EIM Base Schedules, if time permits, in which case they will be settled in the Real-Time Market;

(ii) otherwise include the Energy deployed from reserves as EIM Manual Dispatches, if time does not permit;

(iii) immediately inform the CAISO of events requiring Dispatch of operating reserves and resource EIM Base Schedule adjustments in response to contingencies;

(iv) if a resource's actual response differs from the resource EIM Base Schedule adjustment, provide a resource EIM Base Schedule update showing the actual resources dispatched during the event by no later than 1:00 a.m. seven days after the Operating Day in which the event occurred; and

(v) inform the CAISO of the amount of resource capacity that is reserved for contingency reserve responsibility by either ensuring that an Energy Bid for the resource is below the maximum operating limit of the resource or reducing the maximum operating limit of the resource.

(C) **CAISO Actions.**

(i) **Prior to Update.** Until the CAISO receives resource operating limit updates from an EIM Entity Scheduling Coordinator, the CAISO will continue to send Dispatch Instructions based upon pre-event operating limits.

(ii) **After Update.** After EIM Base Schedule updates are received and Dispatches in the Real-Time Market reflect the updated Self-Schedules and operating limits, the CAISO shall account for the

Dispatches in the net scheduled Interchange values that it provides to EIM Entity Scheduling Coordinators.

(2) **Updates to Data for Reserve Sharing Event.**

(A) **Responsibilities.** Immediately following a reserve sharing event impacting the EIM Entity Balancing Authority Area-

(i) the EIM Entity must submit information regarding the assistance provided, including impacts to Balancing Authority Area Load schedules for each participant involved in the reserve sharing event; and

(ii) the EIM Entity Scheduling Coordinator must submit to the CAISO EIM Manual Dispatch instructions for resources in the EIM Entity Balancing Authority Area deployed in response to the reserve sharing event, pursuant to the reserve sharing group's criteria.

(B) **Offsets.** Until 1:00 a.m. seven days following the reserve sharing event impacting the EIM Entity Balancing Authority Area, the EIM Entity may offset the Load schedules created by the reserve sharing event by entering resource to Load schedules, reflecting generation resources actually utilized to assist in the event.

(q) **Variable Energy Resources.** Provisions of Section 34 specifically applicable to Variable Energy Resources and Eligible Intermittent Resources appear in Sections 34.1.3, 34.1.6, 34.2.2, 34.5.1. 34.13.2.

(r) **Use of EIM Available Balancing Capacity.**

(1) **In General.** The CAISO will use EIM Available Balancing Capacity identified in the EIM Resource Plan to address power balance constraint infeasibilities in the EIM Balancing Authority Area for which the EIM Available Balancing Capacity is designated by the responsible EIM Entity Scheduling Coordinator, while simultaneously participating in Congestion Management.

(2) **Resource Sufficiency Evaluations.** The CAISO will not apply the EIM

Available Balancing Capacity towards its evaluation of the resource sufficiency tests specified in Section 29.34(k), (l), and (m).

(3) **Real-Time Market Scheduling Run.** In each interval of the Real-Time Market, the CAISO will use the EIM Available Balancing Capacity in the run of the market optimization used to establish scheduling priorities by-

(A) adding a penalty price factor to EIM Available Balancing Capacity Energy Bid prices so that the EIM Available Balancing Capacity is dispatched to address power balance violations, after Effective Economic Bids submitted for EIM Participating Resources in the respective EIM Balancing Authority Area not associated with the EIM Available Balancing Capacity have cleared, while respecting the economic merit order of the EIM Available Balancing Capacity Energy Bid prices;

(B) enforce a constraint that prevents the release of EIM Upward Available Balancing Capacity in excess of the difference between the EIM Entity's demand and the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area, minus the import transfer into that EIM Balancing Authority Area; and

(C) enforce a constraint that prevents the release of EIM Downward Available Balancing Capacity in excess of the difference between the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area and the EIM Entity's demand, minus the export transfer out of that EIM Balancing Authority Area.

(4) **Real-Time Market Pricing Run.** For each interval of the Real-Time Market, in the run of the market optimization used to set binding schedules and prices, the CAISO will –

(A) use the EIM Available Balancing Capacity released in the run of the market optimization to establish scheduling priorities based on the Energy Bid Curves for EIM Participating Resources and non-participating

resources created pursuant to Sections 29.30(c) and (d), respectively;

(B) change the load forecast for the EIM Balancing Authority Area by a small tolerance to allow for price determination;

(C) clear the Real-Time Market and establish prices based on the pricing parameters in Sections 27.4.3.2 and 27.4.3.4, if the amount of EIM Available Balancing Capacity released in the scheduling run is not sufficient to clear the potential infeasibility identified in the scheduling run.

(s) **EIM Auto-Match.**

(1) **Designation.** An EIM Entity may submit a designation to the Master File of EIM non-participating resources, up to the number specified in the Business Practice Manual, in its Balancing Authority Area to automatically match import/export schedule changes outside of the Market Clearing of the Real-Time Market because of changes to E-Tags at one or more designated EIM Interties or Scheduling Points, up to the number designated in the Business Practice Manual for the Energy Imbalance Market.

(2) **Duration of Designation.** Any designation under paragraph (1) of this subsection shall remain in effect until the EIM Entity notifies the CAISO that it is terminating the designation by a submission to the Master File.

(3) **CAISO Actions in Response to Intertie Schedule Change.** If an EIM Entity designates a non-participating resource under paragraph (1) of this subsection, the CAISO, upon identification of an associated EIM Intertie or Scheduling Point schedule change outside of the Market Clearing of the Real-Time Market, shall –

(A) reflect a matching schedule change to the EIM non-participating resource in the Real-Time Market using the EIM Auto-Match feature; and

(B) omit the EIM Intertie or Scheduling Point schedule change from the historical intertie schedule over/under-scheduling histogram for the determination of additional capacity test requirements for relevant EIM

Balancing Authority Area(s) under Sections 29.34(l)(4)(B) and 29.34(m)(6)(ii) that are registered for EIM Auto-Match in accordance with the procedures specified in the Business Practice Manual for the Energy Imbalance Market.

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Section 30

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30.5.7 E-Tag Rules and Treatment of Intertie Schedules

In addition to complying with all generally applicable E-Tagging requirements, Scheduling Coordinators must submit their E-Tags consistent with the requirements specified in this Section 30.5.7. If a Scheduling Coordinator receives an intra-hour Schedule change, then the Scheduling Coordinator must, by twenty minutes before the start of the FMM interval to which the Schedule change applies, ensure that an updated energy profile reflects the change. Absent extenuating circumstances, the CAISO automatically updates Energy profiles on E-Tags for Energy Schedules that change from HASP to the FMM within a Trading Hour. In performing this service for a Scheduling Coordinator, the CAISO does not assume any responsibility for compliance with any E-Tag requirements or obligations to which the Scheduling Coordinator is subject. The changed energy profile will apply for the balance of the operating hour unless it is subsequently changed by a further updated energy profile.

30.5.7.1 Self-Schedule Hourly Blocks

By thirty-two minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Self-Schedule Hourly Block. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Self-Schedule Hourly Block to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour must be equal to the Self-Schedule Hourly Block. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour need not equal the Self-Schedule Hourly Block and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour; or (b) the Self-Schedule Hourly Block. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Self-Schedule Hourly Block.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.2 Variable Energy Resource Self-Schedule

By thirty-two minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Variable Energy Resource Self-Schedule. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Variable Energy Resource Self-Schedule to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour must be equal to the Variable Energy Resource Self-Schedule. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour need not equal the Variable Energy Resource Self-Schedule and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour; or (b) the Variable Energy

Resource Self-Schedule. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Variable Energy Resource Self-Schedule.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.3 Economic Hourly Block Bid

By thirty-two minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Economic Hourly Block Bid. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Economic Hourly Block Bid to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour must be equal to the Economic Hourly Block Bid. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour need not equal the Economic Hourly Block Bid and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour; or (b) the quantity of the Economic Hourly Block Bid. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Economic Hourly Block Bid.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.4 Economic Hourly Block Bid with Intra-Hour Option

By thirty-two minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Economic Hourly Block Bid with Intra-Hour Option. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Economic Hourly Block Bid with Intra-Hour Option to zero for each

FMM interval of the hour.

The transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour must be equal to the Economic Hourly Block Bid with Intra-Hour Option. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour need not equal the Economic Hourly Block Bid with Intra-Hour Option and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour; or (b) the quantity of the Economic Hourly Block Bid with Intra-Hour Option. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Economic Hourly Block Bid with Intra-Hour Option.

The CAISO may modify the Energy profile due to Reliability related curtailments.

In the case of an intra-hour redispatch from the FMM, the CAISO may increment or decrement the Energy profile to correspond to the intra-hour redispatch. The MW level to which the FMM can redispatch an Economic Hourly Block Bid with Intra-Hour Option above its HASP Advisory Schedule is limited by the quantity of the transmission profile submitted by thirty-two minutes prior to the applicable Trading Hour.

30.5.7.5 FMM Economic Bid

By thirty-two minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the FMM Economic Bid. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the FMM Economic Bid to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour must be greater than or equal to the FMM Economic Bid. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour need not equal the FMM Economic Bid and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-two minutes prior to the applicable Trading Hour; or (b) the quantity of the FMM energy schedule for the first FMM interval of the applicable Trading Hour.

The CAISO may modify the Energy profile due to Reliability related curtailments.

Scheduling Coordinators with cleared FMM Economic Bids may update either the transmission profile or the Energy profile after thirty-two minutes prior to the applicable Trading Hour and twenty minutes prior to the applicable Trading Hour, respectively. A Scheduling Coordinator choosing to update the transmission profile must submit an updated transmission profile at least thirty-two minutes prior to the applicable FMM interval. A Scheduling Coordinator choosing to update the Energy profile must submit an updated Energy profile at least 20 minutes prior to the applicable FMM interval.

Cleared FMM Economic Bids are eligible for Bid Cost Recovery as specified in Section 11.8.

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Section 34

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34.1.6 Eligible Intermittent Resources Forecast

34.1.6.1 Eligible Intermittent Resources Using Their Own Forecast

For Eligible Intermittent Resources, including Participating Intermittent Resources, that have elected to use the resource's own forecast as specified in Section 4.8.2.1.1, the responsible Scheduling Coordinator must submit to the CAISO its forecast for the binding interval by 27.5 minutes prior to flow (the start of the applicable FMM optimization for the binding interval). If such Scheduling Coordinator does not provide such forecast to the CAISO, the CAISO will use the resource's direct telemetry MW output for Dispatch

purposes. The CAISO shall use the forecast provided by the Scheduling Coordinator to establish MWh quantities to be cleared for that resource in the FMM if the resource has submitted only a Self-Schedule to the RTM. If a Scheduling Coordinator for a Variable Energy Resource submits an Economic Bid to the RTM (either with or without a Self-Schedule), then the CAISO receives and processes all Variable Energy Resources forecasts (as selected by CAISO) which establishes the upper economic limit for that resource in the FMM. Participating Intermittent Resources may elect not to use the forecast provided by the CAISO, in which case they must be certified to use their own forecast as provided in Section 4.8.2.1.1. In addition, the CAISO will not utilize the forecast it produces for the Participating Intermittent Resources using their own forecast. As provided in Section 4.8.2.1.1, the Scheduling Coordinator may submit such forecast in fifteen or five minute granularity. If the Scheduling Coordinator submits the forecast in five-minute granularity, the CAISO will use the average of the three five-minute forecasts provided by the Scheduling Coordinator to determine the MWh to be cleared in the FMM for that resource.

34.1.6.2 Eligible Intermittent Resources Using the CAISO Forecast

Eligible Intermittent Resources that have elected to use the CAISO forecast as specified in Section 4.8.2.1.2 are not required to submit a forecast for the binding interval by 27.5 minutes prior to flow. For Participating Intermittent Resources for which Scheduling Coordinators have elected to use the output forecast provided by the CAISO and have selected such a flag in their Master File, the CAISO will use the MWh forecast data the CAISO produces for such a resource at 27.5 minutes prior to the applicable FMM as follows: (a) as the MWh amounts to be to cleared for that resource in the FMM if only a Self-Schedule is submitted, and (b) as the upper economic limit for that resource in the FMM if an Economic Bid with or without a Self-Schedule is submitted. The forecast used by the CAISO will be in fifteen-minute granularity. Scheduling Coordinators representing Participating Intermittent Resources whose output is designated to satisfy a Resource Adequacy requirement must submit Variable Energy Resource Self-Schedules in the RTM in accordance with the output forecast provided by the CAISO, or an Economic Bid.

34.1.6.3 [Not Used]

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34.3 Real-Time Unit Commitment

34.3.1 RTUC Optimization

The Real-Time Unit Commitment (RTUC) process uses SCUC and is run every fifteen (15) minutes to make commitment decisions for Fast Start and Short Start Units having Start-Up Times within the applicable time periods described below in this section for the next four to seven subsequent fifteen-minute intervals, depending on when during the hour the run occurs. For Multi-Stage Generating Resources the RTUC will issue a binding Transition Instruction separately from the binding Start-Up or Shut Down instructions. The RTUC can also be run with the Contingency Flag activated, in which case the RTUC can commit Contingency Only Operating Reserves. If RTUC is run without the Contingency Flag activated, it cannot commit Contingency Only Operating Reserves. RTUC is run at the following time intervals: (1) at approximately 12 minutes prior to the first Trading Hour, to serve as the HASP run, for T-45 minutes to T+60 minutes; (2) at approximately 7.5 minutes into the current hour for T-30 minutes to T+60 minutes; (3) at approximately 22.5 minutes into the current hour for T-15 minutes to T+60 minutes; and (4) at approximately 27.5 minutes into the current hour for T to T+60 minutes, where T is the beginning of the next Trading Hour. The HASP is a special RTUC run that is performed at approximately 67.5 minutes before each Trading Hour and has the additional responsibility of pre-dispatching Energy and awarding Ancillary Services for HASP Block Intertie Schedules. A Day-Ahead Schedule or RUC Schedule for an MSG Configuration that is later impacted by the resource's derate or outages, will be reconsidered in the RTUC and the FMM taking into consideration the impacts of the derate or outage on the available MSG Configurations. Not all resources identified as needed in a given RTUC run will necessarily receive CAISO commitment instructions immediately, because during the Trading Day the CAISO may issue a commitment instruction to a resource only at the latest possible time that allows the resource to be ready to provide Energy when it is expected to be needed.

34.3.2 Commitment of Fast Start and Short Start Units

RTUC produces binding and advisory Start-Up and Shut-Down Dispatch Instructions for Fast Start and Short Start Units that have Start-Up Times that would allow the resource to be committed prior to the end of the relevant time period of the RTUC run as described in Section 34.3.1. A Start-Up Dispatch

Instruction is considered binding in any given RTUC run if the Start-Up Time of the resource is such that there would not be sufficient time for a subsequent RTUC run to Start-Up the resource. A Start-Up Instruction is considered advisory if it is not binding, such that the resource could achieve its target Start-Up Time as determined in the current RTUC run in a subsequent RTUC run based on its Start-Up Time. A Shut-Down Instruction is considered binding if the resource could achieve the target Shut-Down Time as determined in the current RTUC run in a subsequent RTUC run. A Shut-Down Dispatch Instruction is considered advisory if the resource Shut-Down Instruction is not binding such that the resource could achieve its target Shut-Down time as determined in the current RTUC run in a subsequent RTUC run. A binding Dispatch Instruction that results in a change in Commitment Status will be issued, in accordance with Section 6.3, after review and acceptance of the Start-Up Instruction by the CAISO Operator. An advisory Dispatch Instruction changing the Commitment Status of a resource may be modified by the CAISO Operator to a binding Dispatch Instruction and communicated in accordance with Section 6.3 after review and acceptance by the CAISO Operator. Only binding and not advisory Dispatch Instructions will be issued by the CAISO. For Multi-Stage Generating Resources the CAISO will also issue binding Transition Instructions when the Multi-Stage Generating Resource must change from one MSG Configuration to another. A Transition Instruction is considered binding in any given RTUC run if the Transition Time for the Multi-Stage Generating Resource is such that there would not be sufficient time for a subsequent RTUC run to transition the resource.

34.3.3 [Not Used]

34.4 Fifteen Minute Market

The CAISO conducts the Fifteen Minute Market using the second interval of each RTUC run horizon as follows: (1) at approximately 7.5 minutes prior to the first Trading Hour, for T-45 minutes to T+60 minutes where the binding interval is T-30 to T-15; (2) at approximately 7.5 minutes into the current hour for T-30 minutes to T+60 minutes where the binding interval is T-15 to T; (3) at approximately 22.5 minutes into the current hour for T-15 minutes to T+60 minutes for the binding interval T to T+15; and (4) at approximately 27.5 minutes into the current hour for T to T+60 minutes for the binding interval T+15 to T+30, where T is the beginning of the next Trading Hour. In these intervals the CAISO conducts the FMM to (1) determine financially binding FMM Schedules and corresponding LMPs for all Pricing Nodes,

including all Scheduling Points; (2) determine financially and operationally binding Ancillary Services Awards and corresponding ASMPs, procure required additional Ancillary Services and calculate ASMP used for settling procured Ancillary Service capacity for the next fifteen-minute Real-Time Ancillary Service interval for all Pricing Nodes, including Scheduling Points; (3) determine LAP LMPs that are the basis for settling Demand; and (4) determine FMM Uncertainty Awards. In any FMM interval that falls within a time period in which a Multi-Stage Generating Resource is transitioning from one MSG Configuration to another MSG Configuration, the CAISO: (1) will not award any incremental Ancillary Services; (2) will disqualify any Day-Ahead Ancillary Services Awards; (3) will disqualify Day-Ahead qualified Submissions to Self-Provide Ancillary Services Award, and (4) will disqualify Submissions to Self-Provide Ancillary Services in RTM. Each particular FMM market optimization produces binding settlement prices for Energy, Flexible Ramping Product, and Ancillary Services for the first FMM interval in the FMM horizon but the optimization considers the advisory results from subsequent market intervals within the FMM horizon. The CAISO settles Hourly Block Schedules from Proxy Demand Resources, Hourly Intertie Schedules, and Hourly Ancillary Services Awards accepted in the HASP as FMM Schedules and FMM Ancillary Services Awards in accordance with Section 11.5 and 11.10.1.2, respectively. In the event that a FMM run fails, the CAISO reverts to Day-Ahead Market Ancillary Services Awards and RUC Schedules results corresponding to the same interval, or the corresponding interval from the previous RTUC. The FMM will clear Supply against the CAISO Forecast of CAISO Demand and exports. The FMM issues Energy Schedules and Ancillary Services Awards by twenty-two and a half minutes prior to the binding fifteen-minute interval.

34.4.1 Real-Time Ancillary Services Procurement

If the CAISO determines that additional Ancillary Services are required, other than those procured in the IFM, then the FMM will procure Ancillary Services on a fifteen (15) minute basis as necessary to meet reliability requirements and will determine Real-Time Ancillary Service interval ASMPs for such AS for the next Commitment Period. All Operating Reserves procured in the RTM are considered Contingency Only Operating Reserves. Any Ancillary Service awarded in FMM will be taken as fixed for the three (3) five (5) minute RTD intervals of its target fifteen (15) minute interval. In the FMM, all resources certified and capable of providing Operating Reserves that have submitted Real-Time Energy Bids shall also submit

applicable Spinning or Non-Spinning Reserves Bids, respectively, depending on whether the resource is online or offline. The CAISO will utilize the RTM to procure Operating Reserves to restore its Operating Reserve requirements in cases when: (1) Operating Reserves awarded in the IFM have been dispatched to provide Energy, (2) resource(s) awarded to provide Operating Reserves in the IFM are no longer capable of providing such awarded Operating Reserves, or (3) the Operator determines that additional Operating Reserves are necessary to maintain Operating Reserves within NERC and WECC reliability standards, and any requirements of the NRC. The CAISO will utilize the FMM to procure additional Regulation capacity in Real-Time in cases when: (1) resource(s) awarded to provide Regulation in the IFM are no longer capable of providing such awarded Regulation, or (2) the Operator determines that additional Regulation is necessary to maintain sufficient control consistent with NERC and WECC reliability standards, and any requirements of the NRC and Good Utility Practice. The FMM will produce fifteen (15) minute ASMPs for the four (4) binding fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute ASMPs are then used for the Settlement of the fifteen (15) minute AS Awards. The FMM run will also produce fifteen (15) minute Shadow Prices for each of the Interties for the four (4) fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute Shadow Prices are then used to charge for Intertie Real-Time AS Award providers for Congestion on the Interties. FMM AS Awards are settled in accordance with 11.10.1.3.

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Attachment D – Marked tariff sheets of Second Tranche of revisions

with an effective date in Fall 2021

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

****Second tranche – tariff redlines with proposed tentative effective date of 10/1/2021****

This document displays changes from first tranche as approved, black text

Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(a) **Applicability.** Section 29.11, rather than Section 11, shall apply to the CAISO Settlement with EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators, except as otherwise provided, but not to other Scheduling Coordinators.

(b) **Imbalance Energy.**

(1) **FMM Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's FMM Instructed Imbalance Energy in the same manner as it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(ii) **Non-Participating Resources.** The CAISO will calculate the FMM Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner as

it calculates FMM Instructed Imbalance Energy under Section 11.5.1.1, except that references to the Day-Ahead Schedule in the relevant Appendix A definitions shall be deemed references to the EIM Base Schedule and that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the FMM that is identified by the EIM Entity Scheduling Coordinator prior to the start of the FMM.

(B) **Settlement.** The CAISO will settle –

(i) the FMM Instructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(2) **RTD Instructed Imbalance Energy.**

(A) **Calculation.**

(i) **EIM Participating Resources.** The CAISO will calculate an EIM Participating Resource's RTD Instructed Imbalance Energy in the same manner in which it calculates RTD Instructed Imbalance Energy under Sections 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch of the EIM Participating Resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(ii) **Non-Participating Resources.** The CAISO will calculate the RTD Instructed Imbalance Energy of non-participating resources in an EIM Entity Balancing Authority Area in the same manner in which it calculates RTD Instructed Imbalance Energy under

Section 11.5.1.2 and 11.5.5, except that the CAISO will include any Energy from an EIM Manual Dispatch or EIM Auto-Match of the EIM non-participating resource in the RTD that is identified by the EIM Entity Scheduling Coordinator.

(B) **Settlement.** The CAISO will settle the RTD Instructed Imbalance Energy –

(i) with the EIM Participating Resource Scheduling Coordinator for EIM Participating Resources; and

(ii) with the applicable EIM Entity Scheduling Coordinator for non-participating resources in an EIM Entity Balancing Authority Area.

(3) **Uninstructed Imbalance Energy.**

(A) **EIM Participating Resources.**

(i) **Calculation.** For EIM Participating Resources and an EIM Entity Balancing Authority Area's dynamic import/export schedules with external resources, the CAISO will calculate Uninstructed Imbalance Energy in the same manner in which it calculates Uninstructed Imbalance Energy under Section 11.5.2.1.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy with the EIM Participating Resource Scheduling Coordinator or the EIM Entity Scheduling Coordinator, as applicable.

(B) **Non-Participating Resources.**

(i) **Calculation.** For non-participating resources in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule and the CAISO will treat an EIM Manual Dispatch and

an EIM Auto-Match as a Dispatch Instruction.

(ii) **Settlement.** The CAISO will settle the Uninstructed Imbalance Energy for non-participating resources in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(C) **Non-Participating Load.**

(i) **Calculation.** For non-participating Load in an EIM Entity Balancing Authority Area, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2.2, except that the CAISO will determine deviations based on the EIM Base Load Schedule.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for non-participating Load in an EIM Entity Balancing Authority Area at the applicable Default LAP Hourly Real-Time Price in accordance with Section 11.5.2.2 with the applicable EIM Entity Scheduling Coordinator and will treat EIM Balancing Authority Demand in the same manner as the CAISO treats CAISO Demand under that Section.

(D) **EIM Base Schedules Below PMin.**

(i) **Calculation.** For deviations from an EIM Base Schedule below PMin submitted by an EIM Entity Scheduling Coordinator or an EIM Participating Resource Scheduling Coordinator, the CAISO will calculate Uninstructed Imbalance Energy in accordance with Section 11.5.2 as if the EIM Resource had received a Dispatch Instruction to PMin.

(ii) **Settlement.** The CAISO will settle Uninstructed Imbalance Energy for deviations from an EIM Base Schedule below PMin in an EIM Entity Balancing Authority Area at the applicable RTD Locational Marginal Price in accordance with Section 11.5.2.1 with the applicable EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator.

(c) **Unaccounted For Energy of EIM Entities.**

(1) **Calculation.** The CAISO will calculate Unaccounted For Energy for each EIM Entity Balancing Authority Area as the difference between metered Demand, and the sum of the metered Supply and the metered values at the interties, adjusted for losses.

(2) **Settlement.**

(A) **Unaccounted for Energy Settlement.** The CAISO will settle Unaccounted For Energy with the applicable EIM Entity Scheduling Coordinator at the applicable Hourly Real-Time LAP price.

(B) **Election Not to Settle Unaccounted for Energy.** Annually, an EIM Entity Scheduling Coordinator that submits metered Demand through Meter Data calculated without End-Use Meters may elect to not settle Unaccounted For Energy through the CAISO Markets, in which case –

(i) the CAISO will apply a zero-percent Transmission Losses factor when calculating the Initial EIM base load schedule per section 29.34(g); and

(ii) the EIM Entity Scheduling Coordinator will apply a zero-percent Transmission Losses factor when calculating their metered Demand.

(d) **Charges for Over- and Under-Scheduling of EIM Entities.**

(1) **Under-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand

within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 125% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area exceeds the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall charge the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 200% of the Hourly Real-Time LAP price.

(2) **Over-Scheduling Charges.**

(A) **Level 1 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 5% but less than or equal to 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 75% of the Hourly Real-Time LAP Price.

(B) **Level 2 Charge.** If, during any Trading Hour, the metered Demand within an EIM Entity Balancing Authority Area is less than the EIM Base Schedule of Supply submitted by the EIM Entity by more than 10% and by at least 2 MW, the CAISO shall pay the applicable EIM Entity Scheduling Coordinator for all Uninstructed Imbalance Energy at the EIM Entity Load Aggregation Point at a price that is 50% of the Hourly Real-Time LAP Price.

(3) **Distribution of Revenues.**

(A) **Apportionment.** The CAISO will calculate the total daily excess revenues received from under-scheduling charges and over-scheduling charges under Section 29.11(d)(1) and (2) and apportion them to Balancing Authority Areas in the EIM Area that were not subject to either under-scheduling or over-scheduling charges during the Trading Day according to metered Demand.

(B) **Allocation.** The CAISO will allocate –

(i) the amounts apportioned to EIM Entity Balancing Authority Areas pursuant to Section 29.11(d)(3)(A) to the applicable EIM Entity Scheduling Coordinator; and

(ii) the amounts apportioned to the CAISO Balancing Authority Area pursuant to Section 29.11(d)(3)(A) to Scheduling Coordinators in the CAISO Balancing Authority Area according to metered Demand.

(4) **Exemption.** An EIM Entity will be exempt from under-scheduling and over-scheduling charges under Section 29.11(d)(1) and (2) if it uses the Demand Forecast prepared by the CAISO in its EIM Resource Plan and it approves EIM Base Schedules for its resources within +/- 1% of the CAISO Demand Forecast, as determined according to the Business Practice Manual for the Energy Imbalance Market.

(e) **Neutrality Accounts.**

(1) **In General.** The CAISO will collect neutrality amounts from EIM Market Participants to recover differences in Real-Time Market payments made and Real-Time Market payments received.

(2) **Real-Time Congestion Offset.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Congestion Offset allocation calculated pursuant to Section 11.5.4.1.1.

(3) **Real-Time Imbalance Energy Offset Allocation.** The CAISO will assess EIM Entity Scheduling Coordinators a Real-Time Imbalance Energy Offset allocation calculated pursuant to Section 11.5.4.1.

(4) **Real-Time Marginal Cost of Losses Offset.** The CAISO will allocate the Real-Time Marginal Cost of Losses Offset to EIM Entity Scheduling Coordinators pursuant to Section 11.5.4.1.2.

(5) **Other Neutrality Adjustments.** The CAISO will levy additional charges on or make additional payments to EIM Market Participants as adjustments in accordance with Section 11.14.

(f) **Real-Time Bid Cost Recovery.**

(1) **In General.** The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery.** The CAISO will calculate Real-Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and the corresponding intervals as IFM self-commitment intervals.

(3) **Application of Real-Time Performance Metric.**

The CAISO will adjust the RTM Energy Bid Cost, the RTM Market Revenues, and RTM Minimum Load Costs determined pursuant to Section 29.11(f)(2) by multiplying the Real-Time Performance Metric with those amounts for the applicable Settlement Interval pursuant to the rules specified in Section 11.8.4.4 and its subsections, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(4) **Allocation of EIM Entity RTM Bid Cost Uplift.**

(A) **Calculation of Charge.** The Net RTM Bid Cost Uplift will be determined for each EIM Entity Balancing Authority Area in accordance with the methodology set forth in Section 11.8.6.

(B) **Settlement.** The CAISO will assess the Net RTM Bid Cost Uplift calculated for each EIM Entity Balancing Authority Area to the applicable EIM Entity Scheduling Coordinator in accordance with Section 11.8.6.6.(ii).

(g) **[Not Used]**

(h) **EIM Initial Fee.** The CAISO will charge Balancing Authority Areas that enter into an EIM Implementation Agreement pursuant to Section 29.2(b) an initial fee to cover a share of the capital and operations and maintenance costs associated with setting up the Real-Time Market to accommodate the participation of the Balancing Authority as an EIM Entity. The fee will be established by the EIM Implementation Agreement entered into pursuant to Section 29.2(b)(1) as accepted by FERC.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM Administrative Charge consisting of the real-portions of the Market Services Charge and the System Operations Charge.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** The System Operations Charge shall be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the cost of service study conducted

according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum of the real-time activities associated with market services charge and the real-time activities chart associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(5) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section 29.4(b)(4), the CAISO will charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(6) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

(j) **Variable Energy Resource Forecast Charge.**

(1) **In General.** The CAISO will charge EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators a fee for the Variable Energy Resource forecasting services in accordance with Appendix F, Schedule 4.

(2) **Waiver.** The CAISO will waive the Variable Energy Resource forecast charge if an EIM Entity has an independent forecast for its Variable Energy Resources and provides the independent forecast to the CAISO.

(k) **Transmission Service.** The CAISO will charge EIM Market Participants for transmission service according to Section 29.26.

(l) **Settlement.** With regard to the CAISO's assessment and payment of charges to, and

collection of charges from, EIM Market Participants pursuant to Sections 11 and 29.11, the CAISO shall assess, pay and collect such charges, address disputed invoices, assess, pay and collect Settlement-related fees and charges, including those under Sections 11.21, 11.28, and 11.29, and make any financial adjustments in accordance with the terms and schedule set forth in Section 11.

(m) **Charges Related to RTM Participation of Interties.** In the event that an EIM Entity enables participation in the Real-Time Market on EIM External Interties, the EIM Entity Scheduling Coordinator shall also be subject to any applicable charges under Sections 11.31 and 11.32.

(n) **EIM Transfers and Settlement for Contingency Reserve Obligations.** The CAISO shall allocate Operating Reserve Obligations to EIM Entity Scheduling Coordinators for EIM Transfers as follows –

(1) EIM Entity Scheduling Coordinators will receive a payment equal to three (3) percent of the hourly MW EIM Transfer into the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively; and

(2) EIM Entity Scheduling Coordinators will receive a charge equal to three (3) percent of the hourly MW EIM Transfer out of the CAISO Balancing Authority Area multiplied by the hourly user rate for Spinning Reserves and Non-Spinning Reserves, as calculated per Section 11.10.3.3 and 11.10.4.3, respectively.

(o) **Application of Persistent Deviation Metric.**

The CAISO will modify the Bid Cost Recovery calculations described in Section 29.11(f) and Residual Imbalance Energy payments in Section 11.5.5 as described in Section 11.17, except that the CAISO will treat an EIM Base Schedule as a Day-Ahead Schedule.

(p) **Flexible Ramping Product.** The CAISO will allocate and settle payments and charges for the Flexible Ramping Product according to Section 11.25, where the CAISO will consider EIM Base Schedules of non-participating resources as Self-Schedules.

(q) **EIM Transfer System Resource Settlement Information.** The CAISO will provide EIM

Entities with non-binding Settlement information associated with Energy transfer schedule changes from their respective base schedules between EIM Entity Balancing Authority Areas.

(r) **EIM Transfer System Resource Settlement.**

(1) **EIM Transfer System Resource Registration.** The CAISO will provide each EIM Entity with financially binding Settlement of Energy transfer schedule changes from its respective base schedules between EIM Entity Balancing Authority Areas, and will –

(A) establish for each EIM Entity that shares an EIM Internal Intertie a to/from EIM Transfer system resource pricing location in their respective EIM Entity Balancing Authority Area;

(B) associate with each to/from EIM Transfer system resource pricing location a unique base EIM Transfer system resource that accounts for Energy transfer schedule changes between EIM Entity Balancing Authority Areas;

(C) require each EIM Entity Scheduling Coordinator to submit EIM Base Schedules and E-Tags that identifies Energy transfer schedule changes at the registered base EIM Transfer system resource; and

(D) reject EIM Base Schedule changes at the to/from EIM Transfer system resource pricing location not associated with the registered base EIM Transfer system resource.

(2) **Settlement for EIM Transfer System Resource Changes.** The CAISO will settle EIM Transfer system resource changes established pursuant to Section 29.11(r)(1) as –

(A) FMM Instructed Imbalance Energy or RTD Instructed Energy based on the Settlement Interval in which the E-Tag is received, without regard for other Energy types identified in Sections 11.5.1.1 or 11.5.2.2, or as an Operational Adjustment if the E-Tag is received after the end of the

Operating Hour for purposes of Energy accounting in accordance with the applicable WECC business practices;

(B) based on the difference between the E-Tag and the EIM Transfer system resource base schedule;

(C) at the relevant FMM or RTD Locational Marginal Price at each unique EIM Transfer system resource pricing location associated with the base EIM Transfer system resource; and

(D) including any contribution that the base EIM Transfer system resource might have on the RTM Bid Cost Recovery pursuant to Section 29.11(f).

* * * * *

29.34 EIM Operations

(a) **In General.** Section 34, as supplemented by provisions in Section 29.34, will govern the operation of the Real-Time Market within the EIM Area.

(b) **Applicability.** EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators will submit EIM Base Schedules and other necessary information to the CAISO for use in the Real-Time Market pursuant to Section 29.34 and not pursuant to Section 34.

(c) **Submission Deadlines.** If an EIM Entity Scheduling Coordinator or EIM Participating Resource Scheduling Coordinator fails to submit an EIM Base Schedule according to the timelines established in this Section 29.34, the CAISO will not accept the EIM Base Schedule or use it in the Real-Time Market.

(d) **Demand Forecast.**

(1) **In General.** In accordance with procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO shall develop short-term and mid-term Demand Forecasts by Demand Forecast zone within each EIM Entity Balancing Authority Area, separately from the CAISO Balancing Authority

Area.

(2) **Short Term Forecast.** The CAISO's short-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce a value every five minutes for the duration of the CAISO's Dispatch horizon, which has five-minute granularity and extends several Dispatch Intervals.

(3) **Mid-Term Forecast.** The CAISO's mid-term Demand Forecast for an EIM Entity Balancing Authority Area shall produce hourly values for the next hour through the next 7 days.

(4) **EIM Entity Scheduling Coordinator Demand Forecast.**

(A) **In General.** An EIM Entity Scheduling Coordinator may opt to provide a non-binding EIM Entity Demand Forecast, net of behind-the-meter Generation that is not registered as an EIM Resource, as part of the hourly EIM Base Schedules.

(B) **Timing and Scope.** The EIM Entity Scheduling Coordinator must provide any such Demand Forecasts by 10:00 a.m. for the next 7 days.

(C) **Updates.** The EIM Entity Scheduling Coordinator must update any such Demand Forecast for each Operating Hour and the following 6 to 10 hours and submit the update to the CAISO no later than 75 minutes prior to the start of that Operating Hour, as part of its hourly EIM Base Schedule submission.

(D) **Effect on Bid Requirement.** If the EIM Entity Demand Forecast is less than the CAISO Demand Forecast, then the EIM Entity's EIM Resource Plan must include sufficient Bids to cover the difference in Demand Forecasts.

(5) **Posting.** Between 6:00 p.m. of the seventh day prior to the start of the Operating Day and 6:00 p.m. of the day prior to the Operating Day, the CAISO shall post and update hourly Demand Forecasts by Demand Forecast zone.

(e) **EIM Resource Plan.**

(1) **In General.** By 10:00 a.m. of the day preceding the Operating Day, the EIM Entity Scheduling Coordinators on behalf of non-participating resources and EIM Participating Resource Scheduling Coordinators on behalf of EIM Participating Resources, must submit all applicable components of the EIM Resource Plan as set forth in Section 29.34(e)(3).

(2) **Scope.** The EIM Resource Plan components must cover a seven day horizon (with hourly detail for each resource) beginning with the Operating Day.

(3) **Contents.** The EIM Resource Plan shall comprise –

(A) EIM Base Schedules of EIM Entities and EIM Participating Resources;

(B) Energy Bids (applicable to EIM Participating Resources only);

(C) EIM Upward Available Balancing Capacity;

(D) EIM Downward Available Balancing Capacity;

(E) EIM Reserves to Meet NERC/WECC Contingency Reserves Requirements; and

(F) if the EIM Entity Scheduling Coordinator is not relying on the CAISO's Demand Forecast, a Demand Forecast.

(4) **Contents of EIM Base Schedules.** EIM Base Schedules of EIM Entities must include hourly-level Demand Forecasts for EIM Demand, hourly-level schedules for resources, including any hourly-level schedules below PMin that the EIM Entity seeks an accounting for, and hourly-level scheduled Interchanges.

(5) **Adjustment Prior to Submission of Real-Time EIM Base Schedules.** The EIM Entity Scheduling Coordinator may adjust the components of the EIM Resource Plan prior to the submission of Real-Time EIM Base Schedules up to 75 minutes before the Operating Hour.

(f) **Real-Time EIM Base Schedules.**

(1) **In General.**

(A) **Initial Submission.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating

resources in the EIM Entity Balancing Authority Area that wish to submit real-time hourly EIM Base Schedules, or, with regard to non-participating resources, wish to submit EIM Base Schedule information pursuant to Section 29.34(f)(4), must submit such schedules or other information consistent with the requirements of the Business Practice Manual for the Energy Imbalance Market and at least 75 minutes before the start of the Operating Hour.

(B) **Interim Revisions.** EIM Entity Scheduling Coordinators, EIM Participating Resource Scheduling Coordinators, and non-participating resources in the EIM Entity Balancing Authority Area may revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to Section 29.34(f)(4), meeting the requirements of the Business Practice Manual for the Energy Imbalance Market at or before 55 minutes before the start of the Operating Hour.

(C) **Additional Revisions.** EIM Entity Scheduling Coordinators may continue to revise hourly Real-Time EIM Base Schedules, or, with regard to non-participating resources, revise EIM Base Schedule information submitted pursuant to Section 29.34(f)(4), at or before 40 minutes before the start of the Operating Hour.

(D) **Final Revision.** EIM Entity Scheduling Coordinators may further revise hourly Real-Time EIM Base Schedules, including EIM Base Schedules for EIM Participating Resources, at or before 430 minutes before the start of the Operating Hour.

(2) **EIM Base Schedule for EIM Participating Resources.** The EIM Base Schedule for each EIM Participating Resource must be within the Economic Bid range of the submitted Energy Bids for each Operating Hour for EIM Resources, which the CAISO will make available to the EIM Entity without price information,

provided that an EIM Participating Resource Scheduling Coordinator may also include Energy below PMin in an EIM Base Schedule.

(3) **EIM Base Schedule for Imports and Exports.** EIM Base Schedules must –

(A) disaggregate Day-Ahead import/export schedules between the EIM Entity Balancing Authority Area and the CAISO Balancing Authority Area;

(B) identify the relevant EIM Interties for imports and exports to an EIM Entity Balancing Authority Area from Balancing Authority Areas other than the CAISO Balancing Authority Area; and

(C) include approved, pending, and adjusted E-Tags for imports and exports.

(4) **EIM Base Schedule Aggregation.** In response to a request by an EIM Entity Scheduling Coordinator, the CAISO will establish an electronic interface by which non-participating resources, Loads, and other customers of the EIM Entity may submit EIM Base Schedule information to the EIM Scheduling Coordinator and the CAISO.

(g) **Initial EIM Base Load Schedule.** The CAISO will derive an initial EIM Base Load Schedule for each EIM Entity from the Demand Forecast used for the EIM Entity Balancing Authority Area, estimated Transmission Losses, and an assumed Load distribution, pursuant to the methodology set forth in the Business Practice Manual for the Energy Imbalance Market.

(h) **Energy Bids.** EIM Participating Resource Scheduling Coordinators may submit Energy Bids in accordance with the timelines, processes, and requirements applicable to other resources submitting Energy Bids under Section 34.

(i) **Interchange Schedules with Other Balancing Authorities.**

(1) **In General.** EIM Entity Scheduling Coordinators must submit Interchange Schedules with other Balancing Authority Areas at the relevant EIM Interties and must update these Interchange Schedules with any adjustments, when applicable, as part of the hourly EIM Resource Plan revision.

(2) **Economic Bidding of EIM Intertie Transactions.** An EIM Participating

Resource Scheduling Coordinator may bid a transaction at an EIM External Intertie into the FMM if the EIM Entity supports economic bidding of EIM External Intertie transactions and the relevant transmission service providers or path operators support 15-minute scheduling at the EIM External Intertie under FERC Order No. 764.

(j) **CAISO Validation.** The CAISO Markets systems will validate the initial EIM Resource Plan by 1:00 p.m. on the day before the Operating Day, and within 15 minutes of the submission of EIM Base Schedules or adjustments to EIM Base Schedules, the CAISO will validate the EIM Resource Plan and notify the EIM Entity Scheduling Coordinator-

(1) if the EIM Resource Plan is not balanced;

(2) if the EIM Resource Plan provides insufficient Flexible Ramping Product capacity to meet requirements determined pursuant to Section 29.34(m); and

(3) if the CAISO anticipates Congestion based on the submitted EIM Resource Plans.

(k) **EIM Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules according to Section 29.34(f)(1)(De), Supply in the EIM Base Schedules does not balance the Demand Forecast, the CAISO will adjust the Demand in the EIM Base Schedule to equal Supply.

(l) **EIM Resource Plan Evaluation.**

(1) **Requirement.** The EIM Base Schedules for resources included in the EIM Resource Plan must balance the Demand Forecast for each EIM Entity Balancing Authority Area.

(2) **Insufficient Supply.** An EIM Resource Plan shall be deemed to have insufficient Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the highest quantity offers in the Energy Bid range from EIM Participating Resources, including Interchange with other Balancing Authority Areas, is less than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity

Balancing Authority Area.

(3) **Excess Supply.** An EIM Resource Plan shall be deemed to have excessive Supply if the sum of EIM Base Schedules from non-participating resources and the sum of the lowest quantity Bids in the Energy Bid range from EIM Participating Resources is greater than the total Demand Forecast that the EIM Entity Scheduling Coordinator has decided to use for the associated EIM Entity Balancing Authority Area.

(4) **Additional Hourly Capacity Requirements.**

(A) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that a Balancing Authority Area in the EIM Area has historically high import or export schedule changes between thirty~~forty~~ minutes and twenty minutes before the start of the Trading Hour, the CAISO will add to the Balancing Authority Area in the EIM Area's capacity requirements an additional requirement.

(B) **Additional Capacity Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each Balancing Authority Area in the EIM Area histograms of the percentage of the difference between imports and exports scheduled at thirty~~forty~~ minutes before the start of the Trading Hour and the final imports and exports at twenty minutes before the start of the Trading Hour based on the submitted E-Tags at those times and calculate additional upward and downward requirements for the capacity test component of the resource sufficiency evaluation.

(m) **Flexible Ramping Sufficiency Determination.**

(1) **Review.**

(A) **EIM Entity Balancing Authority Areas.** The CAISO will review the EIM

Resource Plan pursuant to the process set forth in the Business Practice Manual for the Energy Imbalance Market and verify that it has sufficient Bids for Ramping capability to meet the EIM Entity Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), and (5).

(B) **CAISO Balancing Authority Area.** The CAISO will review the Day-Ahead Schedules in the CAISO Balancing Authority Area and verify that it has sufficient Bids for Ramping capability to meet the CAISO Balancing Authority Area upward and downward Ramping requirements, as adjusted pursuant to Sections 29.34(m)(2), (3), (5), and (6).

(2) **Determination of EIM Diversity Benefit.** The CAISO will calculate separately the upward and downward EIM diversity benefit as the difference between the sum of the upward and downward Uncertainty Requirements for all Balancing Authority Areas in the EIM Area, and the Uncertainty Requirement for the EIM Area.

(3) **Effects of EIM Diversity Benefit.** For each Balancing Authority Area in the EIM Area, the CAISO will reduce the upward and downward Uncertainty Requirements by the Balancing Authority Area's pro rata share of the upward and downward EIM diversity benefit in the EIM Area as may be limited by –

(A) the available net import EIM Transfer capability into that Balancing Authority Area in the case of an upward Uncertainty Requirement; and

(B) the available net export EIM Transfer capability from that Balancing Authority Area in the case of a downward Uncertainty Requirement.

(4) **Determination of Flexible Ramping Sufficiency Credit.** The CAISO will calculate for each Balancing Authority Area in the EIM Area, the upward flexible Ramping sufficiency credit as the outgoing EIM Transfer from that area and the downward flexible Ramping sufficiency credit as the incoming EIM transfer into that area.

(5) **Effect of Flexible Ramping Sufficiency Credit.** The CAISO will reduce the upward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its upward flexible Ramping sufficiency credit, and will reduce the downward Uncertainty Requirement of a Balancing Authority Area in the EIM Area by its downward flexible Ramping sufficiency credit.

(6) **Incremental Requirements.**

(i) **In General.** If the CAISO determines under the procedures set forth in the Business Practice Manual for the Energy Imbalance Market that an EIM Balancing Authority Area has historically high import or export schedule changes between T-~~4~~3̲0 and T-20, the CAISO will add to the EIM Entity's flexible capacity requirement an additional incremental requirement.

(ii) **Additional Incremental Requirement.** On a monthly basis, according to procedures set forth in the Business Practice Manual for the Energy Imbalance Market, the CAISO will calculate for each EIM Entity Balancing Authority Area histograms of the percentage of the difference between imports and exports scheduled at T-~~4~~3̲0 and the final imports at T-20 based on the E-Tags submitted at T-~~4~~3̲0 and T-20 and calculate additional incremental and decremental requirements for the capacity test component of the resource sufficiency evaluation.

(n) **Effect of Resource Plan Insufficiency.**

(1) **Resource Plan Balance.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(D~~c~~̲), the EIM Resource Plan has insufficient supply as determined according to Section 29.34(l)-

(A) the CAISO will not include the EIM Entity Balancing Authority Area in the Uncertainty Requirement of the EIM Area;

(B) the CAISO will hold the EIM Transfer limit into or from the EIM Entity

Balancing Authority Area, as specified in Section 29.34(n)(2), at the value for the last 15-minute interval.

(2) **Flexible Ramping Insufficiency.** If, after the final opportunity for the EIM Entity to revise hourly Real-Time EIM Base Schedules as provided in Section 29.34(f)(1)(Dc), the CAISO determines-

(i) that an EIM Entity Balancing Authority Area has insufficient upward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the upward and into the EIM Entity BAA direction; and

(ii) that an EIM Entity Balancing Authority Area has insufficient downward Ramping capacity according to Section 29.34(m), the CAISO will take the actions described in Section 29.34(n)(1)(A) and (B) in the downward and from the EIM Entity BAA direction.

(o) **Transmission Constraint Relaxation.** If an EIM Entity Scheduling Coordinator's approved EIM Resource Plan does not have sufficient Bids to resolve Congestion, the CAISO will relax the relevant Transmission Constraints in the Market Clearing and the EIM Entity will become responsible for managing its congested Transmission Constraints through other means, and the CAISO will determine prices for Congestion consistent with Transmission Constraint relaxation parameters established in the Business Practice Manual for the Energy Imbalance Market until the Transmission Constraint is no longer binding in the Real-Time Market.

(p) **Operating Reserves.**

(1) **Schedules.**

(A) **EIM Entity Responsibility.** Each EIM Entity is responsible for its contingency reserves, or share of such contingency reserves under the terms of a reserve sharing group agreement, and it and the reserve sharing group are responsible for deploying operating reserves, including regulating reserves, in conformance with NERC and WECC

requirements.

(B) **EIM Entity Scheduling Coordinator Responsibility.** The EIM Entity Scheduling Coordinator shall –

(i) include any Energy deployed from reserves in the hourly EIM Base Schedules, if time permits, in which case they will be settled in the Real-Time Market;

(ii) otherwise include the Energy deployed from reserves as EIM Manual Dispatches, if time does not permit;

(iii) immediately inform the CAISO of events requiring Dispatch of operating reserves and resource EIM Base Schedule adjustments in response to contingencies;

(iv) if a resource's actual response differs from the resource EIM Base Schedule adjustment, provide a resource EIM Base Schedule update showing the actual resources dispatched during the event by no later than 1:00 a.m. seven days after the Operating Day in which the event occurred; and

(v) inform the CAISO of the amount of resource capacity that is reserved for contingency reserve responsibility by either ensuring that an Energy Bid for the resource is below the maximum operating limit of the resource or reducing the maximum operating limit of the resource.

(C) **CAISO Actions.**

(i) **Prior to Update.** Until the CAISO receives resource operating limit updates from an EIM Entity Scheduling Coordinator, the CAISO will continue to send Dispatch Instructions based upon pre-event operating limits.

(ii) **After Update.** After EIM Base Schedule updates are received and Dispatches in the Real-Time Market reflect the updated Self-

Schedules and operating limits, the CAISO shall account for the Dispatches in the net scheduled Interchange values that it provides to EIM Entity Scheduling Coordinators.

(2) **Updates to Data for Reserve Sharing Event.**

(A) **Responsibilities.** Immediately following a reserve sharing event impacting the EIM Entity Balancing Authority Area-

(i) the EIM Entity must submit information regarding the assistance provided, including impacts to Balancing Authority Area Load schedules for each participant involved in the reserve sharing event; and

(ii) the EIM Entity Scheduling Coordinator must submit to the CAISO EIM Manual Dispatch instructions for resources in the EIM Entity Balancing Authority Area deployed in response to the reserve sharing event, pursuant to the reserve sharing group's criteria.

(B) **Offsets.** Until 1:00 a.m. seven days following the reserve sharing event impacting the EIM Entity Balancing Authority Area, the EIM Entity may offset the Load schedules created by the reserve sharing event by entering resource to Load schedules, reflecting generation resources actually utilized to assist in the event.

(q) **Variable Energy Resources.** Provisions of Section 34 specifically applicable to Variable Energy Resources and Eligible Intermittent Resources appear in Sections 34.1.3, 34.1.6, 34.2.2, 34.5.1. 34.13.2.

(r) **Use of EIM Available Balancing Capacity.**

(1) **In General.** The CAISO will use EIM Available Balancing Capacity identified in the EIM Resource Plan to address power balance constraint infeasibilities in the EIM Balancing Authority Area for which the EIM Available Balancing Capacity is designated by the responsible EIM Entity Scheduling Coordinator, while simultaneously participating in Congestion Management.

(2) **Resource Sufficiency Evaluations.** The CAISO will not apply the EIM Available Balancing Capacity towards its evaluation of the resource sufficiency tests specified in Section 29.34(k), (l), and (m).

(3) **Real-Time Market Scheduling Run.** In each interval of the Real-Time Market, the CAISO will use the EIM Available Balancing Capacity in the run of the market optimization used to establish scheduling priorities by-

(A) adding a penalty price factor to EIM Available Balancing Capacity Energy Bid prices so that the EIM Available Balancing Capacity is dispatched to address power balance violations, after Effective Economic Bids submitted for EIM Participating Resources in the respective EIM Balancing Authority Area not associated with the EIM Available Balancing Capacity have cleared, while respecting the economic merit order of the EIM Available Balancing Capacity Energy Bid prices;

(B) enforce a constraint that prevents the release of EIM Upward Available Balancing Capacity in excess of the difference between the EIM Entity's demand and the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area, minus the import transfer into that EIM Balancing Authority Area; and

(C) enforce a constraint that prevents the release of EIM Downward Available Balancing Capacity in excess of the difference between the supply of Effective Economic Bids cleared within the applicable EIM Balancing Authority Area and the EIM Entity's demand, minus the export transfer out of that EIM Balancing Authority Area.

(4) **Real-Time Market Pricing Run.** For each interval of the Real-Time Market, in the run of the market optimization used to set binding schedules and prices, the CAISO will –

(A) use the EIM Available Balancing Capacity released in the run of the market optimization to establish scheduling priorities based on the

Energy Bid Curves for EIM Participating Resources and non-participating resources created pursuant to Sections 29.30(c) and (d), respectively;

(B) change the load forecast for the EIM Balancing Authority Area by a small tolerance to allow for price determination;

(C) clear the Real-Time Market and establish prices based on the pricing parameters in Sections 27.4.3.2 and 27.4.3.4, if the amount of EIM Available Balancing Capacity released in the scheduling run is not sufficient to clear the potential infeasibility identified in the scheduling run.

(s) **EIM Auto-Match.**

(1) **Designation.** An EIM Entity may submit a designation to the Master File of EIM non-participating resources, up to the number specified in the Business Practice Manual, in its Balancing Authority Area to automatically match import/export schedule changes outside of the Market Clearing of the Real-Time Market because of changes to E-Tags at one or more designated EIM Interties or Scheduling Points, up to the number designated in the Business Practice Manual for the Energy Imbalance Market.

(2) **Duration of Designation.** Any designation under paragraph (1) of this subsection shall remain in effect until the EIM Entity notifies the CAISO that it is terminating the designation by a submission to the Master File.

(3) **CAISO Actions in Response to Intertie Schedule Change.** If an EIM Entity designates a non-participating resource under paragraph (1) of this subsection, the CAISO, upon identification of an associated EIM Intertie or Scheduling Point schedule change outside of the Market Clearing of the Real-Time Market, shall –

(A) reflect a matching schedule change to the EIM non-participating resource in the Real-Time Market using the EIM Auto-Match feature; and

(B) omit the EIM Intertie or Scheduling Point schedule change from the historical intertie schedule over/under-scheduling histogram for the

determination of additional capacity test requirements for relevant EIM Balancing Authority Area(s) under Sections 29.34(l)(4)(B) and 29.34(m)(6)(ii) that are registered for EIM Auto-Match in accordance with the procedures specified in the Business Practice Manual for the Energy Imbalance Market.

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Section 30

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30.5.7 E-Tag Rules and Treatment of Intertie Schedules

In addition to complying with all generally applicable E-Tagging requirements, Scheduling Coordinators must submit their E-Tags consistent with the requirements specified in this Section 30.5.7. If a Scheduling Coordinator receives an intra-hour Schedule change, then the Scheduling Coordinator must, by twenty minutes before the start of the FMM interval to which the Schedule change applies, ensure that an updated energy profile reflects the change. Absent extenuating circumstances, the CAISO automatically updates Energy profiles on E-Tags for Energy Schedules that change from HASP to the FMM within a Trading Hour. In performing this service for a Scheduling Coordinator, the CAISO does not assume any responsibility for compliance with any E-Tag requirements or obligations to which the Scheduling Coordinator is subject. The changed energy profile will apply for the balance of the operating hour unless it is subsequently changed by a further updated energy profile.

30.5.7.1 Self-Schedule Hourly Blocks

By thirty-two~~forty~~ minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Self-Schedule Hourly Block. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-two~~forty~~ minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM

Schedule associated with the Self-Schedule Hourly Block to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour must be equal to the Self-Schedule Hourly Block. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour need not equal the Self-Schedule Hourly Block and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour; or (b) the Self-Schedule Hourly Block.

A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Self-Schedule Hourly Block.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.2 Variable Energy Resource Self-Schedule

By thirty-twoforty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Variable Energy Resource Self-Schedule. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-twoforty minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Variable Energy Resource Self-Schedule to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour must be equal to the Variable Energy Resource Self-Schedule. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour need not equal the Variable Energy Resource Self-Schedule and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the

transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour; or (b) the Variable Energy Resource Self-Schedule. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Variable Energy Resource Self-Schedule.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.3 Economic Hourly Block Bid

By thirty-twoforty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Economic Hourly Block Bid. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-twoforty minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Economic Hourly Block Bid to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour must be equal to the Economic Hourly Block Bid. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour need not equal the Economic Hourly Block Bid and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour; or (b) the quantity of the Economic Hourly Block Bid. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Economic Hourly Block Bid.

The CAISO may modify the Energy profile due to Reliability related curtailments.

30.5.7.4 Economic Hourly Block Bid with Intra-Hour Option

By thirty-twoforty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the Economic Hourly Block Bid with Intra-Hour Option. If the Scheduling Coordinator fails to submit a valid E-

Tag by thirty-twoforty minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the Economic Hourly Block Bid with Intra-Hour Option to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour must be equal to the Economic Hourly Block Bid with Intra-Hour Option. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour need not equal the Economic Hourly Block Bid with Intra-Hour Option and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the Energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour; or (b) the quantity of the Economic Hourly Block Bid with Intra-Hour Option. A Scheduling Coordinator is exposed to the Under/Over Delivery Charge if the Energy profile at twenty minutes prior to the applicable Trading Hour is not equal to the Economic Hourly Block Bid with Intra-Hour Option.

The CAISO may modify the Energy profile due to Reliability related curtailments.

In the case of an intra-hour redispatch from the FMM, the CAISO may increment or decrement the Energy profile to correspond to the intra-hour redispatch. The MW level to which the FMM can redispatch an Economic Hourly Block Bid with Intra-Hour Option above its HASP Advisory Schedule is limited by the quantity of the transmission profile submitted by thirty-twoforty minutes prior to the applicable Trading Hour.

30.5.7.5 FMM Economic Bid

By thirty-twoforty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag (or set of E-Tags) that passes CAISO E-Tag validation procedures and that supports the FMM Economic Bid. If the Scheduling Coordinator fails to submit a valid E-Tag by thirty-twoforty minutes prior to the applicable Trading Hour, then the CAISO will set the MW quantity of the FMM Schedule associated with the FMM Economic Bid to zero for each FMM interval of the hour.

The transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour must

be greater than or equal to the FMM Economic Bid. If the Scheduling Coordinator has a transmission profile less than its advisory Energy schedule, then the CAISO will limit the schedule for Energy in the FMM so that it does not exceed the quantity of the transmission profile.

The energy profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour need not equal the FMM Economic Bid and the Scheduling Coordinator may revise the Energy profile up to twenty minutes prior to the applicable Trading Hour. At twenty minutes prior to the applicable Trading Hour, the quantity of the energy profile must be equal to the lower of: (a) the transmission profile of the E-Tag at thirty-twoforty minutes prior to the applicable Trading Hour; or (b) the quantity of the FMM energy schedule for the first FMM interval of the applicable Trading Hour.

The CAISO may modify the Energy profile due to Reliability related curtailments.

Scheduling Coordinators with cleared FMM Economic Bids may update either the transmission profile or the Energy profile after thirty-twoforty minutes prior to the applicable Trading Hour and twenty minutes prior to the applicable Trading Hour, respectively. A Scheduling Coordinator choosing to update the transmission profile must submit an updated transmission profile at least thirty-two40 minutes prior to the applicable FMM interval. A Scheduling Coordinator choosing to update the Energy profile must submit an updated Energy profile at least 20 minutes prior to the applicable FMM interval.

Cleared FMM Economic Bids are eligible for Bid Cost Recovery as specified in Section 11.8.

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Section 34

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34.1.6 Eligible Intermittent Resources Forecast

34.1.6.1 Eligible Intermittent Resources Using Their Own Forecast

For Eligible Intermittent Resources, including Participating Intermittent Resources, that have elected to use the resource's own forecast as specified in Section 4.8.2.1.1, the responsible Scheduling Coordinator

must submit to the CAISO its forecast for the binding interval by ~~3~~2~~7~~.5 minutes prior to flow (the start of the applicable FMM optimization for the binding interval). If such Scheduling Coordinator does not provide such forecast to the CAISO, the CAISO will use the resource's direct telemetry MW output for Dispatch purposes. The CAISO shall use the forecast provided by the Scheduling Coordinator to establish MWh quantities to be cleared for that resource in the FMM if the resource has submitted only a Self-Schedule to the RTM. If a Scheduling Coordinator for a Variable Energy Resource submits an Economic Bid to the RTM (either with or without a Self-Schedule), then the CAISO receives and processes all Variable Energy Resources forecasts (as selected by CAISO) which establishes the upper economic limit for that resource in the FMM. Participating Intermittent Resources may elect not to use the forecast provided by the CAISO, in which case they must be certified to use their own forecast as provided in Section 4.8.2.1.1. In addition, the CAISO will not utilize the forecast it produces for the Participating Intermittent Resources using their own forecast. As provided in Section 4.8.2.1.1, the Scheduling Coordinator may submit such forecast in fifteen or five minute granularity. If the Scheduling Coordinator submits the forecast in five-minute granularity, the CAISO will use the average of the three five-minute forecasts provided by the Scheduling Coordinator to determine the MWh to be cleared in the FMM for that resource.

34.1.6.2 Eligible Intermittent Resources Using the CAISO Forecast

Eligible Intermittent Resources that have elected to use the CAISO forecast as specified in Section 4.8.2.1.2 are not required to submit a forecast for the binding interval by ~~3~~2~~7~~.5 minutes prior to flow. For Participating Intermittent Resources for which Scheduling Coordinators have elected to use the output forecast provided by the CAISO and have selected such a flag in their Master File, the CAISO will use the MWh forecast data the CAISO produces for such a resource at ~~3~~2~~7~~.5 minutes prior to the applicable FMM as follows: (a) as the MWh amounts to be to cleared for that resource in the FMM if only a Self-Schedule is submitted, and (b) as the upper economic limit for that resource in the FMM if an Economic Bid with or without a Self-Schedule is submitted. The forecast used by the CAISO will be in fifteen-minute granularity. Scheduling Coordinators representing Participating Intermittent Resources whose output is designated to satisfy a Resource Adequacy requirement must submit Variable Energy Resource Self-Schedules in the RTM in accordance with the output forecast provided by the CAISO, or an Economic

Bid.

34.1.6.3 [Not Used]

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34.3 Real-Time Unit Commitment

34.3.1 RTUC Optimization

The Real-Time Unit Commitment (RTUC) process uses SCUC and is run every fifteen (15) minutes to make commitment decisions for Fast Start and Short Start Units having Start-Up Times within the applicable time periods described below in this section for the next four to seven subsequent fifteen-minute intervals, depending on when during the hour the run occurs. For Multi-Stage Generating Resources the RTUC will issue a binding Transition Instruction separately from the binding Start-Up or Shut Down instructions. The RTUC can also be run with the Contingency Flag activated, in which case the RTUC can commit Contingency Only Operating Reserves. If RTUC is run without the Contingency Flag activated, it cannot commit Contingency Only Operating Reserves. RTUC is run at the following time intervals: (1) at approximately 12 minutes prior to the first Trading Hour, to serve as the HASP run, for T-45 minutes to T+60 minutes; (2) at approximately 7.5 minutes into the current hour for T-30 minutes to T+60 minutes; (3) at approximately 22.5 minutes into the current hour for T-15 minutes to T+60 minutes; and (4) at approximately ~~3~~2<u></u>7.5 minutes into the current hour for T to T+60 minutes, where T is the beginning of the next Trading Hour. The HASP is a special RTUC run that is performed at approximately 67.5 minutes before each Trading Hour and has the additional responsibility of pre-dispatching Energy and awarding Ancillary Services for HASP Block Intertie Schedules. A Day-Ahead Schedule or RUC Schedule for an MSG Configuration that is later impacted by the resource's derate or outages, will be reconsidered in the RTUC and the FMM taking into consideration the impacts of the derate or outage on the available MSG Configurations. Not all resources identified as needed in a given RTUC run will necessarily receive CAISO commitment instructions immediately, because during the Trading Day the CAISO may issue a commitment instruction to a resource only at the latest possible time that allows the resource to be ready to provide Energy when it is expected to be needed.

34.3.2 Commitment of Fast Start and Short Start Units

RTUC produces binding and advisory Start-Up and Shut-Down Dispatch Instructions for Fast Start and Short Start Units that have Start-Up Times that would allow the resource to be committed prior to the end of the relevant time period of the RTUC run as described in Section 34.3.1. A Start-Up Dispatch Instruction is considered binding in any given RTUC run if the Start-Up Time of the resource is such that there would not be sufficient time for a subsequent RTUC run to Start-Up the resource. A Start-Up Instruction is considered advisory if it is not binding, such that the resource could achieve its target Start-Up Time as determined in the current RTUC run in a subsequent RTUC run based on its Start-Up Time. A Shut-Down Instruction is considered binding if the resource could achieve the target Shut-Down Time as determined in the current RTUC run in a subsequent RTUC run. A Shut-Down Dispatch Instruction is considered advisory if the resource Shut-Down Instruction is not binding such that the resource could achieve its target Shut-Down time as determined in the current RTUC run in a subsequent RTUC run. A binding Dispatch Instruction that results in a change in Commitment Status will be issued, in accordance with Section 6.3, after review and acceptance of the Start-Up Instruction by the CAISO Operator. An advisory Dispatch Instruction changing the Commitment Status of a resource may be modified by the CAISO Operator to a binding Dispatch Instruction and communicated in accordance with Section 6.3 after review and acceptance by the CAISO Operator. Only binding and not advisory Dispatch Instructions will be issued by the CAISO. For Multi-Stage Generating Resources the CAISO will also issue binding Transition Instructions when the Multi-Stage Generating Resource must change from one MSG Configuration to another. A Transition Instruction is considered binding in any given RTUC run if the Transition Time for the Multi-Stage Generating Resource is such that there would not be sufficient time for a subsequent RTUC run to transition the resource.

34.3.3 [Not Used]

34.4 Fifteen Minute Market

The CAISO conducts the Fifteen Minute Market using the second interval of each RTUC run horizon as follows: (1) at approximately 7.5 minutes prior to the first Trading Hour, for T-45 minutes to T+60 minutes where the binding interval is T-30 to T-15; (2) at approximately 7.5 minutes into the current hour for T-30 minutes to T+60 minutes where the binding interval is T-15 to T; (3) at approximately 22.5 minutes into

the current hour for T-15 minutes to T+60 minutes for the binding interval T to T+15; and (4) at approximately ~~3~~2 7.5 minutes into the current hour for T to T+60 minutes for the binding interval T+15 to T+30, where T is the beginning of the next Trading Hour. In these intervals the CAISO conducts the FMM to (1) determine financially binding FMM Schedules and corresponding LMPs for all Pricing Nodes, including all Scheduling Points; (2) determine financially and operationally binding Ancillary Services Awards and corresponding ASMPs, procure required additional Ancillary Services and calculate ASMP used for settling procured Ancillary Service capacity for the next fifteen-minute Real-Time Ancillary Service interval for all Pricing Nodes, including Scheduling Points; (3) determine LAP LMPs that are the basis for settling Demand; and (4) determine FMM Uncertainty Awards. In any FMM interval that falls within a time period in which a Multi-Stage Generating Resource is transitioning from one MSG Configuration to another MSG Configuration, the CAISO: (1) will not award any incremental Ancillary Services; (2) will disqualify any Day-Ahead Ancillary Services Awards; (3) will disqualify Day-Ahead qualified Submissions to Self-Provide Ancillary Services Award, and (4) will disqualify Submissions to Self-Provide Ancillary Services in RTM. Each particular FMM market optimization produces binding settlement prices for Energy, Flexible Ramping Product, and Ancillary Services for the first FMM interval in the FMM horizon but the optimization considers the advisory results from subsequent market intervals within the FMM horizon. The CAISO settles Hourly Block Schedules from Proxy Demand Resources, Hourly Intertie Schedules, and Hourly Ancillary Services Awards accepted in the HASP as FMM Schedules and FMM Ancillary Services Awards in accordance with Section 11.5 and 11.10.1.2, respectively. In the event that a FMM run fails, the CAISO reverts to Day-Ahead Market Ancillary Services Awards and RUC Schedules results corresponding to the same interval, or the corresponding interval from the previous RTUC. The FMM will clear Supply against the CAISO Forecast of CAISO Demand and exports. The FMM issues Energy Schedules and Ancillary Services Awards by twenty-two and a half minutes prior to the binding fifteen-minute interval.

34.4.1 Real-Time Ancillary Services Procurement

If the CAISO determines that additional Ancillary Services are required, other than those procured in the IFM, then the FMM will procure Ancillary Services on a fifteen (15) minute basis as necessary to meet reliability requirements and will determine Real-Time Ancillary Service interval ASMPs for such AS for the

next Commitment Period. All Operating Reserves procured in the RTM are considered Contingency Only Operating Reserves. Any Ancillary Service awarded in FMM will be taken as fixed for the three (3) five (5) minute RTD intervals of its target fifteen (15) minute interval. In the FMM, all resources certified and capable of providing Operating Reserves that have submitted Real-Time Energy Bids shall also submit applicable Spinning or Non-Spinning Reserves Bids, respectively, depending on whether the resource is online or offline. The CAISO will utilize the RTM to procure Operating Reserves to restore its Operating Reserve requirements in cases when: (1) Operating Reserves awarded in the IFM have been dispatched to provide Energy, (2) resource(s) awarded to provide Operating Reserves in the IFM are no longer capable of providing such awarded Operating Reserves, or (3) the Operator determines that additional Operating Reserves are necessary to maintain Operating Reserves within NERC and WECC reliability standards, and any requirements of the NRC. The CAISO will utilize the FMM to procure additional Regulation capacity in Real-Time in cases when: (1) resource(s) awarded to provide Regulation in the IFM are no longer capable of providing such awarded Regulation, or (2) the Operator determines that additional Regulation is necessary to maintain sufficient control consistent with NERC and WECC reliability standards, and any requirements of the NRC and Good Utility Practice. The FMM will produce fifteen (15) minute ASMPs for the four (4) binding fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute ASMPs are then used for the Settlement of the fifteen (15) minute AS Awards. The FMM run will also produce fifteen (15) minute Shadow Prices for each of the Interties for the four (4) fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute Shadow Prices are then used to charge for Intertie Real-Time AS Award providers for Congestion on the Interties. FMM AS Awards are settled in accordance with 11.10.1.3.

* * * * *

Attachment E – EIM Governing Body memoranda dated Nov 25, 2020

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

Memorandum

To: Energy Imbalance Market Governing Body

From: Anna McKenna, Interim Head of Market Policy and Performance

Date: November 25, 2020

Re: Decision on EIM base schedule submission deadline proposal

This memorandum requires EIM Governing Body action.

EXECUTIVE SUMMARY

Management proposes two changes to the rules related to an energy imbalance market (EIM) entity's base schedules, which reflect the entity's planned system operation. Base schedules serve as the baseline for an EIM entity's imbalance energy settlement and are also an important component of an EIM entity's hourly resource sufficiency evaluation.

The first change Management proposes is to move the final hourly base schedule submission deadline 10 minutes closer to the beginning of each hour by moving it from 40 minutes before each operating hour to 30 minutes before each operating hour. This will allow EIM entities to submit more accurate base schedules because they will be based on information that is closer to the operating hour.

The second change Management proposes is to allow base schedules for energy production below an EIM resource's minimum load so that base schedules can reflect energy produced when an EIM resource is starting up. This will enable the resource sufficiency evaluation to consider this additional energy production, and also will decrease the resource's uninstructed imbalance energy.

These rule changes apply specifically to EIM entities and participants and are, therefore, under the EIM Governing Body's primary approval authority.

Management proposes the following motion:

> ***Moved, that the EIM Governing Body approves the proposal for base schedule submission as described in the memorandum dated November 25, 2020; and***
>
> ***Moved, that the EIM Governing Body authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory***

Commission to implement the proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.

PROPOSAL

Base schedule submission deadline

Management proposes to move the final hourly base schedule submission deadline from 40 to 30 minutes before the start of each operating hour. In conjunction with this change, Management proposes that the ISO conduct an additional resource sufficiency test evaluation run, which would be at 30 minutes before the start of each operating hour.

Base schedules reflect an EIM entity's planned supply resource schedules and demand forecast for its BAA. They are the baseline for imbalance energy settlement in the EIM and are an important component of the EIM entity's hourly resource sufficiency evaluation, which assures EIM entities schedule sufficient supply resources.

Moving the timeline for submitting final base schedules to be 10 minutes closer to the start of each operating hour allows base schedules to include information from closer to the operating hour. Consequently, the EIM's resource sufficiency test will use more accurate information than it currently uses. This more accurate information will also lead to lower amounts of uninstructed imbalance energy. This revised deadline also better aligns with Bonneville Power Administration's timeline for designating its customers' hourly energy schedules based on its hydroelectric production forecast. Bonneville Power Administration is planning to join the EIM in fall 2021.

The ISO currently requires EIM entities to submit base schedules by 40 minutes before the start of each operating hour because the fifteen-minute market optimization for the first interval of the hour begins running at 37.5 minutes before the hour. Technology improvements now allow the ISO to configure the market systems to complete this fifteen-minute market run in a shorter time. Consequently, the ISO can move the start of the market run to after 30 minutes before the hour without impacting system performance.

EIM entities submit base schedules for each operating hour to the ISO at multiple intervals. They submit initial base schedules at 75 minutes before the hour. The ISO systems then run the EIM resource sufficiency evaluation and provide advisory results back to EIM entities. This process repeats at 55 minutes before the hour and then final base schedules are currently due at 40 minutes before the hour.

This iterative process enables EIM entities to update their base schedules with more accurate information, such as resource output and load forecasts and bilateral transaction schedules. It also allows EIM entities to view advisory results produced by the resource sufficiency evaluation, and allows them time to correct any resource

sufficiency evaluation failure. This is important because EIM rules specify that the EIM cannot dispatch additional transfers into (or potentially, out of) a BAA that fails a final resource sufficiency evaluation.

In conjunction with moving the final base schedule submission deadline to 30 minutes before each operating hour, Management proposes that the ISO systems conduct an additional resource sufficiency evaluation, which will be run at 30 minutes before the start of each operating hour. This will become the final resource sufficiency evaluation run that determines whether a BAA can participate in additional EIM energy transfers. The resource efficiency evaluation currently run at 40 minutes before the hour will remain and become an additional advisory run.

Management proposes an additional feature that will increase the usefulness of the advisory resource sufficiency evaluation that will run at 40 minutes before the hour. Management proposes that the two resource sufficiency evaluations respectively run at 30 and 40 minutes before the hour, each use the same input data from the ISO systems, including projected resource output and variable energy resource and demand forecasts. Both runs will use the same the ISO system input data as the resource sufficiency evaluation currently run at 40 minutes before the hour uses.

This will provide EIM entities whose BAA fails the resource sufficiency evaluation run at 40 minutes before the hour a greater likelihood of taking corrective actions and then passing the final resource sufficiency evaluation at 30 minutes before the hour. They will be more certain of passing the final evaluation because the inputs from the ISO systems will be the same in the two runs.

In conjunction with this change, Management also proposes to change the timing of related market processes such as the reference for scheduled intertie transactions to final tagged amounts that the resource sufficiency evaluation uses to adjust BAAs' supply requirements based on their historical intertie transaction delivery rate. The reference point will change to look at intertie schedules at 30 minutes before each operating hour rather than the existing 40 minutes.

Energy below resource minimum load

The second base schedule related change Management proposes is to allow base schedules for energy production below an EIM resource's minimum load. This is so that base schedules can reflect energy produced when an EIM resource is starting up.

The current rules do not allow base schedules to represent energy produced below an EIM resource's minimum load. This prevents an EIM entity from accounting for energy produced while a resource is starting in the EIM's hourly resource sufficiency evaluation. One of the metrics the resource sufficiency evaluation assesses is whether base schedules for resource's in a BAA are submitted for sufficient supply to meet the BAA's demand forecast. The energy produced by a resource when it is starting up should be accounted for when evaluating whether an EIM entity can meet its BAA's demand forecast.

Management proposes that the ISO use these base schedules below minimum load in the resource sufficiency evaluation and as the basis for imbalance energy settlement. Management also proposes to not change how it settles differences between a resource's actual energy production and these base schedules below minimum load. Currently, the ISO settles all of the energy produced while starting up as uninstructed imbalance energy.

STAKEHOLDER POSITIONS

In general stakeholders strongly support Management's proposals as they include important changes Management made during the stakeholder process in response to stakeholder suggestions.

Management revised its initial proposal in response to EIM entity concerns regarding a draft proposal that would have moved the final base schedule submission deadline to 30 minutes before the hour without retaining the existing resource sufficiency run at 40 minutes before the hour. EIM entities were concerned they would have 10 minutes less time to take operational actions, such as starting-up additional resources, in the event their BAA failed the final resource sufficiency evaluation run at 30 minutes before the hour. In response to this concern, Management revised its proposal to retain the existing resource sufficiency evaluation run at 40 minutes before the hour to provide additional advisory results. In addition, in response to EIM entity suggestions, Management revised its initial proposal so that that the resource sufficiency evaluation runs at 30 and 40 minutes prior to each operating hour will use the same input data from the ISO systems.

Finally, some stakeholders were concerned that shortening the time allowed for the fifteen-minute minute market to solve for the first fifteen-minute interval of the operating hour might not be feasible once the real-time market optimization becomes even more technologically complex with the implementation of nodal flexible ramping product implementation in fall 2021. In response, Management proposes to not implement the new final base schedule submission deadline of 30 minutes prior to the operating hour until after it has implemented the nodal flexible ramping product and testing shows the shortened fifteen-minute market run time is still feasible.

The Department of Market Monitoring did not submit comments in response to this proposal.

CONCLUSION

Management requests the EIM Governing Body approve Management's proposed base schedule submission rule changes. These changes will enable the EIM resource sufficiency evaluation to more fully account for EIM entities' available energy supply and will allow them to submit base schedules based on information from closer to the beginning of each operating hour.

Memorandum

To: Energy Imbalance Market Governing Body

From: Anna McKenna, Interim Head of Market Policy and Performance

Date: November 25, 2020

Re: Decision on real-time settlement review proposal.

This memorandum requires EIM Governing Body action.

EXECUTIVE SUMMARY

Management proposes four changes to the real-time market settlement rules that apply to the western energy imbalance market (EIM). At the end of last-year's *Real-Time Market Neutrality Settlement* stakeholder process, Management committed to an additional stakeholder process, which it started this summer to comprehensively review ISO market real-time settlements and identify any potential inappropriate cost shifting between balancing authority areas (BAAs).

The first two proposed settlement rule changes address issues that can arise when EIM participants make a change to an energy schedule to deliver a bilateral transaction between BAAs after the hourly deadline for submitting EIM "base schedules."

The first proposed settlement rule change is to require transfer schedule changes for all EIM entities be settled through the ISO settlement process. EIM entities currently have the option to settle these schedule changes outside of the ISO settlement process, which can result in cost shifting when these changes are associated with energy being wheeled through multiple BAAs.

The second proposed settlement rule change is to modify the price specified for settling imbalance energy resulting from these transfer schedule changes. The price that is currently used is different than what other supply and demand associated with the transfer schedule change are settled at in the real-time market. This can result in inappropriate cost shifting between BAAs on either side of a transfer. Therefore, Management proposes to align the transfer settlement with the settlement of other supply and demand associated with the transfer schedule change.

Management's third proposed settlement rule change modifies the rules for settling an EIM entity's "unaccounted for energy." Unaccounted for energy is the difference

between the metered demand in a service area and the energy delivered into a service area. Under the current rules this results in a charge or credit to the EIM entity, and can lead to cost shifting issues under certain circumstances. Management proposes to allow an EIM entity to elect for the ISO to not settle unaccounted for energy for its BAA if it reports its BAA's demand to the ISO based on supply amounts and a loss amount specified in its open access transmission tariff rather than based on end-use load meters.

Management's fourth proposed settlement rule change is to modify how the ISO allocates costs for real-time market bid cost recovery uplift payments. The current settlement rule is to allocate a portion of these costs between BAAs to account for bid cost recovery costs incurred to support energy transfers between BAAs. Management proposes to modify this allocation so that it is based on each BAA's load, exports, and transfers out, which is consistent with the ISO's methodology for allocating real-time market bid cost recovery costs in the ISO BAA.

The proposed tariff rules to implement the first three changes are EIM-specific and are under the EIM Governing Body's primary approval authority. The fourth change is under the EIM Governing Body's advisory role as it is generally applicable to the ISO's real-time market.

Management proposes the following motion:

> ***Moved, that the EIM Governing Body approves the proposal for (1) require that these transfer schedule changes be settled in the ISO settlement process, (2) the price at which imbalance energy resulting from changes to EIM energy transfers scheduled as base schedules is settled, and (3) allow an EIM entity to elect that the ISO settlement process will not settle unaccounted for energy for its BAA if it reports its BAA's demand to the ISO not based on end-use load meters, as described in the memorandum dated November 25, 2020; and***
>
> ***Moved, that the EIM Governing Body authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.***

PROPOSAL

EIM Transfer Schedule Change Imbalance Energy Settlement

The first two changes Management proposes are to the ISO settlement rules that apply when EIM entities make a change, after the hourly deadline for submitting EIM base schedules, to an energy transfer between BAAs scheduled in the EIM as a base

schedule. EIM entities typically schedule these transactions to facilitate bilateral energy sales between BAAs.

Management's first proposed rule change is to require that all imbalance energy resulting from these transfer schedule changes be settled in the ISO settlement process. Currently, adjoining BAAs have to agree to have imbalance energy resulting from these transfer schedule changes settled in the ISO settlement process.

Management's second proposed rule change applies to the price the ISO uses to settle imbalance energy resulting from these transfer schedule changes.

These settlement rule changes address inappropriate cost shifting between BAAs that currently can occur in the ISO settlement process. This cost shifting is a particular issue when it involves wheeling energy across multiple EIM BAAs.

Base schedules reflect EIM entities' planned system operation and are the baseline for imbalance energy settlement in the EIM. The ISO real-time market settlement process does not settle the energy produced or consumed that corresponds to a base schedule. Rather, the settlement process settles imbalance energy, which is the difference between the base schedule and the actual energy produced or consumed.

In addition to submitting base schedules for individual supply resources' planned output and for demand, EIM entities also submit base schedules for energy transfers between BAAs, which are typically to facilitate bilateral energy sales between BAAs that settle outside of the ISO settlement process. These can involve a transfer schedule from one BAA to another or a wheeling schedule that transfers energy across multiple EIM BAAs.

As an example of base schedules for energy transfers, assume, BAA 1 enters into a bilateral agreement to sell 100 MW of energy to BAA 2. In this case, the BAAs submit base schedules to the ISO for the 100 MW transfer amount (along with base schedules for the corresponding supply and demand).[1] There is no settlement of these base schedules in the ISO settlements process—settlement occurs in the bi-lateral market. The cost shifting issues arise because EIM entities have the ability to increase or decrease the scheduled energy transfer after the hourly deadline for submitting base schedules. The ISO settlement process settles the difference between the final scheduled transfer and the base schedule for the transfer as imbalance energy.

Continuing the example described above, if BAA 1 and BAA 2 increased their transfer schedule from 100 MW to 125 MW after the base schedule submission deadline, the ISO settlement process would settle 25 MW of imbalance energy. BAA 1 would pay for 25 MW of imbalance energy for the increased transfer out of BAA 1 (because the increased transfer out of its BAA is increased demand). BAA 2 would be paid for 25 MW of imbalance energy because for the increased transfer into BAA 2 (because the

[1] More specifically, BAA1 would submit a 100 MW base schedule for a supply resource (internal supply or import), a 100 MW base schedule for the export to BAA2, and BAA 2 would submit a 100 MW base schedule for the import to BAA2, and a 100 MW demand base schedule (internal demand or export).

increased transfer into its BAA is increased supply). In this situation, although BAA 1 would pay imbalance energy charges for the 25 MW increased transfer out, it would presumably also increase the output of a supply resource by 25 MW to provide the energy that supported the transfer out. In this case, the ISO settlement process would pay it for 25 MW of imbalance energy provided by the supply resource. Similarly, the ISO settlement process would pay BAA 2 for the increased transfer into its BAA and charge it for imbalance energy for its BAA's increased demand.[2]

The first settlement rule change Management proposes also addresses cost shifting involving changes to transfer schedules that are associated with a wheeling schedule across multiple BAAs. Currently, it is optional for EIM entities to settle the imbalance energy settlement related to the transfer schedule changes through the ISO settlement system. Management proposes that it be mandatory because the current optionality can result in cost shifting between BAAs, particularly a schedule change that involves a transfer that is part of a wheeling schedule across multiple BAAs.

If some EIM entities choose to not settle these transfer base schedule changes through the ISO settlement process, costs may shift between BAAs because the ISO settlements process may pay or charge one BAA for a transfer into or out of its BAA but not pay or charge it for the opposite leg. If all EIM entities are required to settle these transfer base schedule changes through the ISO settlement process, the ISO will appropriately charge and pay for all of the imbalance energy involved in a wheeling schedule change.

Management's second proposed rule change applies to the price the ISO uses to settle imbalance energy resulting from these transfer schedule changes. Ideally, since these transfer schedules and any associated resource output and demand changes are all associated with a bilateral transaction settled outside of the ISO settlement process, each BAA's imbalance energy payments and charges in the ISO settlement process due to a transfer schedule change should net to zero (except appropriately for congestion and losses within a BAA). However, this is not typically the case, because the ISO settlement rules currently specify that the price for imbalance energy at a BAA's point of interconnection with another EIM entity BAA is a ratio of the both the sending and receiving BAAs' energy prices in their respective BAAs (*e.g.*, the average price).[3] This is as opposed to the price being the locational marginal prices at the points of interconnection. The imbalance energy for the other schedule changes involved in the transfer schedule change is settled at the resource's or demand's locational marginal price.

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[2] Note that this situation is different from transfers between BAAs that result from ISO market dispatches. The ISO settlements process does not directly settle those exports and imports. Rather, it settles transfers dispatched by the market through an imbalance energy payment to supply resources in the sending BAA and an imbalance energy charge to load or resources in the receiving BAA.

[3] The import or export associated with a transfer schedule change is priced at the point of interconnection. The price ratio currently used is a static value adjacent BAAs agree to and is set-up in the ISO's settlement system.

Consequently, the imbalance energy for the sending BAA's resource supplying the energy for the transfer schedule change can be settled at a much different price than the transfer out of its BAA, and the imbalance energy for the receiving BAA's demand can be settled at a much different price than for the transfer into its BAA. This prevents each BAA's imbalance energy settlement for the transfer schedule change from netting to zero (ignoring congestion and losses). As a result, BAAs participating in the transaction are left with costs attributed to this difference in prices, causing the ISO settlement process to inappropriately shift costs between BAAs.

To address this cost shifting issue, Management proposes that all imbalance energy due to transfer schedule changes is settled at the locational marginal price at the schedule change location. This will result in imbalance energy within a BAA associated with a transfer schedule change all being paid at the same price (ignoring congestion and losses).

Unaccounted for Energy Settlement

Management's third proposed settlement rule change addresses potential cost shifting that can currently occur in an EIM entity's "unaccounted for energy" settlement. Unaccounted for energy settlement results in a charge or credit based on the difference between the total metered demand in a service area and the energy delivered into a service area, accounting for transmission losses. In the EIM, these service areas correspond to EIM entity BAAs.

Management proposes to allow an EIM entity to elect that the ISO not settle unaccounted for energy for its BAA if it reports its BAA's demand to the ISO based on an approved load profile that is not based on end-use load meters. These EIM entities calculate their load by subtracting a loss amount specified in their open access transmission tariff (OATT) from their metered supply amounts.[4]

Currently, the ISO cannot accurately account for an EIM entity's losses when it calculates that entity's unaccounted for energy if the EIM entity calculates its load based on supply meters and OATT losses. This is because their OATT-defined losses are used to both schedule supply and demand and to account for losses when reporting demand to the ISO. This is different from entities that report their demand using end-use meters, whose scheduled losses can differ from actual losses that are reflected in their meter readings.

For example, assume an EIM entity that calculates its load based on supply meters and OATT losses submits base schedules for 104 MW of supply and 100 MW of demand because its OATT specifies it calculates its end-use load using a 4 percent loss factor. There should be no unaccounted for energy if the metered supply and metered demand

[4] Existing EIM entities generally calculate their load in this manner. The cost-shifting issue described for UFE does not exist for load-serving entities in the ISO BAAs.

turn out to be the same as scheduled. There is no revenue shortfall to collect as unaccounted for energy charges.

However, the ISO may inaccurately account for losses if it settles unaccounted for energy for this EIM entity. For example, assume the ISO assumes 3 percent losses in the settlement of the unaccounted for energy, the EIM entity would incur a charge for 1 MW of unaccounted energy in this same situation (104 MW supply – 3 MW losses – 100 MW demand = 1 MW unaccounted for energy).

This can result in cost shifting in two ways. First, since the ISO may collect an unaccounted for energy charge with no corresponding revenue shortfall to pay, the ISO would allocate this revenue to offset cost allocation accounts. An EIM entity's OATT may specify that it allocates offset allocation revenues to different customers than unaccounted for energy charges. Second, because the ISO calculates the unaccounted for energy charges based on energy prices within the BAA, if these prices are influenced by congestion charges resulting from energy transfers from another BAA, the ISO will allocate a portion of the congestion revenue collected as unaccounted for energy to another BAA. A BAA not settling UFE avoids this cost shifting.

Bid Cost Recovery Cost Allocation

Management's fourth proposed settlement rule change addresses how the ISO settlement process allocates costs between BAAs for real-time market bid cost recovery uplift payments to resources. This fourth change is under the EIM Governing Body's advisory role to the ISO Board of Governors as it is generally applicable to the ISO's real-time market.

The ISO guarantees suppliers bid cost recovery to ensure suppliers dispatched by the market recover their bid costs when energy market revenues based on market prices are not sufficient to cover their bid-in costs. For example, energy payments at the locational marginal price may not be sufficient to cover the commitment costs of a resource the market starts. The ISO generally allocates the costs of these real-time market bid cost recovery payments to the BAA in which the resource they are paid to is located.

It also allocates a portion of these costs between BAAs in the EIM to account for bid cost recovery costs incurred to support energy transfers between BAAs. The ISO allocates ISO BAA bid cost recovery costs to load and exports. EIM entities allocate bid cost recovery costs in their BAAs pursuant to their OATTs. In addition to the EIM transfers resulting from the real-time market's dispatch of resources, the ISO currently adjusts the bid cost recovery allocation between BAAs based on uninstructed imbalance energy and unaccounted for energy quantities

Management proposes to no longer consider uninstructed imbalance energy and unaccounted for energy quantities and instead allocate a portion of a BAA's bid cost

recovery costs to transfers out of a BAA in proportion only to the ratio of the transfers out of a BAA to the sum of the BAA's load, exports, and transfers out.

This is consistent with cost causation principles for real-time bid cost recovery. When the ISO can isolate what drives the cost, the ISO will allocate the costs to the identified cause. However, when many factors drive costs, as is the case with real-time bid cost recovery for resources dispatched or commitment the real-time market, the most equitable means of allocating such costs is to the beneficiary, which is load, exports, and the BAA receiving an energy transfer from another BAA.

Uninstructed imbalance energy does not directly result in incurring bid cost recovery costs in one BAA to serve another. Rather, if uninstructed imbalance energy results in the ISO real-time market dispatching a resource to transfer energy from one BAA to another, any associated bid cost recovery costs are proportional to the transfer amount.

Unaccounted for energy does not result in bid cost recovery costs as it does not result in the real-time market committing or dispatching resources. Unaccounted for energy is a post-market accounting of energy that merely accounts for differences in load meters reported to the ISO and the energy dispatched to serve load in a service area.

STAKEHOLDER POSITIONS

Stakeholders generally support management's proposals.

In response to the ISO's initial straw proposal, Powerex maintained that it was not necessary to require imbalance energy resulting from transfer base schedules to always be settled in the ISO settlement process. Management provided an example in its draft final proposal to demonstrate it is necessary to settle this imbalance energy in the market so that costs are not shifted to EIM entities that are intermediate BAAs in an energy wheeling schedule.

Arizona Public Service and Idaho Power both requested additional information to estimate the total dollar impact of not settling unaccounted for energy. In response, Management will provide a market simulation environment to help EIM entities estimate the changes and compare settlement results with and without unaccounted for energy.

The ISO Department of Market monitoring did not submit comments as part of this initiative.

CONCLUSION

Management requests the EIM Governing Body approve this proposal. The four proposals within this real-time settlement review initiative will address instances of inappropriate cost-shifting and provide for more equitable allocation of bid cost recovery costs.

Attachment F – CAISO Board of Governors memorandum dated Dec 9, 2020

Real-Time Settlement and Base Schedule Timeline Enhancements

California Independent Systems Operator Corporation

January 27, 2021

Memorandum

To: ISO Board of Governors

From: Anna McKenna, Interim Head of Market Policy and Performance

Date: December 9, 2020

Re: **Decision on real-time settlement review proposal**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Management proposes to modify how the ISO allocates the costs for real-time market bid cost recovery uplift payments between balancing authority areas to be more consistent with cost causation principles. Management proposes to allocate these costs based on each balancing authority area's load, exports, and EIM transfers, rather than also considering uninstructed imbalance energy and unaccounted for energy as it does today.

This proposed change resulted from a stakeholder process that the ISO initiated following last-year's *Real-Time Market Neutrality Settlement* stakeholder process to review ISO market real-time settlement rules to identify any potential inappropriate cost shifting, particularly between balancing authority areas.

This recent *Real-Time Settlement Review* stakeholder process resulted in three other proposed settlement rule changes that Management presented to the EIM Governing Body at their December 2, 2020, meeting. The EIM Governing Body approved these changes under their primary approval authority and they are included on the Board of Governors' consent agenda. These changes addressed imbalance energy settlement resulting from schedule changes to transfer schedules between EIM balancing authority areas and addressed "unaccounted for energy" settlement for EIM entities.[1]

The EIM Governing Body also voted to provide an opinion, under their advisory role, to support the bid cost recovery payment cost allocation change proposed in this memorandum.

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[1] These changes are described in the November 25, 2020, memorandum to the EIM Governing Body posted at https://www.westerneim.com/Documents/Decision-EIMBaseScheduleSubmissionProposal-Memo-Dec2-2020.pdf

Management proposes the following motions:

> ***Moved, that the ISO Board of Governors approves the real-time settlement review proposal as described in the memorandum dated December 9, 2020; and***
>
> ***Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.***

PROPOSAL

The ISO and stakeholders recently completed a stakeholder process, titled *Real-Time Settlement Review*, to review ISO market real-time settlement rules to identify any potential inappropriate cost shifting, particularly between balancing authority areas. As a result of this review, Management proposes to modify how the ISO settlement process allocates costs between balancing authority areas for real-time market bid cost recovery uplift payments to resources.

The ISO bid cost recovery settlement rules ensure resources dispatched by the market recover their bid costs when energy market revenues based on market prices are not sufficient to cover their bid-in costs. For example, energy payments at the locational marginal price may not be sufficient to cover the start-up and minimum load costs of a resource the market starts. The bid cost recovery settlement rules provide for a make-whole payment in the event market revenues do not cover bid-in costs.

The ISO settlement rules generally allocate these real-time market bid cost recovery payment costs to the balancing authority area in which the resource they are paid to is located. The ISO allocates bid cost recovery payment costs incurred for the ISO balancing authority area to load and exports. Energy imbalance market entities allocate bid cost recovery payment costs in their balancing authority areas pursuant to their open access transmission tariffs.

The ISO settlement rules also allocate a portion of these bid cost recovery payment costs between balancing authority areas in the western energy imbalance market to account for bid cost recovery payment costs incurred to support energy transfers between balancing authority areas. This allocation between balancing authority areas is currently based on energy transfer quantities as well as each balancing authority area's uninstructed imbalance energy and unaccounted for energy quantities.

Management proposes to no longer consider uninstructed imbalance energy and unaccounted energy in this allocation between balancing authority areas and proposes instead to base it on the quantity of energy transferred out of a balancing authority area

compared to its demand. This approach is more consistent with cost causation principles because a balancing authority area's transfer out quantities compared to its demand reflect the portion of bid cost recovery payment costs incurred in its balancing authority area to support energy transfers to another.

Specifically, Management proposes to reduce the allocation of bid cost recovery payment costs to a balancing authority area in proportion to the ratio of the transfers out of the balancing authority area to the sum of the balancing authority area's demand (load and exports) and transfers out. The existing rules, which will remain in-place, then allocate these costs to other balancing authority areas based on the ratio of each balancing authority area's transfer in quantity to the quantity of all balancing authority areas' transfers in combined.

Uninstructed imbalance energy does not directly result in real-time market bid cost recovery payment recovery payment costs in one balancing authority area to serve another. Rather, the proportion of the bid cost recovery costs that are attributable to energy transfers to other balancing authority areas are captured by the transfers out of a balancing authority area compared to its overall demand.

Similarly, unaccounted for energy does not result in bid cost recovery payment costs, as it does not result in the real-time market committing or dispatching resources. Unaccounted for energy is a post-market accounting of energy that merely accounts for differences in load meters reported to the ISO and the energy dispatched to serve load in a service area.

STAKEHOLDER POSITIONS

Stakeholders including the ISO Department of Market Monitoring, support Management's proposal, stating it is an improvement that better reflects cost causation.

CONCLUSION

Management requests the ISO Board of Governors approve Management's proposed change to the settlement rules for allocating bid cost recovery payment costs among balancing authority areas, as it will provide for more equitable allocation of these costs in a manner that better reflects cost-causation.