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January 15, 2009

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: California Independent System Operator Corporation

**Docket No. ER09-____-000
MRTU Tariff Clarifications Amendment**

**Docket No. ER08-367-____
Docket No. ER06-615-____
Compliance Filing**

Dear Secretary Bose:

The California Independent System Operator Corporation ("CAISO") submits this filing in order to make a number of clarifying revisions to the Market Redesign and Technology Upgrade ("MRTU") Tariff. The purpose of the proposed tariff clarifications is to ensure consistency between the MRTU software and the tariff; to provide additional implementation detail; to reflect minor modifications concerning how some MRTU features are being implemented; to address instances where the underlying provisions in the February 9, 2006, original MRTU Tariff filing in Docket No. ER06-615 were either not properly modified for MRTU or not modified at all; and to correct minor errors.¹ The CAISO has stakeholdered the tariff clarifications and believes that

¹ The CAISO submits the proposed tariff clarifications pursuant to Section 205 of the Federal Power Act ("FPA"), 16 U.S.C. § 824d, and Section 35.13 of the Commission's regulations, 18 C.F.R. § 35.13. Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the MRTU Tariff, and except where otherwise noted herein, references to section numbers are references to sections of the MRTU Tariff.

most of the proposed tariff clarifications are non-controversial. In addition, the CAISO is submitting in this filing tariff language in compliance with Paragraph 61 of the Commission's December 4, 2008, order in Docket Nos. ER08-367 and ER06-615.² These directives relate to the calculation of user rates and cost allocation for Voltage Support and Black Start that were never properly modified for MRTU.

I. BACKGROUND AND STAKEHOLDER PROCESS

MRTU is the product of more than eight years of study, analysis, stakeholder input, coordination with state authorities, and Commission guidance to address structural flaws in the CAISO's electricity markets and to develop an improved infrastructure for the CAISO's markets and operations. As part of the MRTU development process, the CAISO contracted with Science Applications International Corporation ("SAIC") in September 2007 to verify and document, prior to implementation of MRTU, that the various new applications that constitute MRTU were developed, built, and tested in accordance with the MRTU Tariff as filed with the Commission and conformed through November 15, 2007. SAIC certified the Scheduling Infrastructure Business Rules ("SIBR"), the Market Quality System ("MQS"), the Congestion Revenue Rights ("CRR") rules, and the Integrated Forward Market/Real-Time Nodal ("IFM/RTN") software to be used under MRTU. SAIC utilized both a "top-down" and "bottom-up" approach. The top-down approach determined whether the MRTU Tariff accurately reflected the software business rules. The bottom-up approach analyzed test results to ensure consistency with the business rules and the MRTU Tariff. SAIC published the results of this certification process on May 12, 2008.³ No major issues were uncovered by SAIC with respect to either software functionality or the relationship between software systems and the MRTU Tariff.

SAIC did identify a number of minor instances in which it believed the MRTU Tariff could be clarified or modified to track the MRTU Tariff business rules more accurately. After reviewing the items identified by SAIC the CAISO agreed with SAIC as to most, though not all, of SAIC's proposed MRTU Tariff changes and these changes are included in the instant filing. The CAISO's

² *California Independent System Operator Corp.*, 125 FERC ¶ 61,262 (2008) ("December 4 Order"). On January 5, 2009, the CAISO filed a request for extension of time, until January 15, 2009, to comply with Paragraph 61 of the December 4 Order. On January 7, 2009, the Commission issued a notice granting that CAISO request. The CAISO submitted its compliance filing in response to the other directives in the December 4 Order on January 5, 2009.

³ The SAIC certification materials are available for review on the CAISO's website at <http://www.aiso.com/1fc5/1fc5d12b5460.html>.

responses to all of SAIC's recommendations are available on the CAISO's website.⁴

The CAISO also conducted its own review of the MRTU Tariff to determine whether any further clarifications were needed. Pursuant to this review, which was informed by testing and market simulation results, the CAISO concluded that other tariff clarifications were warranted.⁵ These changes are also included in this filing.

On October 3, 2008, the CAISO posted on its website its responses to the SAIC recommendations and draft tariff clarifications for stakeholder review and comment. On October 10, 2008, the CAISO posted on its website an updated version of the proposed tariff changes, additional explanations regarding those tariff changes, and a spreadsheet that mapped the tariff changes to the reasons and bases for them ("Roadmap").⁶ The CAISO also extended the date for stakeholder comments. The CAISO held conference calls with stakeholders on October 17, 21, and 31, 2008, and on November 3, 2008, the CAISO posted on its website further tariff clarifications based on the conference-call discussion and the CAISO's further internal review. The CAISO held additional conference calls on November 4 and 10, 2008, to discuss the tariff changes with stakeholders.⁷ The CAISO determined that the tariff clarifications proposed in this filing are simply to clarify existing policies reflected in the tariff and thus no new Board authorization was required to make the clarifications.

⁴ The CAISO's responses are included in the materials available at the Internet link cited in footnote 3, above.

⁵ This review and analysis also included four "deferred functionality" items, which the CAISO determined ought to be presented to the CAISO Governing Board ("Board") for approval because they arguably involved modifications to existing policy, rather than clarification of existing policy as is the case with the proposals contained in the instant filing. The deferred functionality items were reflected in an amendment to the MRTU Tariff that the CAISO filed on October 31, 2008, in Docket No. ER09-213-000. Commission action on the deferred functionality tariff amendment is pending.

⁶ The full title of the Roadmap is "Proposed Changes to California Independent System Operator Corporation to Market Redesign and Technology Upgrade Tariff

⁷ The documents posted by the CAISO and the written stakeholder comments are available for review on the CAISO's website at <http://www.aiso.com/17ba/17ba873e19350.html>. As reflected in some of these materials, during the time that the tariff clarifications were being developed, the filing that would in time contain those clarifications (*i.e.*, the instant filing) was sometimes informally referred to as the "bucket" tariff amendment, because it would contain a miscellaneous assortment of tariff changes in the same omnibus filing or "bucket."

II. PROPOSED MRTU TARIFF CHANGES

The proposed changes to the MRTU Tariff contained in this filing are shown in clean format in Attachment A hereto and in black-line format in Attachment B hereto. Attachment C hereto contains a table ("Table") that describes, for each tariff section and definition for which the CAISO proposes changes in this filing,⁸ the SAIC comments, if applicable, and the results of the CAISO's review process, as informed by the CAISO's discussions with stakeholders, which led to the preparation of the tariff clarifications. The Table is based largely on the materials prepared by the CAISO and posted on its website as described above.

The Table includes several categories of tariff clarifications that were discussed at some length during the stakeholder process and that therefore warrant discussion not only in the Table but also below in Section II of this transmittal letter. Discussion of these items in Section II does not mean in every case that the items are controversial. Rather, some of the clarifications simply call for a more complete explanation than can be accommodated in the Table. Proposed tariff clarifications that are self-explanatory and did not generate stakeholder comments or extensive discussions are only discussed in the Table.

A. Tariff Clarifications Initially Considered In Response to SAIC Recommendations

1. Wheeling Through Transactions

The CAISO proposes to clarify Section 30.5.4, which pertains to Wheeling Through transactions, in response to SAIC's observation that the tariff language was inaccurate insofar as the SIBR rules applied. The proposed clarifications to Section 30.5.4 explain that SIBR rules require the Import and Export Bids of a Wheeling Through transaction to have a matching Wheeling reference identifier but that the Bids need not specify a matching quantity. The CAISO further clarifies Section 30.5.4 to indicate that the Wheeling Through transaction would be erased in the absence of a matching Wheeling reference. Finally, the CAISO clarifies that only the matching quantities would ultimately clear the relevant CAISO market.

2. Dispatch of Contingency Only Reserves in the Real-Time Market

SAIC observed that, in addition to being able to do so through the Real-Time unit Contingency process, the automated Real-Time Economic Dispatch

⁸ The Table is arranged in number order for tariff sections and in alphabetical order for definitions.

process, the Real-Time Unit Commitment ("RTUC") process can also commit Contingency Only resources. The commitment of Contingency Only resources in the RTUC is accomplished by turning on the Contingency Flag. Accordingly, the CAISO proposes clarifications to Section 34.2 to reflect this. In response to stakeholder comments, the CAISO further clarifies that the option to use these tools to dispatch or commit Contingency Only resources – including the RTUC process – can only be effectuated if there is an unplanned Outage, a Contingency, or an imminent or actual System Emergency.⁹ No further changes are needed for this clarification because by definition Contingency Only resources can only be dispatched under such conditions. Using the defined term makes explicit in the applicable sections that these processes will only dispatch Contingency Only resources under these scenarios. The CAISO also notes that Section 34.8 already provides the additional detail on the conditions under which the Real-Time Market ("RTM") can dispatch Contingency Only resources and proposes to include a reference to Section 34.8 in Section 34.3 that discusses the various forms of Real-Time dispatch to make this information easier to find in the tariff.

3. Dispatch of Ancillary Services

SAIC noted the existence of some anachronistic language in Sections 34.16.3.1 and 34.16.3.2 concerning the dispatch of Ancillary Services. Specifically, SAIC noted that under the MRTU software, resources are not dispatched in "merit order" but rather are dispatched "optimally." Due to stakeholder concern over use of the word "optimally," the CAISO has deleted the anachronistic references but has declined to add "optimally," thus leaving the tariff language to state that resources will be dispatched in accordance with the relevant MRTU software.

4. Replacement of Operating Reserve

SAIC and stakeholders made suggestions for clarifying Section 34.16.3.3. The tariff clarifications the CAISO proposes are intended to address SAIC's observations as well as stakeholder comments on the use of defined terms. The purpose of the revisions is to make clear that if the CAISO dispatches Energy from Operating Reserves, it will either restore the Operating Reserves through the dispatch of additional Energy or procure additional Operating Reserves in the Hour-Ahead Scheduling Process ("HASP") for use in the RTM.

⁹ The California Department of Water Resources provided comments indicating that it believed the CAISO's authority under Section 34.8 allowed the CAISO too much discretion to dispatch Contingency Only resources. CAISO staff responded that the purpose of the ongoing "bucket" stakeholder process was to clarify and correct the tariff and not to consider proposed changes to existing policies.

5. Exceptional Dispatch Tariff Provisions

SAIC recommended adding specific clarifying language to Section 34.9.2, which concerns the CAISO's Exceptional Dispatch tariff authority, to state that the CAISO's has authority to "reverse the operating mode of a Pumped-Storage Hydro Unit." The CAISO has added this language. SAIC also recommended that the CAISO's authority under subsection (8) of Section 34.9.2 be generalized. As currently on file, subsection (8) provides authority to "reverse a commitment instruction issued through the IFM that is no longer optimal as determined through RUC." SAIC recommended that the quoted language be replaced by the phrase "reverse a previous commitment." Stakeholders objected to this change as overly broad. The CAISO is, therefore, not proposing to change this tariff provision at this time. Finally, the CAISO has added tariff language to Sections 34.9, 34.9.1, 34.9.2, and 34.9.3 to clarify the CAISO's authority to use Exceptional Dispatch to commit resources outside of the RTM time frame.¹⁰

Finally, through the tariff stakeholder process, the CAISO observed that Section 11.5.6.1 was missing a description of how decremental Instructed Imbalance Energy ("IIE") should be compensated in response to an Exceptional Dispatch. This is the same price specified in Sections 11.5.6.2 and 11.5.6.2.4 and was simply inadvertently missing from Section 11.5.6.1. This tariff clarification has no bearing on the pending proceeding in Docket No. ER08-1178 concerning Exceptional Dispatch bid mitigation and eligibility for supplemental compensation. There is no bid mitigation proposed for decremental Bids and no eligibility for Supplemental Revenues.

6. Price Correction and Validation

Section 35 sets forth the CAISO's authority to correct and validate prices. SAIC made a general recommendation that the CAISO should revise Section 35 to state that the CAISO may "recalculate," rather than "rerun," the market. The CAISO generally agreed that "recalculate" is more accurate as it is more comprehensive term and includes market reruns. Stakeholder comments, however, suggested that the CAISO had taken this suggestion too far. In response to stakeholders, the CAISO concurred that simply replacing "rerun" with "recalculate" was overbroad and agreed to maintain one use of the term "rerun" in Section 35.1 to reflect the CAISO's preference to rerun the market to the extent reasonably practicable. However, the CAISO submits that the use of "recalculate" in place of "rerun" is more accurate and thus preferable to use elsewhere in revised Section 35.

¹⁰ These clarifications are consistent with the directives in Paragraph 444 of the Commission's June 25, 2007, order in the MRTU proceeding, *California Independent System Operator Corp.*, 119 FERC ¶ 61,313.

7. Bidding Rules

SAIC made two recommendations that would clarify how Bids in SIBR would be treated in two circumstances. First, SAIC recommended that Section 30.7.6.1 be modified to make clear that a Regulation Up Bid will be erased whenever the resource's Self-Schedule amount is greater than the Regulation Limit for Regulation Up. The CAISO has made this clarification to Section 30.7.6.1. Although stakeholders questioned whether the rule should be otherwise (*e.g.*, should be revised to delete only a portion of the resource's Regulation Up Bid) the rule noted by SAIC is a longstanding SIBR rule published on the CAISO's website for several years now. The existing rule provides that if a Self-Schedule is at a level that does not permit the resource to provide the Regulation Up service specified in the Bid, the entire Regulation Up Bid will be erased. The purpose of the stakeholder process for miscellaneous tariff clarifications was not to reconsider the policy choices reflected in the rules but rather to ensure that existing policies are appropriately reflected in the tariff. Accordingly, the CAISO is not proposing any changes to the underlying rule.

Second, SAIC recommended that the CAISO modify Section 30.5.2.6.1 to reflect similar principles applicable to Regulation Down Bids. Specifically, SAIC recommended adding tariff language to clarify that a Regulation Down Bid will be erased unless there is an Energy Bid or Self-Schedule Bid that would allow the resources to operate a level that would permit the resource to provide the Regulation Down service. The CAISO has made that clarification to Section 30.5.2.6.1.

8. Eligibility to Set the LMP

SAIC noted that, while the MRTU Tariff included in Section 34.19.2.3 a discussion of the resources eligible and conditions for setting the Locational Marginal Price ("LMP"), SAIC recommended that there should also be a similar discussion regarding eligibility to set prices with respect to the Integrated Forward Market ("IFM"), Residual Unit Commitment ("RUC") and HASP. The CAISO agreed to add parallel language in the tariff to reflect such eligibility. Generally, the eligibility rules that apply for setting prices in the RTM also apply in the IFM, RUC or HASP. Therefore, the CAISO essentially took the principles in Section 34.19.2.3 and developed new provisions in Sections 31.3.1.4, 31.5.1.4, and 33.8.1 to include a discussion of the principles that apply in the IFM, RUC, and HASP, respectively, in setting the prices.¹¹

¹¹ As discussed elsewhere in this filing, the CAISO also proposes changes to Section 34.19.2.3 for the purpose of correcting the use of the term Generated Bid as well as for the purpose of conforming the use of defined terms.

Stakeholder participants commented that the three sections did not address intertie resources. Section 34.19.2.3 already included references to System Resources, which are used in the provision of intertie bids. The CAISO adds further clarifying language to address the variations of System Resources in the eligibility determination. For example, the CAISO clarifies that Resource-Specific System Resources are treated more like internal generating units than are other System Resources that do not provide three-part bids. Participants also noted that the new provisions warranted additional discussion with Market Participants. Further, participants suggested that the rules reflected in Section 34.19.2.3 should apply differently. For example, certain participants asked what happens if a resource is dispatched beyond its Economic bid range because the CAISO dispatches it beyond its maximum output (PMax).

In response to many requests which the CAISO believes amounted to a reconsideration of the rules for setting LMPs, the CAISO reiterated that through these clarifications it was not suggesting that the rules for setting prices should change. Rather, the proposed clarifications to Sections 31.3.1.4, 31.5.1.4, and 33.8.1 are intended for the purposes of providing the additional detail in the tariff on the rules for setting the LMP in the markets. Having not set out to change the existing rules, the CAISO did not believe it was appropriate to incorporate additional revisions to alter the LMP-setting rules already reflected in Section 34.19.2.3. Instead, the CAISO chose to simply supplement the details in each market with the rules already found in Section 34.19.2.3 already.

9. Accounting For Unscheduled Flow in the Real-Time Market

The CAISO is proposing to revise Section 34 in order to recognize updates to the Full Network Model ("FNM") used in the RTM optimization include current estimates of Real-Time unscheduled flow at the Interties. The MRTU Tariff already provides that the CAISO accounts for unscheduled flow in the HASP.¹² In its audit of the MRTU Tariff and implementation documentation, SAIC noted that the tariff did not describe compensating injections (loop flow or unscheduled flow) with respect to the RTM as it does with respect to the HASP in Section 33.2. SAIC asked whether this detail should be included in the tariff. The CAISO agreed to supplement the tariff with the same specification in the RTM. Compensating injections is the phrase used to refer to the process in the HASP and RTM software to account for loop flow impacts from external sources and sinks on the CAISO grid. The Real-Time pre-dispatch process uses the Energy Management System ("EMS") telemetry/State Estimator solution for flows across the CAISO boundary and determines the total injections at the Scheduling Points and other external points that produce flows at the boundary so that they match the State Estimator solution. The compensating injection refers to the

¹² See Section 33.2.

amounts calculated and accounted for as described above as the difference between the injections and the market schedules at the Scheduling Points so that flows produced by the sum of the market schedules and the compensating injections at each point match the flows observed at the boundaries.

This method of accounting for unscheduled flow is documented in the Business Practice Manuals ("BPMs"). For example, in Section 3.1.9 of the BPM for Market Operations, the CAISO explains that it performs loop flow (compensating injection) calculations to supplement market scheduling data, in order to match the actual Real-Time metered power flows that are observed at the CAISO boundary. It also explains that in Real-Time the CAISO combines the EMS telemetry/State Estimator results with market schedules to determine Real-Time loop flows. The CAISO then explains that the EMS/State Estimator telemetry reports the actual Real-Time flow on the interties and the market applications recognize the difference between the scheduled flow and actual Real-Time flow as being unscheduled flow (*i.e.*, loop flow), which is the basis of the calculated compensating injection. Similar explanations regarding this methodology in Real-Time are also found in the BPM for FNM.¹³

During the stakeholder process in this tariff clarification proceeding, the Sacramento Municipal Utility District ("SMUD") expressed a concern that this practice was not sufficiently explained to participants. The CAISO pointed out that through this proposed clarification there was no intent to change what had already been previously described and already incorporated in its documentation. Because through this tariff change process the CAISO is not intending to make any substantive revisions in the tariff or its procedures regarding compensating injections, and because no other participant raised this issue, the CAISO considered that individual discussions with SMUD on this issue to explain further its processes on compensating injections would be more appropriate. The CAISO has contacted SMUD to request a meeting to discuss the compensating injections concepts further and hopes that SMUD will agree to discuss any of the concerns they have regarding the use of compensating injections with the CAISO through that process. However, any such discussions will be outside the scope of this tariff clarification proceeding.

To return to the instant proceeding, pursuant to the rule of reason, the CAISO already has in Section 33.2 appropriate detail regarding the fact that in the HASP it will account for the impact on its system of unscheduled flow. This statement provides notice and gives a clear and definitive statement that unscheduled flow will be accounted flow. As described above, the technique used to do so is also detailed in BPM provisions. The CAISO believes it is appropriate to follow the same approach in adding the detail in the RTM. Section 34 will clearly state that the FNM used in the RTM will also account for

¹³ See BPM for FNM, Section 4.2.4.3.

unscheduled flow, and the BPMs already contain the additional detail of how this is accomplished through the use of compensating injections. Market Participants can look to the BPMs to determine the methodology used to calculate the compensating injections.

SMUD also expressed concern regarding the use of compensating injections in the separate proceeding in Docket No. ER09-240-000 on the inclusion of market parameters in the MRTU Tariff. SMUD stated there that the CAISO's use of "compensating injections" in its market model might have the effect of lowering the priority of their self-schedules. The CAISO provided in that proceeding a lengthy explanation of the use of compensating injections and its explanation of why they should have no impact on the priority of SMUD's self-schedules, but most recently SMUD has responded further with additional concerns regarding the use of compensating injections asserting that the CAISO is not accurately representing the concept, and that they continue to have concerns regarding compensating injections and the priority of self-schedules. The CAISO plans to file a further response to SMUD in that docket.

The CAISO takes the opportunity to address here one of the issues raised by SMUD in Docket No. ER09-240, which SMUD might raise again here. That is, SMUD's recommendation there that the Commission require the CAISO to supplement the tariff with additional detail on compensating injections such that compensating injections are (as SMUD puts it) "(1) addressed directly and transparently in the CAISO tariff, and (2) in sufficient detail to allow market participants to independently validate the values being "injected" by the CAISO in real time." In the first instance, the CAISO does not believe that the standard articulated by SMUD is achievable in that it requires that the tariff contain sufficient detail to validate the actual compensating injections made by CAISO in the real-time. This is impossible to do as the compensating injections in Real-Time are calculated based on the solution provided by the State Estimator and the EMS. Including the solution in the tariff would be of course impossible. Moreover, as explained above, the CAISO already has appropriate detail in its tariff and the BPMs regarding unscheduled flow and the calculation of compensating injections.

B. Other Tariff Clarifications

1. Voltage Support and Black Start

In its answer to comments filed in Docket Nos. ER08-367 and ER06-615 in response to the CAISO's December 21, 2007 filing of an updated comprehensive MRTU Tariff, the CAISO acknowledged that tariff provisions relating to the rates and cost allocation for Voltage Support and Black Start – specifically Sections 11.10.7 and 11.10.8, which were essentially identical to Sections 8.12.4 and 8.12.5 of the currently effective CAISO tariff – were not

appropriately adapted for MRTU. The CAISO proposed to file on compliance modifications to these sections to adapt the language while preserving the cost allocation reflecting in the currently effective tariff to the extent possible. In Paragraph 61 of the December 4 Order, the Commission directed the CAISO to make these changes on compliance.

Prior to the issuance of the December 4 Order, the CAISO developed draft tariff language as part of the stakeholder process described in Section I, above. In the course of developing that tariff language through the stakeholder process, the CAISO realized the additional changes would be necessary to adapt the pre-existing tariff language for MRTU regarding Voltage Support and Black Start. The CAISO also concluded that it was necessary to correct some MRTU Tariff sections to ensure that resources providing Exceptional Dispatch Energy for Voltage Support would be compensated for Energy under the Exceptional Dispatch tariff provisions. Because of the number of changes and affected tariff provisions, the CAISO offers the following summary of the changes.

First, the CAISO proposes to modify Section 8.2.3.3 to clarify that when the CAISO directs a Generating Unit to reduce its MW output to provide the CAISO with additional Voltage Support, it is eligible to recover its opportunity cost.

Second, the CAISO proposes to adapt and update the explanation of opportunity cost for MRTU and move it from Section 8.3.8 to Section 11.10.1.4 so that all settlements-related tariff provisions are in Section 11. The CAISO made clear to stakeholders that under both the currently effective CAISO tariff and the MRTU Tariff, the CAISO does not compensate resources for Voltage Support *per se* other than through payment of opportunity costs in the event there is a lost opportunity to provide Energy, unless the resource is under a Reliability Must-Run ("RMR") Contract (in which case the compensation provided under RMR Contract compensation includes compensation for providing Voltage Support).

Third, the CAISO is proposing to delete anachronistic tariff language in Sections 8.2.3.3, 8.3.8, and 8.3.9. The language proposed for deletion in Section 8.2.3.3 does not include rates, terms, or conditions but rather indicates that at some point in the future the CAISO may subject Wheeling Through and Wheeling Out transactions to a reactive power charge to be developed through a future tariff amendment. In addition, both Sections 8.3.8 and 8.3.9 contain language relevant only to circumstances existing as of the original CAISO Operations Date (March 31, 1998). The CAISO also believes that such language should now be removed as unnecessary.

Fourth, the CAISO proposes to modify Section 11.5.6.5 to clarify that Energy received from Black Start units providing Black Start services is paid the

Exceptional Dispatch Settlement price but allocated like other Black Start costs pursuant to Section 11.5.6.5. The CAISO has deleted references to Voltage Support Energy and allocation of Voltage Support Energy from this provision because Energy procured for purposes of Voltage Support is compensated and allocated as Exceptional Dispatch Energy not Voltage Support.

Fifth, the CAISO proposes to update and adapt Sections 11.10.1.4 (regarding Voltage Support) and 11.10.1.5 (regarding Black Start) to explain how non-Energy payments for these services are calculated. As discussed above, Section 11.10.1.4 explains how opportunity cost is calculated when the CAISO requires a resource to limit its output to provide Voltage Support. The section also clarifies that incremental and decremental Energy obtained through Exceptional Dispatch is compensated and settled as Exceptional Dispatch Energy in accordance with Sections 11.5.6.1 and 11.5.6.2.5.2. The changes to Section 11.10.1.5 pertaining to Black Start resources indicate that such resources are compensated based on contractual provisions, provided that the resource will be compensated for Energy and be eligible for Bid Cost Recovery under the tariff in response to an Exceptional Dispatch if the Energy price and costs are not specified in any applicable contract.

Sixth and finally, the CAISO has revised the Voltage Support and Black Start cost allocation provisions in Sections 11.10.7 and 11.10.8 in compliance with the December 4 Order. Section 11.10.7 allocates Voltage Support to Measured Demand, excluding demand within a Metered Subsystem except as provided in Section 4.9.4.4. Section 11.10.8 allocates Black Start costs to Measured Demand excluding exports and excluding demand within a Metered Subsystem except as provided in Section 4.9.4.4.

2. Constrained Output Generators

The CAISO has substantially rewritten the tariff provisions concerning Constrained Output Generators ("COGs") for the purpose of clarifying the tariff language to accurately reflect the CAISO's COG policy. The tariff clarifications concern Section 27.7 and its subsections and the definition of a COG eligible resource.¹⁴ The proposed definition of a COG eligible resource provides that the resource eligible for special COG treatment has an operating range no greater than the higher of three MWs or five percent of its maximum output. Any such resource is eligible to participate as a COG, in which case the CAISO will use the resource's "Calculated Energy Bid," consisting of the resource's Minimum Load

¹⁴ SAIC also noted that the definition of COG in Section 27.7.1.3 is incorrect. The CAISO agreed and also noted that the definition of COG stated in Appendix A of the MRTU Tariff was inconsistent with the correct definition of a COG.

Cost divided by the MW quantity of the resource's maximum output.¹⁵ A resource with zero operating range must participate as a COG. A resource that has a non-zero operating range has the option to elect COG status or to participate like any other non-COG resource and can submit Bids within its operating range. All these clarifications are consistent with the COG policies previously developed in the MRTU stakeholder process.

The CAISO has also added tariff language indicating that a Scheduling Coordinators must make its annual election prior to each calendar year by registering the resource's PMin in the Master File as equal to its PMax less 0.01 MW. This Master File requirement is necessary as the CAISO discovered through testing and market simulation that the MRTU software must utilize an Energy Bid for some small amount of capacity in order to implement the CAISO's COG policy to allow such a resource to participate in the CAISO markets and to be eligible to set the LMP using a Calculated Energy Bid.

3. Ramping Issues

As a result of experience gained through market simulation, the CAISO determined that it needed to simplify the use of ramp rates for dispatching resources. Therefore, the CAISO is proposing to modify Sections 34.5 and 34.15.1 to provide that the CAISO will utilize a resource's Operational Ramp Rate rather than its Regulation Ramp Rate when the resource is providing or offering to provide both Energy and Regulation, subject to the resource's Dispatch Operating Point remaining within its applicable Regulating Range. This change will improve the performance of the MRTU software and resolve inconsistent cross-hour ramping results while honoring resource-specific constraints. The CAISO is currently testing the software to implement this change.

4. Inter-Scheduling Coordinator Trades

The CAISO proposes several changes to Section 28 relating to Inter-SC Trades and to the definition of Physical Trades in Appendix A of the tariff. The CAISO's two main purposes in proposing these changes are to clarify that the Aggregated Pricing Nodes of Physical Scheduling Plants will be eligible locations for Physical Trades and to clarify that incremental Physical Trades submitted in the HASP will be validated against the HASP Advisory Schedules. The CAISO has also made minor clarifying changes to the Section 28.

¹⁵ Accordingly, in the instant filing, the CAISO has added to Appendix A of the tariff the new defined term Calculated Energy Bid.

5. Resource Adequacy Capacity

The CAISO proposes to clarify Section 40.4.3 to address the circumstance when Resource Adequacy capacity is less than a resource's PMin. The clarification requires the resource's full PMin to be available to the CAISO in order to fulfill the obligation to make the Resource Adequacy capacity available to the CAISO. In this regard, and as stated in the CAISO's comments filed in the Exceptional Dispatch tariff amendment docket, ER08-1178, the CAISO does not believe that it should be obligated to compensate the resource for any non-Resource Adequacy capacity lower than its PMin in this situation.¹⁶

6. Correction to Section 8.3.5

Section 8.3.5 currently includes the following sentence: "The CAISO Governing Board must approve all long-term contracts." The CAISO proposes to delete this sentence in its entirety. The version of this sentence in the currently effective CAISO tariff is included in Section 8.3.4 and reads as follows: "The ISO Governing Board must approve all long-term **Replacement Reserve** contracts" (emphasis added). The Replacement Reserve product is not a product under MRTU and, accordingly, the entire sentence should have been deleted from the MRTU Tariff. By deleting just the reference to Replacement Reserve contracts, the requirement of Board approval was incorrectly and inappropriately broadened to require approval of all long-term contracts. Stakeholders raised concern over the proposal to delete this requirement. The CAISO believes that the proposal to delete the sentence is an appropriate correction of an error. In the stakeholder process, the CAISO informed stakeholders that, as a matter of corporate policy, the Board does approve all contracts above a specific dollar amount which the Board sets and reevaluates from time to time. Therefore, management's discretion in this area is circumscribed and stakeholder interests are adequately protected by this policy.

7. Clarification to Settlement Language To Ensure Revenue Neutrality Related to Congestion Revenue

The CAISO is proposing tariff changes to clarify Section 11.2.4.4.1 in order to ensure revenue neutrality in the settlement of congestion charges and payments. The MRTU Tariff already provides that in the full funding settlement of the Congestion Revenue Rights ("CRR") Balancing Account, the CAISO will net out IFM Congestion Credits as reflected in Section 11.2.4.4.1. The congestion credits account for the reversal of the crediting of the congestion component of LMPs for valid and balanced schedules submitted by Scheduling Coordinators under Existing Transmission Contracts ("ETCs"), Transmission

¹⁶ Comments of the California Independent System Operator Corporation Regarding Technical Conference, Docket Nos. ER08-1178-000 and EL08-88-000 (Nov. 24, 2008), at 15.

Ownership Rights ("TORs"), or Converted Rights. It is necessary to net out these credits from the CRR Balancing Account, otherwise the CRR Balancing Account will not be revenue neutral after it has been fully cleared as the CAISO would not be accounting for the fact that certain congestion charges are effectively not collected. Through its review and validation of Charge Codes during its pre-MRTU *go-live* activities, the CAISO determined that the CRR Balancing Account settlement language in the tariff lacked the additional requirement that the HASP and RTM congestion credits also be netted out. The CAISO applies the congestion credit to ETC and TORs in the HASP and RTM also. Without this accounting the CAISO would not be revenue neutral. The Charge Codes have already been developed to net out the additional HASP and RTM amounts and the tariff should be conformed accordingly.

The CAISO also determined that the provisions in Section 11.5.4.2 regarding the allocation of non-zero amounts of the sum of Instructed Imbalance Energy, Uninstructed Imbalance Energy, and Unaccounted For Energy must also ensure that certain congestion revenues are excluded in order to arrive to revenue neutrality. In the first instance the CAISO is proposing to exclude from the demand that is subject to Real-Time Congestion Offset, which is calculated to account for the non-assessment of congestion charges to ETCs, Converted Rights, and TORs under the "perfect hedge" construct, any demand that is subject to the congestion credit in the IFM. Section 11.5.4.2 already provides for the exclusion of the demand that was subjected to the congestion credit in the HASP and RTM, but because the congestion credit is applied in the IFM as well, the demand that is subject to this credit also has to be excluded from the calculation.

Similarly, the CAISO is proposing to exclude from the demand subject to the Real-Time Cost of Losses Offset any TORs demand that is subject to the IFM Marginal Cost of Losses Credit. Again, the demand that is subject to the RTM Marginal Cost of Losses Credit is already addressed in the Section 11.5.4.2 but the CAISO had inadvertently excluded the accounting for this type of demand that is subject to the marginal cost of losses credit in the IFM.

Finally, upon further review of Section 11.5.4.2, in the language on the summing up IIE, Uninstructed Imbalance Energy ("UIE") and Unaccounted for Energy ("UFE") for the purposes of determining any non-zero amounts that need to be allocated to market participants, the CAISO identified the need to include in this calculation the Real-Time Ancillary Services Congestion revenue that the CAISO cannot keep and has to be allocated to Market Participants. This methodology is consistent with the Charge Codes that allocated out any such congestion revenue through the neutrality accounting.

8. Elimination of Requirement to Electronically Tag RUC Capacity

The MRTU Tariff provides that System Resources that are awarded Ancillary Services capacity or RUC Capacity in the Day-Ahead Market are required to electronically tag (*i.e.*, assign an E-Tag, as prescribed by the Western Electricity Coordinating Council (“WECC”)) the Ancillary Services capacity or RUC Capacity. This tagging requirement for Ancillary Services capacity and RUC Capacity was included in order to enforce the rescission of payments for amounts of such capacity that becomes undispachable. The tariff provides that if the amounts of Ancillary Services capacity or RUC Capacity in an E-Tag differs from the amounts of such for the System Resource, the CAISO will rescind payments for any portion of the awarded capacity that becomes undispachable capacity.¹⁷ It has become evident that it is not possible to actually electronically tag RUC Capacity under the WECC rules. Therefore, the CAISO believes that the Sections 8.10.8.1 and 31.5.7.1 of the tariff must be updated to reflect the fact that RUC Capacity is not subject to electronic tagging as is Ancillary Services capacity.

Certain participants requested additional information on why the electronic tagging of RUC Capacity is not feasible and what the implications are. The infeasibility arises out of the fact that the North American Electric Reliability Corporation (NERC”) does not provide an entry for RUC capacity in its E-Tag. Without the E-Tag, it is not clear how the CAISO can determine whether or not the external resource is dispatchable. Therefore, the CAISO is proposing to eliminate the requirement that RUC Capacity also be tagged, and is proposing the accompanying tariff provisions that effectuate the rescission of payments.

9. Posting Requirements

In its efforts to validate its ability to post market information as required in by the tariff, the CAISO noted that several provisions were not clearly articulated. The CAISO proposes a series of clarifications that are intended continue to provide the same level of detail that was previously anticipated but more precisely state the format and the actual data posting. These changes are proposed to Sections 6.5.3.2.2, 6.5.4.2.2, 6.5.5.2.2, and 6.5.5.2.3.

The CAISO is proposing to clarify that the posting of total Day-Ahead Schedules is for total Supply and Demand by Transmission Access Charge (“TAC”) Area and for the entire CAISO Balancing Authority Area. The CAISO is proposing to also separately state that it will post the total Day-Ahead Schedules (MWh) of imports and exports by Transmission Interface. Both of these concepts were captured in the existing tariff language stating that the CAISO was going to

¹⁷ See Section 8.10.8.1.

post the total Day-Ahead Schedules (MWh) by Generator, Demand, and Scheduling Point for the CAISO Balancing Authority Area. The proposed changes clarify the posting of total supply and not by Generator. The use of the term Generator in this context was erroneous and was not logical because it implied that CAISO would post total supply of each Generator to the public. The change also clarifies that the Demand is by Transmission Access Charge area, which is the same area as the Default Load Aggregation Points ("LAPs"). The separate listing of the Supply and Demand at the interties, *i.e.*, imports and exports at Transmission Interfaces, is in direct response to Market Participants' requests during the stakeholder process. While Supply and Demand are broad enough to capture this requirement, the CAISO agreed with stakeholders that it would be beneficial to specify them separately as the first listing could be read to mean that the postings are only for internal locations. Similar clarifying changes are proposed in Section 6.5.4.2.2 that pertains to postings in the HASP.

Consistent with its request for approval of tariff changes to defer its ability to procure Ancillary Services at the interties in the HASP currently pending before the Commission in Docket No. ER09-213,¹⁸ the CAISO is also proposing to delete the requirement that it post total HASP Advisory Schedules (MWh) and HASP Ancillary Service Awards by Scheduling Point.

CAISO is also proposing to additional clarifications to specify the granularity at which it will post the LMPs, Ancillary Service Marginal Prices, and CAISO Forecast of CAISO Demand in both Sections 6.5.3.2.2 and 6.5.4.2.2. Finally, the CAISO is proposing to delete Section 6.5.5.2.3 as it is redundant with the requirement to post the same information every five minutes as stated in Section 6.5.5.2.4.

10. Load Shedding Tool Changes

The CAISO is proposing changes to Section 7.7.11.4 in order to modify the methodology it uses to determine to what proportion an entity will be subject to Load Shedding. Through its review of the implementation of the Load Shedding tariff language during System Emergencies or to prevent a System Emergency in Section 7.7.11.4, the CAISO determined that it does not have the ability to determine a UDC or MSS has a resource deficiency based on the Day-Ahead Schedules and HASP Schedules. The determination of resource deficiency is important to determine so that if there is a need for load curtailment due to the resource deficiencies, the CAISO will apply the load curtailment to deficient resources differently than those that are not found to be resource deficient.¹⁹ The CAISO is not proposing to change this requirement but only is

¹⁸ See *supra* footnote 5.

¹⁹ See Section 7.7.11.4.2.

proposing to change the way in which resource deficiency is determined because it is not feasible to do so as the CAISO had anticipated. The CAISO notes that the method currently in the tariff came about through conforming changes to the tariff under MRTU. When this process was further tested, the CAISO determined that it could not be implemented.

III. EFFECTIVE DATE AND CONDITIONAL REQUEST FOR WAIVER

The CAISO respectfully requests that the Commission approve the MRTU Tariff changes proposed in this filing to be effective as of March 31, 2009. However, in the unanticipated event that MRTU is implemented more than 120 days after the submittal of this filing, the CAISO requests waiver, pursuant to Section 35.11 of the Commission's regulations (18 C.F.R. § 35.11), of Section 35.3 of the Commission's regulations (18 C.F.R. § 35.3), in order to permit the changes to the MRTU Tariff proposed herein to become effective as of that implementation date. Granting a waiver in this instance would be consistent with the similar waivers of Section 35.3 that the Commission has granted for other MRTU-related filings.

IV. COMMUNICATIONS

Communications regarding this filing should be addressed to the following individuals, whose names should be placed on the official service list established by the Secretary with respect to this submittal:

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V. SERVICE

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements under the MRTU Tariff. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO's website.

VI. ATTACHMENTS

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


- | | |
|--------------|---|
| Attachment A | Revised MRTU Tariff sheets that incorporate the changes proposed in this filing |
| Attachment B | The MRTU Tariff changes described in Attachment A, shown in black-line format |
| Attachment C | Table of MRTU Tariff clarifications |

VII. CONCLUSION

For all the foregoing reasons, the Commission should approve the MRTU Tariff changes contained in the instant submittal as filed. Please feel free to contact the undersigned if you have any questions concerning this matter.

Respectfully submitted,

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Attachment A – Clean Sheets
Miscellaneous Tariff Clarifications
4th Replacement CAISO Tariff (MRTU)

ER09-__-000

January 15, 2009

The New Participating TO shall assume responsibility for paying all Scheduling Coordinators' charges regardless of whether the New Participating TO elects to become a Scheduling Coordinator or obtains the services of a Scheduling Coordinator.

For the period between the effective date of this provision and ending December 31, 2010, the TAC Transition Date pursuant to Section 4.2 of Appendix F, Schedule 3, New Participating TOs that have joined the CAISO and turned over Operational Control of their facilities and Entitlements shall receive the IFM Congestion Credit in accordance with Section 11.2.1.5, which IFM Congestion Credit shall only be applicable to those facilities and Entitlements in existence on the effective date of the CAISO's initial assumption of Operational Control over the facilities and Entitlements of a New Participating TO.

4.3.1.2.1 New Participating TOs shall complete TRTC Instructions for their Converted Rights as provided in Section 16.4.5. To the extent such Converted Rights derive from ETCs with Original Participating TOs, the New Participating TOs and the appropriate Original Participating TO shall develop the TRTC Instructions together.

4.3.1.3 Western Path 15 shall be required to turn over to CAISO Operational Control only its rights and interests in the Path 15 Upgrade and shall not be required to turn over to CAISO Operational Control Central Valley Project transmission facilities, Pacific AC Intertie transmission facilities, California-Oregon Transmission Project facilities, or any other new transmission facilities or Entitlements not related to the Path 15 Upgrade. For purposes of the CAISO Tariff, Western Path 15 shall be treated with respect to revenue recovery as a Project Sponsor in accordance with Section 24.10.

4.3.1.4 The capacity provided to the CAISO under the Transmission Exchange Agreement originally accepted by FERC in Docket No. ER04-688 is deemed to be CAISO Controlled Grid facilities and is subject to all terms and conditions of the CAISO Tariff.

4.3.1.5 Each Participating TO must provide its Local Reliability Criteria to the CAISO, as required by the TCA.

4.4.6.1.2 Governing Agreements for Installations.

The CAISO and the UDC shall enter into agreements governing the installation of equipment or other facilities containing customary, reasonable terms and conditions.

4.4.6.2 Access to Facilities.

The UDCs shall grant the CAISO reasonable access to UDC facilities free of charge for purposes of inspection, repair, maintenance, or upgrading of facilities installed by the CAISO on the UDC's system, provided that the CAISO must provide reasonable advance notice of its intent to access UDC facilities and opportunity for UDC staff to be present. Such access shall not be provided unless the parties mutually agree to the date, time and purpose of each access. Agreement on the terms of the access shall not be unreasonably withheld.

4.4.6.3 Access During Emergencies.

Notwithstanding any provision in this Section 4.4 the CAISO may have access, without giving prior notice, to any UDC's equipment or other facilities during times of a System Emergency or where access is needed in connection with an audit function.

4.4.7 Provision of Information for CRRs to Reflect Load Migration.

Each UDC shall provide to the CAISO information as provided in Section 36.8.5.1 that enables the CAISO to perform transfers of CRRs that reflect Load Migration in a timely manner as required in Section 36.8.5.

4.4.8 UDC Facilities under CAISO Control.

The CAISO and each UDC shall enter into an agreement in relation to the operation and maintenance of the UDC's facilities that are under the CAISO's Operational Control.

4.5 Responsibilities of a Scheduling Coordinator.

The Load following, net or gross Settlement, and RUC procurement elections of an MSS Operator change certain aspects of, but do not preclude, the participation of the MSS in the CAISO Markets. An MSS Operator may: (i) bid to supply Energy to, or purchase Energy from, the CAISO Markets, (ii) bid to provide available capacity in RUC, and (iii) bid or make a Submission to Self-Provide an Ancillary Service from a System Unit or from individual Generating Units or Participating Loads within the MSS. An MSS Operator also may purchase Ancillary Services from CAISO or third parties to meet its Ancillary Service Obligations under the CAISO Tariff.

4.9.13.1 Gross or Net Settlement.

An MSS Operator has the option to settle with the CAISO on either a gross basis or a net basis for its Load and generating resources. This election shall be made annually for a period consistent with annual CRR Allocation. If the MSS Operator elects net Settlement, then CRRs would be allocated on MSS net Load and the MSS may choose the MSS LAP as its CRR Sink in the first tiers of CRR Allocation. If the MSS Operator elects gross Settlement, then CRRs would be allocated on a gross Load basis and the MSS may not choose the MSS LAPs as its CRR Sink in the first tiers of CRR Allocation.

4.9.13.2 Load-Following or Non Load-Following Election.

The MSS Operator has the option to elect to operate a System Unit or Generating Units in the MSS to follow its Load, provided that: (a) the Scheduling Coordinator for the MSS Operator shall remain responsible for purchases of Energy in accordance with the CAISO Tariff if the MSS Operator does not operate its System Unit or Generating Units and bid or schedule imports into the MSS, to match the metered Demand in the MSS and exports from the MSS; and (b) if the deviation between Generation and imports into the MSS and metered Demand and exports from the MSS exceeds the MSS Deviation Band, then the Scheduling Coordinator for the MSS Operator shall pay the additional amounts specified in Section 11.7. If an MSS Operator elects Load-following and net Settlements, all generating resources

Communication delays by the Scheduling Coordinator may result in Uninstructed Deviation Penalties or other adjustments pursuant to this CAISO Tariff. The CAISO may, with the prior permissions of the Scheduling Coordinator concerned, communicate with and give Dispatch Instructions to the operators of Generating Units and Loads directly without having to communicate through their appointed Scheduling Coordinator. In situations of deteriorating system conditions or emergency, the CAISO reserves the right to communicate directly with the Generator(s) as required to ensure System Reliability.

6.3.2 Recording of Dispatch Instructions.

The CAISO shall maintain records of all electronic, fax and verbal communications related to a Dispatch Instruction. The CAISO shall maintain a paper or electronic copy of all Dispatch Instructions delivered by fax and all Dispatch Instructions delivered electronically. The CAISO shall record all voice conversations that occur related to Dispatch Instructions on the Dispatch Instruction communication equipment. These records, copies and recordings may be used by the CAISO to audit the Dispatch Instruction, and to verify the response of the Market Participant concerned to the Dispatch Instruction.

6.3.3 Contents of Dispatch Instructions.

Dispatch Instructions shall include, but are not limited to, the following information:

- (a) specific resource being dispatched;
- (b) specific MW value of the resource being dispatched;
- (c) specific type of instruction (action required);
- (d) time the resource is required to begin initiating the Dispatch Instruction;
- (e) time the resource is required to achieve the Dispatch Instruction;
- (f) time of notification of the Dispatch Instruction; and
- (g) any other information which the CAISO considers relevant.

6.5.3 Day-Ahead Market Communications.

6.5.3.1 Communications With Scheduling Coordinators.

6.5.3.1.1 Prior to 6:00 a.m., the CAISO will continuously screen Inter-SC Trades of Energy for the DAM submitted by Scheduling Coordinators and will provide feedback to the Scheduling Coordinators about the consistency and validity of these Inter-SC Trades based on information available to the CAISO.

6.5.3.1.2 Between 6:00 a.m. and the end of the Day-Ahead Inter-SC Trade Period, the CAISO performs the validation of Inter-SC Trades of Energy for the DAM and will notify the participants of the status of these Inter-SC Trades.

6.5.3.1.3 Between 5:00 a.m. and 10:00 a.m., the CAISO will provide feedback to Scheduling Coordinators about their validated ETC and TOR quantities, and calculated Default Energy Bids curves provided by Independent Entities, and in addition, the RMR Proxy Bids for Energy and the Minimum Load and Start-Up Cost Bid curves for RMR Units, as provided by Independent Entities.

6.5.3.1.4 After the close of the DAM bidding at 10:00 a.m., the CAISO will send a message to the Scheduling Coordinators regarding the outcome of the Bid validation.

6.5.3.1.5 By 1:00 p.m., the CAISO will publish the result of the DAM and the resource will be flagged if it is being dispatched under its RMR Contract. Any such Dispatch shall be deemed an RMR Dispatch Notice under the RMR Contract.

6.5.3.1.6 After the results of the DAM are published by 1:00 p.m., the CAISO performs the Inter-SC Trade of Energy post-market validation and communicates the results back to the applicable Scheduling Coordinator.

6.5.3.2.2 The results of the Day-Ahead Market will be published on OASIS by 1:00 p.m. and will include:

- (a) Total Day-Ahead Schedules (MWh) for total Supply and Demand by TAC Area and for the entire CAISO Balancing Authority Area;
- (b) Total Day-Ahead Schedules (MWh) of imports and exports by Transmission Interface;
- (c) Total Day-Ahead AS Awards by AS Region and AS type;
- (d) RUC Prices by PNode and APNodes, RUC Forecast Demand for each RUC Zone, hourly RUC Capacity from Generation, and hourly RUC Capacity from imports for each TAC Area and the entire CAISO Balancing Authority Area;
- (e) Day-Ahead LMP for Energy for each PNode and APNode, including the Energy, MCC and MCL components;
- (f) Day-Ahead ASMP by AS Region and AS type;
- (g) Day-Ahead mitigation indicator;
- (h) CAISO Forecast of CAISO Demand for each TAC Area and the entire CAISO Balancing Authority Area;
- (i) Shadow Prices; and
- (j) Total Day-Ahead system Marginal Losses in MWh and Marginal Cost of Losses for each Trading Hour of the next Trading Day.

6.5.4 HASP Communications.

The HASP opens at 1:00 p.m. the day before the target Operating Day and Scheduling Coordinators can submit Bids into the HASP as of that time.

6.5.4.2.2 At thirty (30) minutes before the Trading Hour, on an hourly basis, the CAISO will publish on OASIS the following:

- (a) Total HASP Intertie Schedules for imports and exports by TAC Area and for the entire CAISO Balancing Authority Area;
- (b) HASP Intertie LMPs by PNodes and APNodes;
- (c) HASP advisory LMPs by PNode and APNode;
- (d) HASP Shadow Prices; and
- (e) Total HASP system Marginal Losses in MWh for the next Operating Hour.

6.5.5 Real-Time Market Communications.

The CAISO shall issue Dispatch Instructions to Scheduling Coordinators determined pursuant to the RTM throughout any given day.

6.5.5.1 Communications with Scheduling Coordinators.

Communications between the CAISO and Scheduling Coordinators shall take place via the CAISO's secure communication system to a dedicated terminal at the Scheduling Coordinator's scheduling center. If there is a failure of electronic communications with a Scheduling Coordinator, then, at the CAISO's discretion, the Scheduling Coordinator may communicate by facsimile. Communication by facsimile requires verbal approval by the CAISO.

6.5.5.1.1 Every fifteen (15) minutes, the CAISO will communicate via the secure communication system Start-Up and Shut-Down Instructions and Real-Time AS Awards to internal resources.

6.5.5.1.2 Every five (5) minutes for Target T+10, the CAISO will send Dispatch Instructions via the secure communication system. The Dispatch Instruction will be flagged if a resource is being dispatched under its RMR Contract.

6.5.5.2 Public Market Information.

6.5.5.2.1 Every hour the CAISO shall post via OASIS information regarding the status of the RTM.

This information shall include but is not limited to the following:

(a) Mitigation indicator.

6.5.5.2.2 Every fifteen (15) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

(a) Total Real-Time AS Awards by AS Region and AS type; and

(b) Real-Time ASMPs by AS Region and AS type.

6.5.5.2.3 [NOT USED]

6.5.5.2.4 Every five (5) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

(a) CAISO Forecast of CAISO Demand;

(b) Total Real-Time dispatched Energy and Demand on a 24-hour delayed basis;

(c) Real-Time Dispatch Interval LMP;

(d) Real-Time system losses; and

(e) Actual Operating Reserve.

7.7.2.1 Declarations of System Emergencies.

The CAISO shall, when it considers that conditions giving rise to a System Emergency exist, declare the existence of such System Emergency. A declaration by the CAISO of a System Emergency shall be binding on all Market Participants until the CAISO announces that the System Emergency no longer exists.

7.7.2.2 Responsibilities of UDCs and MSSs Operators During a System Emergency.

In the event of a System Emergency, UDCs shall comply with all directions from the CAISO concerning the management and alleviation of the System Emergency and shall comply with all procedures concerning System Emergencies set out in this CAISO Tariff, the Business Practice Manuals, and the Operating Procedures, and each MSS Operator shall comply with all directions from the CAISO concerning the avoidance, management and alleviation of the System Emergency and shall comply with all procedures concerning System Emergencies set forth in the CAISO Tariff, Business Practice Manuals and Operating Procedures. During a System Emergency, the CAISO and UDCs shall communicate through their respective control centers and in accordance with procedures established in individual UDC Operating Agreements, and the CAISO and the MSS Operator shall communicate through their respective control centers and in accordance with procedures established in the MSS Agreement.

7.7.2.3 Responsibilities of Generating Units and System Units During System Emergencies.

All Generating Units and System Units that are owned or controlled by a Participating Generator are (without limitation to the CAISO's other rights under this CAISO Tariff) subject to control by the CAISO during a System Emergency and in circumstances in which the CAISO considers that a System Emergency is imminent or threatened. The CAISO shall, subject to this Section 7, have the authority to instruct a Participating Generator to bring its Generating Unit on-line, off-line, or increase or curtail the output of the Generating Unit and to alter scheduled deliveries of Energy and Ancillary Services

7.7.11.4 Load Shedding.

7.7.11.4.1 [NOT USED]

7.7.11.4.2 If the CAISO forecasts in advance of the HASP that Load curtailment will be necessary due to a resource deficiency as determined pursuant to Section 40.7, the CAISO will identify any UDC or MSS Service Area that is resource deficient. The CAISO will provide notice to all Scheduling Coordinators if one or more UDC or MSS is deficient. If Load curtailment is required to manage a System Emergency associated with a resource deficiency determined pursuant to Section 40.7, the CAISO will determine the amount and location of Load to be curtailed and will allocate a portion of that required Load curtailment to each UDC or MSS Operator whose Service Area has been identified as being resource-deficient based on the ratio of its resource deficiency to the total Balancing Authority Area resource deficiency. Each UDC or MSS Operator shall be responsible for notifying its customers and Generators connected to its system of curtailments and service interruptions.

7.7.11.4.3 If a Load curtailment is required to manage System Emergencies, in any circumstances other than those described in Section 7.7.11.4.2, the CAISO will determine the amount and location of Load to be reduced and to the extent practicable, will allocate a portion to each UDC or MSS Operator based on the ratio of its Demand (at the time of the Balancing Authority Area annual peak for the previous year) to total Balancing Authority Area annual peak Demand for the previous year taking into account system considerations and the UDC's or MSS Operator's curtailment rights under their tariffs. Each UDC or MSS Operator shall be responsible for notifying its customers and Generators connected to its system of curtailments and service interruption.

their interconnection agreements or, for Regulatory Must-Take Generation, Regulatory Must-Run Generation and Reliability Must-Run Generation, consistent with existing obligations. For Generating Units that do not operate under one of these agreements, the minimum power factor range will be within a band of 0.90 lag (producing VARs) and 0.95 lead (absorbing VARs) power factors. Participating Generators with Generating Units existing at the CAISO Operations Date that are unable to meet this operating power factor requirement may apply to the CAISO for an exemption. Prior to granting such an exemption, the CAISO shall require the Participating TO or UDC to whose system the relevant Generating Units are interconnected to notify it of the existing contractual requirements for Voltage Support established prior to the CAISO Operations Date for such Generating Units. Such requirements may be contained in CPUC Electric Rule 21 or the Interconnection Agreement with the Participating TO or UDC. The CAISO shall not grant any exemption under this Section from such existing contractual requirements. The CAISO shall be entitled to instruct Participating Generators to operate their Generating Units at specified points within their power factor ranges. Participating Generators shall receive no compensation for operating within these specified ranges.

If the CAISO requires additional Voltage Support, it shall procure this either through Reliability Must-Run Contracts or, if no other more economic sources are available, by instructing a Generating Unit to move its MVar output outside its mandatory range. Only if the Generating Unit must reduce its MW output in order to comply with such an instruction will it be eligible to recover its opportunity cost in accordance with Section 11.10.1.4.

All Loads directly connected to the CAISO Controlled Grid shall maintain reactive flow at grid interface points within a specified power factor band of 0.97 lag to 0.99 lead. Loads shall not be compensated for the service of maintaining the power factor at required levels within the bandwidth. A UDC interconnecting with the CAISO Controlled Grid at any point other than a Scheduling Point shall be subject to the same power factor requirement.

The power factor for both the Generating Units and Loads shall be measured at the interconnection point with the CAISO Controlled Grid. The CAISO will develop and will be authorized to levy penalties against Participating Generators, UDCs or Loads whose Voltage Support does not comply with the CAISO's requirements. The CAISO will establish voltage control standards with UDCs and the operators of other Balancing Authority Areas and will enter into operational agreements providing for the coordination of actions in the event of a voltage problem occurring.

8.2.3.4 Black Start Capability.

The CAISO shall determine the amount and location of Black Start Generation it requires through contingency studies that are used as the basis of the CAISO's emergency plans. The studies shall specify:

- (a) the initiating disturbance;
- (b) the magnitude of the Outage, including the extent of the Outage (local area, CAISO Controlled Grid, or WECC), the assumed status of Generation after the initiating disturbance, the status of interconnections, the system Demand level at the time of the disturbance, the interconnection support, and assumptions regarding the availability of support from other utilities to help restore Generation and Demand;
- (c) the Generator performance including a percentage of Black Start units (to be determined by the CAISO) which are expected to fail to start, and;
- (d) expected transmission system damage.

from resources including Loads, Generating Units, and System Units, which have been certified and tested by the CAISO using the process defined in Part D of Appendix K. Black Start capability may only be provided from Generating Units which have been certified and tested by the CAISO using the process defined in Part E of Appendix K. CAISO certification to provide Ancillary Services may be revoked by the CAISO under the provisions of this CAISO Tariff, including Appendix K.

8.3.5 The CAISO shall procure Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve on a daily, hourly and Real-Time basis in the IFM and RTM, respectively. The CAISO shall procure Ancillary Services on a longer-term basis pursuant to Section 42.1.3 if necessary to meet Reliability Criteria. The CAISO shall contract for Voltage Support annually (or for such other period as the CAISO may determine is economically advantageous) and on a daily or hourly basis as required to maintain System Reliability. The CAISO shall contract annually (or for such other period as the CAISO may determine is economically advantageous) for Black Start Generation.

8.3.6 Market-Based Prices.

Public utilities under the FPA must submit Bids for Ancillary Services capped at FERC authorized cost-based rates unless and until FERC authorizes different pricing. Public utilities under the FPA shall seek FERC Ancillary Services rate approval on bases consistent with the CAISO time-frame for contracting for each Ancillary Service (hourly rate for some Ancillary Services, annual rate or otherwise for other Ancillary Services) so that cost-based Bids and market-based Bids for each service shall be on comparable terms. All other entities may use market-based rates not subject to any restrictions apart from those found in this CAISO Tariff. Public utilities under the FPA which have not been approved to bid at market-based rates will not be paid above their cost-based Bid for the Ancillary Service concerned even if the relevant Market Clearing Price is higher.

8.3.7 Bidding Requirements, Including Submission to Self-Provide an Ancillary Service.

Scheduling Coordinators may submit Bids or Submissions to Self-Provide an Ancillary Service consistent with the rules specified in Section 30 and any further requirements in this Section 8.3.7. Scheduling Coordinators may (i) submit Bids or Submissions to Self-Provide an Ancillary Service from resources located within the CAISO Balancing Authority Area or Dynamic System Resources certified to provide Ancillary Services, (ii) submit Submissions to Self-Provide an Ancillary Service from resources located outside the CAISO Balancing Authority Area if provided pursuant to ETCs, TORs, or Converted Rights, (iii) submit Bids for Ancillary Services from resources located outside the CAISO Balancing Authority Area, or (iv) specify Inter-SC Trades of Ancillary Services. Ancillary Services in the Day-Ahead Market and in the Real-Time Market are comprised of the following: Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve. Each Generating Unit (including Physical Scheduling Plants), System Unit, Participating Load, or System Resource for which a Scheduling Coordinator wishes to submit Ancillary Service Bids must meet the requirements set forth in this CAISO Tariff. The same resource capacity may be offered into more than one CAISO Ancillary Service auction at the same time. Ancillary Services Bids and Submissions to Self-Provide an Ancillary Service can be submitted up to seven (7) days in advance. Ramp Rates will be only used by the CAISO for procuring capacity associated with the specific Ancillary Services. The CAISO will issue Real-Time Dispatch Instructions in the Real-Time Market for the Energy associated with the awarded capacity based upon the applicable Operational Ramp Rate submitted with the Energy Bid Curve in accordance with Section 30.7.7. There is no ability to procure Ancillary Services for export. To the extent a Scheduling Coordinator has an on-demand obligation to serve loads outside the CAISO Balancing Authority Area, it can do so provided that (1) it is using export transmission capacity available in Real-Time, and (2) the resource capacity providing Energy to satisfy the on-demand obligation is not under an RMR Contract or Resource Adequacy Capacity obligation, and has not been paid a RUC Availability Payment for the Trading Hour.

8.3.8 Procurement of Voltage Support.

Any Participating Generator who is producing Energy shall, upon the CAISO's specific request, provide reactive energy output outside the Participating Generator's Voltage Support obligation defined in Section 8.2.3.3.

The CAISO shall select Participating Generators' Generating Units which have been certified for Voltage Support to provide this additional Voltage Support. Subject to any locational requirements, the CAISO shall select the least costly Generating Units from a computerized merit order stack to back down to produce additional Voltage Support in each location where Voltage Support is needed.

8.4 Technical Requirements for Providing Ancillary Services.

All Generating Units, System Units, Participating Loads and System Resources providing Ancillary Services shall comply with the technical requirements set out in Sections 8.4.1 to 8.4.3 below relating to their operating capabilities, communication capabilities and metering infrastructure. No Scheduling Coordinator shall be permitted to submit a Bid to the CAISO for the provision of an Ancillary Service from a Generating Unit, System Unit, Participating Load or System Resource, or to provide a Submission to Self-Provide an Ancillary Service from a Generating Unit, System Unit, Participating Load, or Dynamic System Resource, unless the Scheduling Coordinator is in possession of a current certificate issued by the CAISO confirming that the Generating Unit, System Unit, Participating Load or System Resource complies with the CAISO's technical requirements for providing the Ancillary Service concerned. Scheduling Coordinators can apply for Ancillary Services certificates in accordance with the requirements for considering and processing such applications in Appendix K and the CAISO's Operating Procedures. The CAISO shall have the right to inspect Generating Units, Participating Loads or the individual resources comprising System Units and other equipment for the purposes of the issue of a certificate and periodically thereafter to satisfy itself that its technical requirements continue to be met. If at any time the CAISO's technical requirements are not being met, the CAISO may withdraw the certificate for the Generating Unit, System Unit, Participating Load or System Resource concerned.

8.4.1 Operating Characteristics Required to Provide Ancillary Services.

Each Generating Unit, System Unit, Participating Load or System Resource for which a Scheduling Coordinator wishes to submit a Bid to provide Ancillary Services must comply with the requirements for the specific Ancillary Service as set forth in Appendix K and the Business Practice Manual. The

If the total Submissions to Self-Provide Ancillary Services exceed the maximum regional requirement for the relevant Ancillary Service in an Ancillary Service Region, the submissions that would otherwise be accepted by the CAISO as feasible and qualified will be awarded on a pro-rata basis among the suppliers offering to self-provide the Ancillary Service up to the amount of the requirement. If a regional constraint imposes a limit on the total amount of Regulation Up, Spinning Reserve, and Non-Spinning Reserve, and the total self-provision of these Ancillary Services in that region exceeds that limit, Self-Provided AS are qualified pro rata from higher to lower quality service in three tiers: Regulation Up first, followed by Spinning Reserve, and then by Non-Spinning Reserve. Submissions to Self-Provide Ancillary Services in excess of the maximum regional requirement for the relevant Ancillary Service in an Ancillary Service Region will not be accepted and qualified by the CAISO as Self-Provided Ancillary Services.

The CAISO shall schedule Self-Provided Ancillary Services in the Day-Ahead Market and the RTM and Dispatch Self-Provided Ancillary Services in the Real-Time. To the extent that a Scheduling Coordinator self-provides Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve, the CAISO shall correspondingly reduce the quantity of the Ancillary Services it procures from Bids submitted in the Day-Ahead Market and the Real-Time Market. To the extent a Scheduling Coordinator's Self-Provided Ancillary Service for a particular Ancillary Service is greater than the Scheduling Coordinator's obligation for that particular Ancillary Service in a Settlement Interval, the Scheduling Coordinator will receive the user rate for the Self-Provided Ancillary Service for the amount of the Self-Provided Ancillary Service in excess of the Scheduling Coordinator's obligation.

8.10.8.1 Rescission of Payments for Undispatchable Ancillary Service Capacity.

The CAISO shall calculate the Real-Time ability of each Generating Unit, Participating Load, System Unit or System Resource to deliver Energy from Ancillary Services capacity or Self-Provided Ancillary Services capacity for each Settlement Interval based on its maximum operating capability, actual telemetered output, and Operational Ramp Rate as described in Section 30.10. System Resources that are awarded Ancillary Services capacity in the Day-Ahead Market are required to electronically tag (E-Tag as prescribed by the WECC) the Ancillary Services capacity. If the amounts of Ancillary Services capacity in an electronic tag differ from the amounts of Ancillary Services capacity for the System Resource, the Undispatchable Capacity will equal the amount of the difference, and will be settled in accordance with the provisions of Section 11.10.9.1.

8.10.8.2 Rescission of Payments for Unavailable Ancillary Service Capacity.

If the CAISO determines that a Scheduling Coordinator has supplied Uninstructed Imbalance Energy to the CAISO during a Settlement Interval from the capacity of a Generating Unit, Participating Load, System Unit or System Resource that is obligated to supply Spinning Reserve or Non-Spinning Reserve to the CAISO, payments to the Scheduling Coordinator for the Ancillary Service capacity used to supply Uninstructed Imbalance Energy shall be eliminated to the extent of the deficiency, in accordance with the provisions of Section 11.10.9.2.

8.10.8.3 Rescission of Payments for Undelivered Ancillary Service Capacity.

For each Settlement Interval in which a Generating Unit, Participating Load, System Unit or System Resource fails to supply Energy from Spinning Reserve or Non-Spinning Reserve capacity in accordance with a Dispatch Instruction, or supplies only a portion of the Energy specified in the Dispatch Instruction, the capacity payment will be reduced to the extent of the deficiency, in accordance with the provisions of Section 11.10.9.3.

10.2.8.4 SQMDS Security.

The CAISO will provide any needed information to entities that are permitted to access SQMDS. The CAISO must maintain the security and integrity of Revenue Quality Meter Data brought into SQMDS.

10.2.9 Validation, Estimation and Editing of Meter Data.

Subject to any exemption granted by the CAISO, Revenue Quality Meter Data that CAISO Metered Entities provide to the CAISO will be processed using the Validation, Estimation and Editing procedures published in the Business Practice Manuals in order to produce Settlement Quality Meter Data.

10.2.9.1 Obligation to Assist.

At the request of the CAISO, CAISO Metered Entities shall assist the CAISO in correcting or replacing defective data and in detecting and correcting underlying causes for such defects. Such assistance shall be rendered in a timely manner so that the Settlement process is not delayed.

10.2.9.2 Availability of Meter Data.

Subject to any exemption granted by the CAISO, Meter Data of CAISO Metered Entities must be recorded at 5-minute intervals and will be collected in accordance with the provisions of the applicable Business Practice Manual. The CAISO may also collect Meter Data on demand as provided in the applicable Business Practice Manual.

10.2.9.3 [NOT USED]

10.2.9.4 CAISO Imposed Penalties and Sanctions.

The CAISO shall have the authority to impose penalties and sanctions, including but not limited to Sanctions set forth in Section 37 and the applicable Business Practice Manual and suspension of trading rights, if a CAISO Metered Entity provides fraudulent metering data to the CAISO. Such penalties shall be approved by FERC.

11.2.1.4 IFM Charges for Energy Exports at Scheduling Points.

For each Settlement Period that the CAISO clears Energy transactions in the IFM, the CAISO shall charge Scheduling Coordinators for the Energy export MWh quantity at individual Scheduling Points scheduled in the Day-Ahead Schedule, an amount equal to the IFM LMP for the applicable Scheduling Point multiplied by the MWh quantity at the individual Scheduling Point scheduled in the Day-Ahead Schedule.

11.2.1.5 IFM Congestion Credit for ETCs, TORs, and Converted Rights.

For all Points of Receipt and Points of Delivery pairs associated with a valid and balanced ETC Self-Schedule, TOR Self-Schedule or Converted Rights Self-Schedule, the CAISO shall not impose any charge or make any payment to the Scheduling Coordinator related to the MCC associated with such Self-Schedules. For each Scheduling Coordinator, the CAISO shall determine the applicable IFM Congestion Credit, which can be positive or negative, as the sum of the products of the quantity scheduled in the Day-Ahead Schedule and the MCC at each eligible Point of Receipt and Point of Delivery associated with the valid and balanced portions of that Scheduling Coordinator's ETC, TOR, and Converted Rights Self-Schedules.

11.2.1.6 Allocation of IFM Marginal Losses Surplus Credit.

On each Settlement Statement, the CAISO shall apply the IFM Marginal Losses Surplus Credit to each Scheduling Coordinator for the period of each Settlement Statement. For each Settlement Period, the IFM Marginal Losses Surplus Credit shall be the product of the IFM Marginal Losses Surplus rate (\$/MWh) and the MWh of Measured Demand for the relevant Scheduling Coordinator net of that Scheduling Coordinator's (1) Measured Demand associated with a TOR Self-Schedule subject to the IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.2.1.7; and (2) Measured Demand associated with a TOR Self-Schedule subject to the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2.

The IFM Marginal Losses Surplus rate shall be equal to the total IFM Marginal Losses Surplus (\$) divided by the sum of the total MWh of Measured Demand in the CAISO Balancing Authority Area for the relevant Settlement Period net of (1) any Measured Demand associated with a TOR Self-Schedule subject to the IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.2.1.7; and (2) any Measured Demand associated with a TOR Self-Schedule subject to the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2.

surplus revenue for the Settlement Period after making all hourly CRR Payments will go to the CRR Balancing Account for use in the end-of-month clearing of the CRR Balancing Account processes pursuant to Section 11.2.4.4.1. Any CRR Payment shortfalls (or amounts not fully paid) and CRR Charge shortfalls (or amounts not fully charged) for the Settlement Period, will be tracked for further Settlement during the end-of-month clearing process as described in Section 11.2.4.4.1. The hourly Settlement of CRRs for each CRR Holder will be based on the type of CRR holdings as described in Section 11.2.4.2. The CRR Holder's hourly CRR Settlement amount, which may be subject to pro-ration if necessary as described in this Section, will be the net of the holder's CRR Payments for CRR Options or CRR Obligations, and the holder's CRR Charges for CRR Obligations out of these holdings.

11.2.4.4.1 Monthly Clearing of the CRR Balancing Account – Full Funding of CRRs.

At the end of each month, all CRR Payment shortfalls for all CRR Holders shall be paid in full and all CRR Charge shortfalls shall be fully charged through the CRR Balancing Account clearing process. The net of these CRR Charges and CRR Payment shortfalls shall be added to the CRR Balancing Account for the applicable month. Any surplus or shortfall revenue amounts in the CRR Balancing Account will be distributed to Scheduling Coordinators in an amount equal to (a) the CRR Balancing Account surplus or shortfall amounts, times (b) the ratio of each Scheduling Coordinator's Measured Demand (net of the Scheduling Coordinator's Measured Demand associated with valid and balanced ETC, TOR or Converted Rights Self-Schedule quantities for which IFM Congestion Credits and/or HASP and RTM Congestion Credits were provided in the same relevant month) divided by (c) the total Measured Demand for all Scheduling Coordinators for the relevant month (net of the total Measured Demand associated with valid and balanced ETC, TOR or Converted Rights Self-Schedule quantities for which IFM Congestion Credits and/or RTM Congestion Credits were provided in the same relevant month).

11.2.4.5 CRR Balancing Account.

The CRR Balancing Account shall accumulate: (1) the seasonal and monthly CRR Auction revenue amounts as described in Section 11.2.4.3 and (2) any surplus revenue or shortfall generated from hourly CRR Settlements as described in Section 11.2.4.4. Interest accruing due to the CRR Balancing Account shall be at the CAISO's received interest rate and shall be credited to the CRR Balancing Account.

11.5.1.1 Total IIE Settlement Amount.

The total IIE Settlement Amount (\$) per Settlement Interval for each Scheduling Coordinator is the sum of the IIE Settlement Amounts for the Standard Ramping Energy, MSS Load Following Energy, Optimal Energy, Real-Time Minimum Load Energy, HASP Scheduled Energy, Regulation, Ramping Energy Deviation, Derate Energy, Real-Time Self-Schedule Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Real-Time Pumping Energy and Operational Adjustments for the Day-Ahead and Real-Time.

11.5.1.2 Total IIE Quantity.

The total IIE quantity (MWh) per Settlement Interval for each Scheduling Coordinator is the sum of Standard Ramping Energy, MSS Load Following Energy, Optimal Energy, HASP Scheduled Energy, Real-Time Minimum Load Energy, Regulation Energy, Ramping Energy Deviation, Derate Energy, Real-Time Self-Schedule Energy, Residual Imbalance Energy, and Exceptional Dispatch Energy, Real-Time Pumping Energy, and Operational Adjustments for the Day-Ahead and Real-Time.

11.5.2 Uninstructed Imbalance Energy.

Scheduling Coordinators shall be paid or charged a UIE Settlement Amount for each LAP, PNode or Scheduling Point for which the CAISO calculates a UIE quantity. UIE quantities are calculated for each resource that has a Day-Ahead Schedule, Dispatch Instruction, Real-Time Interchange Export Schedule or Metered Quantity. For MSS Operators electing gross Settlement, regardless of whether that entity has elected to follow its Load or to participate in RUC, the UIE for such entities is settled similarly to how UIE for non-MSS entities is settled as provided in this Section 11.5.2. The CAISO shall account for UIE in two categories: (1) Tier 1 UIE is accounted as the quantity deviation from the resource's IIE; and (2) Tier 2 UIE is accounted as the quantity deviation from the resource's Day-Ahead Schedule. For Generating

11.5.4 Pricing for Imbalance Energy and Allocation of Non-Zero Amounts of the Sum of IIE, UIE and UFE.

11.5.4.1 Application and Calculation of Dispatch Interval LMPs.

Payments to Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected gross Settlement, that supply Imbalance Energy will be based on Resource-Specific Settlement Interval LMPs. The Resource-Specific Settlement Interval LMPs are established using Dispatch Interval LMPs. Dispatch Interval LMPs will apply to Generating Units, System Units for MSS Operators that have elected gross Settlement, Physical Scheduling Plants, Dynamic System Resources, and the Demand response portion of a Participating Load for Settlement of Imbalance Energy. The Dispatch Interval LMP will be calculated at each PNode associated with such resource irrespective of whether the resource at that PNode has received Dispatch Instructions. The Dispatch Interval LMPs are then used to calculate a Resource-Specific Settlement Interval LMP and a Resource Specific Tier 1 UIE Settlement Interval Price for each Generating Unit, System Unit or MSS Operator that has elected gross Settlement, Physical Scheduling Plant, Dynamic System Resource, and Participating Load within the CAISO Controlled Grid. Payments to Scheduling Coordinators for MSS Operators that have elected net Settlement that supply Imbalance Energy will be based on the Real-Time Settlement Interval MSS Price.

11.5.4.2 Allocations of Non-Zero Amounts of the Sum of IIE, UIE, UFE, and the Real-Time Ancillary Services Congestion Revenues.

The CAISO will first compute (1) the Real-Time Congestion Offset and allocate it to all Scheduling Coordinators, based on Measured Demand, excluding Demand associated with ETC or TOR Self-Schedules for which a HASP and RTM Congestion Credit was provided as specified in Section 11.5.7, and excluding Demand associated with ETC, Converted Right, or TOR Self-Schedules for which an IFM Congestion Credit was provided as specified in Section 11.2.1.5; and (2) the Real-Time Marginal Cost of Losses Offset and allocate it to all Scheduling Coordinators based on Measured Demand, excluding Demand associated with TOR Self-Schedules for which a RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section

11.5.7.2, and excluding Demand associated with ETC, Converted Right or TOR Self-Schedules for which an IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section 11.2.1.7. For Scheduling Coordinators for MSS Operators regardless of whether the MSS Operator has elected gross or net Settlement, the CAISO will allocate the Real-Time Congestion Offset based on the MSS Aggregation Net Non-ETC/TOR Measured Demand. To the extent that the sum of the Settlement amounts for IIE, UIE, UFE and the Real-Time Ancillary Services Congestion revenues, less Real-Time Congestion Offset, does not equal zero, the CAISO will assess charges or make payments for the resulting differences to all Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that are not Load following MSSs and have elected gross Settlement, based on a pro rata share of their Measured Demand for the relevant Settlement Interval. For Scheduling Coordinators for MSS Operators that have elected Load following or net Settlement, or both, the CAISO will assess charges or make payments for the resulting non-zero differences of the sum of the Settlement amounts for IIE, UIE, and UFE and the Real-Time Ancillary Services Congestion Revenues, less Real-Time Congestion Offset based on their MSS Aggregation Net Measured Demand.

11.5.5 Settlement Amount for Residual Imbalance Energy.

For each Settlement Interval, Residual Imbalance Energy Settlement amounts shall be the product of the MWh of Residual Imbalance Energy for that Settlement Interval and the Bid that led to the Residual Imbalance Energy from the relevant Dispatch Interval in which the resource was dispatched. For MSS Operators the Settlement for Residual Imbalance Energy is conducted in the same manner, regardless of any MSS elections (net/gross Settlement, Load following or opt-in/opt-out of RUC).

11.5.6 Settlement Amounts for IIE from Exceptional Dispatch.

For each Settlement Interval, the IIE Settlement Amount from each type of Exceptional Dispatch described in Section 34.9 is calculated as the sum of the products of the relevant IIE quantity for the Dispatch Interval and the relevant Settlement price for the Dispatch Interval for each type of Exceptional Dispatch as further described in this Section 11.5.6. For MSS Operators the Settlement for IIE from Exceptional Dispatches is conducted in the same manner, regardless of any MSS elections (net/gross Settlement, Load following or opt-in/opt-out of RUC). Except for the Settlement price, Exceptional Dispatches to perform Ancillary Services testing, to perform PMax testing, and to perform pre-commercial operation testing for Generating Units are otherwise settled in the same manner as provided in Section 11.5.6.1. Notwithstanding any other provisions of this Section 11.5.6, the Exceptional Dispatch Settlement price that is applicable in circumstances in which the CAISO applies Mitigation Measures to Exceptional Dispatch of resources pursuant to Section 39.10 shall be calculated as set forth in Section 11.5.6.7.

11.5.6.1 Settlement for IIE from Exceptional Dispatches used for System Emergency Conditions, for a Market Interruption, to Mitigate Overgeneration Conditions or to Prevent or Relieve Imminent System Emergencies.

The Exceptional Dispatch Settlement price for incremental IIE that is delivered as a result of an Exceptional Dispatch for System Emergency conditions, for a Market Interruption, to mitigate Overgeneration conditions, or to prevent or relieve an imminent System Emergency, including forced Start-Ups and Shut-Downs, is the higher of the (a) Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for incremental Energy for this type of Exceptional Dispatch are settled in two payments: (1) incremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the incremental Energy Bid Cost in excess of the applicable LMP at the relevant Location is settled pursuant to Section 11.5.6.1.1. The Exceptional Dispatch Settlement price for decremental IIE that is delivered as a result of an Exceptional Dispatch Instruction for a Market Interruption, or to prevent or relieve a System Emergency is the minimum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price subject to Section 39.6.1.4, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. All Energy costs for decremental IIE associated with this type of Exceptional Dispatch are included in the total IIE Settlement Amount described in Section 11.5.1.1.

11.5.6.1.1 Settlement of Excess Cost Payments for Exceptional Dispatches used for System Emergency Conditions, for a Market Interruption, and to Avoid an Imminent System Emergency.

The Excess Cost Payment for incremental Exceptional Dispatches used for emergency conditions, for a Market Interruption, or to avoid an imminent System Emergency is calculated for each resource for each Settlement Interval as the cost difference between the Settlement amount calculated pursuant to

Section 11.5.6.1 for the applicable Exceptional Dispatch at the Resource-Specific Settlement Interval LMP and delivered Exceptional Dispatch quantity at one of the following three costs: (1) the resource's Energy Bid Cost, (2) the Default Energy Bid cost, or (3) the Energy cost at the negotiated price, as applicable for System Resources, for the relevant Exceptional Dispatch.

11.5.6.2 Settlement of IIE from Exceptional Dispatches Caused by Modeling Limitations.

The Exceptional Dispatch Settlement price for IIE that is consumed or delivered as a result of an Exceptional Dispatch to mitigate or resolve Congestion as a result of a transmission-related modeling limitation in the FNM as described in Section 34.9.3 is the maximum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for incremental Energy for this type of Exceptional Dispatch are settled in two payments: (1) incremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the incremental Energy Bid costs in excess of the applicable LMP at the relevant Location are settled per Section 11.5.6.2.3. The Exceptional Dispatch Settlement price for decremental IIE for this type of Exceptional Dispatch is the minimum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for decremental IIE associated with this type of Exceptional Dispatch are settled in two payments: (1) decremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the decremental Energy Bid costs in excess of the applicable LMP at the relevant Location are settled per Section 11.5.6.2.3.

11.5.6.2.4 Exceptional Dispatches for Non-Transmission-Related Modeling Limitations.

The Exceptional Dispatch Settlement price for incremental IIE that is consumed or delivered as a result of an Exceptional Dispatch to mitigate or resolve Congestion that is not a result of a transmission-related modeling limitation in the FNM as described in Section 34.9.3 is the maximum of the (a) Resource-Specific Settlement Interval LMP, (b) Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. All costs for incremental Energy for this type of Exceptional Dispatch will be included in the total IIE Settlement Amount described in Section 11.5.1.1. The Exceptional Dispatch Settlement price for decremental IIE for this type of Exceptional Dispatch is the minimum of the (a) Resource-Specific Settlement Interval LMP, (b) Energy Bid price, (c) or the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. All costs for decremental IIE associated with this type of Exceptional Dispatch are included in the total IIE Settlement Amount described in Section 11.5.1.1.

11.5.6.2.5 Allocation of Exceptional Dispatch Excess Cost Payments.

11.5.6.2.5.1 Allocation of Exceptional Dispatch Excess Cost Payments to PTOs.

The total Excess Cost Payments calculated pursuant to Section 11.5.6.2.3 for the IIE from Exceptional Dispatches instructed as a result of a transmission-related modeling limitation in the FNM as described in Section 34.9.3 in that Settlement Interval shall be charged to the Participating Transmission Owner in whose PTO Service Territory the transmission-related modeling limitation as described in Section 34.9.3 is located. If the modeling limitation affects more than one Participating TO, the Excess Cost Payments shall be allocated pro-rata in proportion to the Participating TOs' Transmission Revenue Requirements. Costs allocated to Participating TOs under this section shall constitute Reliability Services Costs.

11.5.6.4 Settlement of IIE from Exceptional Dispatches Used for Ancillary Services Testing, PMax Testing and Pre-Commercial Operation Testing for Generating Units.

The Exceptional Dispatch Settlement price for incremental IIE that is consumed or delivered as a result of an Exceptional Dispatch for purposes of Ancillary Services testing, PMax testing, or pre-commercial operation testing for Generating Units is the maximum of the Resource-Specific Settlement Interval LMP or the Default Energy Bid price. All Energy costs for these types of Exceptional Dispatch will be included in the IIE Settlement Amount described in Section 11.5.1.1.

11.5.6.5 Settlement of IIE from Black Start.

All IIE Settlement Amounts associated with Black Start receive the Exceptional Dispatch Settlement price as provided in Section 11.5.6.1, but the costs are allocated pursuant to Section 11.10.8.

11.5.6.6 Settlement of IIE from Exceptional Dispatches for HASP and Real-Time ETC and TOR Self-Schedules.

The Exceptional Dispatch Settlement price for IIE from HASP and Real-Time ETC and TOR Self-Schedules shall be the Resource-Specific Settlement Interval LMP. The IIE Settlement Amount for this type of Exceptional Dispatch shall be calculated as the product of the sum of all of these types of Energy and the Resource-Specific Settlement Interval LMP. All Energy costs for these types of Exceptional Dispatches will be included in the IIE Settlement Amount described in Section 11.5.1.1.

11.5.6.7 Settlement of Exceptional Dispatch Energy from Exceptional Dispatches of Resources Mitigated Pursuant to Section 39.10.

This entire Section 11.5.6.7, except for Section 11.5.6.7.3 as described therein, shall be effective until the end of the 24th month following the effective date of this Section 11.5.6.7, after which date this entire Section 11.5.6.7 shall no longer apply.

11.5.6.7.1 Settlement of Exceptional Dispatch Energy from Exceptional Dispatches of Resources Eligible for Supplemental Revenues.

Except as specified in Section 11.5.6.7.4, the Exceptional Dispatch Settlement price for the Exceptional Dispatch Energy delivered by a resource that satisfies all of the criteria set forth in Section 39.10.1.1 shall be the higher of (a) the resource's Energy Bid price or (b) the Resource-Specific Settlement Interval LMP.

11.5.7 HASP and RTM Congestion Credit and Marginal Cost of Losses Credit for Eligible TOR Self-Schedules.

11.5.7.1 HASP and RTM Congestion Credit for ETCs and TORs.

The CAISO shall not apply charges or payments to Scheduling Coordinators related to the MCC associated with all Points of Receipt and Points of Delivery pairs associated with valid and balanced ETC Self-Schedules or TOR Self-Schedules. The balanced portion will be based on the difference between: (1) the minimum of the metered CAISO Demand, ETC or TOR Self-Schedule submitted in the HASP, or the Existing Contract maximum capacity as specified in the TRTC Instructions; and (2) the valid and balanced portion of the Day-Ahead Schedule. For each Scheduling Coordinator, the CAISO shall determine for each Settlement Interval the

applicable HASP and RTM Congestion Credit for Imbalance Energy, which can be positive or negative, as the sum of the product of the relevant MWh quantity and the MCC at each Point of Receipt and Point of Delivery associated with the valid and balanced portions of that Scheduling Coordinator's ETC or TOR Self-Schedules. For all exports and imports settled in the HASP, the CAISO shall use the MWh quantity specified in the CAISO's Interchange transactional scheduling system schedule. For all Demand settled in the Real-Time Market the CAISO shall use the metered CAISO Demand associated with the applicable ETC or TOR. For all Supply settled in the Real-Time Market the CAISO shall use the quantity specified in the Dispatch Instructions.

11.5.7.2 RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules.

For all Points of Receipt and Points of Delivery pairs associated with a valid and balanced TOR Self-Schedule submitted to the HASP or RTM pursuant to an existing agreement between the TOR holder and either the CAISO or a Participating TO as specified in Section 17.3.3, the CAISO shall not impose any charge or make any payment to the Scheduling Coordinator related to the MCL associated with such TOR Self-Schedules and will instead impose any applicable charges for losses as specified in the existing agreement between the TOR holder and either the CAISO or a Participating TO applicable to the relevant TOR. In any case in which the TOR holder has an existing agreement regarding its TORs with either the CAISO or a Participating TO, the provisions of the agreement shall prevail over any conflicting provisions of this Section 11.5.7.2. Where the provisions of this Section 11.5.7.2 do not conflict with the provisions of the agreement, the provisions of this Section 11.5.7.2 shall apply to the subject TORs. The balanced portion of the TOR Self-Schedule will be based on the difference between: (1) minimum of the metered CAISO Demand or TOR Self-Schedule submitted in the HASP, or the TOR maximum capacity as specified in the TRTC Instructions; and (2) the Day-Ahead Schedule. For each Scheduling Coordinator, the CAISO shall determine for each Settlement Interval the applicable RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules for Imbalance Energy, which can be positive or negative, as the sum of the product

11.8.1.2 Real-Time Self-Commitment Period.

A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource shall consist of all consecutive Dispatch Intervals not in an IFM Commitment Period or a RUC Commitment Period where the Bid Cost Recovery Eligible Resource has a Self-Schedule or, except for Self-Provided Ancillary Services for Non-Spinning Reserve by a Fast Start Unit, has a non-zero amount of Self-Provided Ancillary Services. A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource may not be less than the relevant MUT (rounded up to the next 15-minute Commitment Interval) when considered jointly with any adjacent IFM Self-Commitment Period. For example, if a Bid Cost Recovery Eligible Resource self-commits at time h , the self-commitment will be extended to Commitment Interval $h + \text{MUT}$, unless an IFM or RUC Commitment Period exists starting after hour h , in which case the self-commitment will be extended to Commitment Interval $h + \min(\text{MUT}, t)$. A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource may not be apart from an IFM or RUC Commitment Period by less than the relevant MDT (rounded up to the next 15-minute Commitment Interval). For example, if a Bid Cost Recovery Eligible Resource self-commits at time $T1$ and has a RUC Schedule at time $T2 < T1$, the Real-Time Market Self-Commitment Period will be extended to the interim Commitment Intervals if $T1 - T2 < \text{MDT}$. The number of Real-Time Market Self-Commitment Periods for a Bid Cost Recovery Eligible Resource within a Trading Day, when considered jointly with any adjacent IFM Self-Commitment Period, may not exceed the relevant MDS (or $\text{MDS} + 1$ if the first Real-Time Market Self-Commitment Period is the continuation of a Real-Time Market Commitment Period from the previous Trading Day). For example, if a Bid Cost Recovery Eligible Resource self-commits at time $T1$ and has a RUC Schedule at time $T2 > T1$, the Real-Time Market Self-Commitment Period will be extended to the interim Commitment Intervals if an additional Real-Time Market Start-Up at $T1$ would violate the MDS constraint.

- (g) The IFM Start-Up Cost will be qualified if an actual Start-Up occurs earlier than the start of the IFM Commitment Period if the advance Start-Up is as a result of a Start-Up instruction issued in a RUC or Real-Time Market process subsequent to the IFM, or the advance Start-Up is uninstructed but is still within the same Trading Day and the Bid Cost Recovery Eligible Resource actually stays on until the targeted IFM Start-Up.

11.8.2.1.2 IFM Minimum Load Cost.

The Minimum Load Cost for the applicable Settlement Interval shall be the Minimum Load Cost submitted to the CAISO in the IFM divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the IFM Minimum Load Cost in a CAISO IFM Commitment Period is eligible for Bid Cost Recovery. The IFM Minimum Load Cost for any Settlement Interval is zero if: (1) the Settlement Interval is in an IFM Self Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under an RMR Contract prior to the Day-Ahead Market or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule for the applicable Settlement Interval; or (3) the Bid Cost Recovery Eligible Resource is determined not actually On during the applicable Settlement Interval. For the purposes of determining IFM Minimum Load Cost, a Bid Cost Recovery Eligible Resource is assumed to be On if its metered Energy in a Settlement Interval is equal to or greater than the difference between its Minimum Load Energy and the Tolerance Band. Otherwise, it is determined to be Off.

11.8.2.1.3 IFM Pump Shut-Down Cost.

For Pumped-Storage Hydro Units and Participating Load only, the IFM Pump Shut-Down Costs for each Settlement Interval shall be equal to the relevant Pump Shut-Down Cost submitted to CAISO in the IFM divided by the number of Settlement Intervals in a Trading Hour that is preceded by a previous commitment by the IFM to pump, in which actual shut down occurs if the unit is committed by the IFM not to pump and actually does not operate in pumping mode in that

Settlement Interval (as detected through Meter Data). The IFM Pump Shut-Down Cost for an IFM Shut-Down period shall be zero if: (1) it is followed by an IFM or RFM Self-Commitment Period in generation mode; (2) the Shut-Down is due to an Outage reported through SLIC; or (3) the Shut-Down is delayed by the RTM past the IFM Shut-Down period in question or cancelled by the RTM before the Shut-Down process has started.

11.8.2.1.4 IFM Pumping Bid Cost.

For Pumped-Storage Hydro Units and Participating Load only, the IFM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the IFM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative. The Pumping Cost is included in IFM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the IFM to pump or serve Load if it actually operates in pumping mode or serves Load in that Settlement Interval. The IFM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for actual Energy consumed in excess of the Day-Ahead Schedule for Demand. The IFM Pumping Cost for any Settlement Interval is zero if: (1) the Settlement Interval is in an IFM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; or (2) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under an RMR Contract prior to the Day-Ahead Market or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule for the applicable Settlement Interval.

11.8.2.1.5 IFM Energy Bid Cost.

For any Settlement Interval, the IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, shall be the integral of the relevant Energy Bid submitted to the IFM, if any, from the higher of the registered Bid Cost Recovery Eligible Resource's Minimum Load and the Day-Ahead Total Self-Schedule up to the relevant MWh scheduled in the Day-Ahead Schedule, divided by the number of Settlement Intervals in a Trading Hour. The IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, for any Settlement Interval is set to zero for any portion of the Day-Ahead Schedule that is not delivered from the otherwise Bid Cost Recovery Eligible Resource that has metered Generation below its Day-Ahead Schedule; any portion of the Day-Ahead Schedule that is actually delivered remains eligible for IFM Energy Bid Cost Recovery.

11.8.2.1.6 IFM AS Bid Cost.

For any Settlement Interval, the IFM AS Bid Cost shall be the product of the IFM upward AS Award from each accepted IFM AS Bid and the relevant AS Bid Price, divided by the number of Settlement Intervals in a Trading Hour.

- (a) The RUC Start-Up Cost for a RUC Commitment Period is zero if the Start-Up is delayed beyond the RUC Commitment Period in question or cancelled by the Real-Time Market prior to the Bid Cost Recovery Eligible Resource starting its start-up process.
- (b) If a RUC Start-Up is terminated in the Real-Time within the applicable RUC Commitment Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource is starting up the, RUC Start-Up Cost is prorated by the ratio of the Start-Up Time before termination over the RUC Start-Up Time.
- (c) The RUC Start-Up Cost for a RUC Commitment Period is qualified if an actual Start-Up occurs within that RUC Commitment Period.
- (d) The RUC Start-Up Cost shall be qualified if an actual Start-Up occurs earlier than the start of the RUC Start-Up, if the relevant Start-Up is still within the same Trading Day and the Bid Cost Recovery Eligible Resource actually stays on until the RUC Start-Up, otherwise the Start-Up Cost is zero for the RUC Commitment Period.

11.8.3.1.2 RUC Minimum Load Cost.

The Minimum Load Cost for the applicable Settlement Interval shall be the Minimum Load Cost of the Bid Cost Recovery Eligible Resource divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the RUC Minimum Load Cost in a CAISO RUC

Commitment Period is eligible for Bid Cost Recovery. The RTM Minimum Load Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) the Bid Cost Recovery Eligible Resource is not actually On in that Settlement Interval; (4) that Settlement Interval is included in an IFM or RUC Commitment Period; or (5) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.9.2 for the purpose of performing Ancillary Services testing, pre-commercial operation testing for Generating Units, or PMax testing. For the purposes of RTM Minimum Load Cost, a Bid Cost Recovery Eligible Resource is determined to not actually be On if the metered Energy in that Settlement Interval is less than the Tolerance Band referenced by the Minimum Load Energy.

11.8.4.1.3 RTM Pump Shut-Down Cost.

The RTM Pump Shut-Down Cost for each Settlement Interval is the relevant Pump Shut-Down Cost submitted by the Scheduling Coordinator only for Pumped-Storage Hydro Units and Participating Load, divided by the number of Settlement Intervals in which such resource was committed by the Real-Time Market in a Trading Hour with scheduled pumping operation and in which an actual Shut-Down occurs and the resource does not actually operate in pumping mode or serve Load in that Settlement Interval (as detected through Meter Data). The RTM Pump Shut-Down Cost for a Real-Time Market Shut-Down event shall be zero if: (1) it is followed by a RTM Self-Commitment Period in generation mode or offline mode; or (2) the Shut-Down is due to an Outage reported through SLIC.

11.8.4.1.4 RTM Pumping Bid Cost.

For Pumped-Storage Hydro Units and Participating Load only, the RTM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the HASP or RTM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative since it represents the amount the entity is willing to pay to pump or serve Load. The Pumping Cost is included in RTM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the Real-Time Market to pump or serve Load, if it actually operates in pumping mode or serves Load in that Settlement Interval. The RTM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for any Energy consumed in excess of instructed Energy. The RTM Pumping Bid Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) the Bid Cost Recovery Eligible Resource is not actually in pumping mode in that Settlement Interval; (4) that Settlement Interval is included in an IFM or RUC Commitment Period; or (5) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.9.2 for the purpose of performing Ancillary Services testing or pre-commercial operation testing.

- (i) In the first tier, the hourly Net IFM Bid Cost Uplift is allocated to Scheduling Coordinators in proportion to their non-negative IFM Load Uplift Obligation, but with an IFM Bid Cost Uplift rate not exceeding the ratio of the hourly Net IFM Bid Cost Uplift for the Trading Hour divided by the sum of all hourly Generation scheduled in the Day-Ahead Schedule and IFM upward AS Awards for all Scheduling Coordinators from CAISO-committed Bid Cost Recovery Eligible Resources in that Trading Hour. The IFM Load Uplift Obligation for each Scheduling Coordinator, including Scheduling Coordinators for Metered Subsystems regardless of their MSS optional elections (net/gross Settlement, Load following, RUC opt-in/out), is the difference between the total Demand scheduled in the Day-Ahead Schedule of that Scheduling Coordinator and the sum of scheduled Generation and scheduled imports from the Self-Schedules in the Day-Ahead Schedule of that Scheduling Coordinator, adjusted by any applicable Inter-SC Trades of IFM Load Uplift Obligations.
- (ii) In the second tier, Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected both to not follow their Load and gross Settlement, will be charged for an amount equal to any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to the Scheduling Coordinator's Measured Demand. Scheduling Coordinators for MSS Operators that have elected to either follow their Load or net Settlement, or both, will be charged for an amount equal to any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to their MSS Aggregation Net Measured Demand.

- (ii) In the second tier, the Scheduling Coordinator shall be charged an amount equal to any remaining RUC Compensation Costs in proportion to the Scheduling Coordinator's metered CAISO Demand in any Trading Hour.

11.8.6.6 Allocation of Net RTM Bid Cost Uplift.

The hourly Net RTM Bid Cost Uplift is computed for the Trading Hour as the product of the uplift ratio in 11.8.6.3 and the sum over all Settlement Intervals of the Trading Hour of any positive Net RTM Bid Cost Uplift after the sequential netting in Section 11.8.6.2. The hourly RTM Bid Cost Uplift is allocated to Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected (a) not to follow their Load, and (b) gross Settlement, in proportion to their Measured Demand for the Trading Hour. For Scheduling Coordinators for MSS Operators that have elected (a) not to follow their Load, and (b) net Settlement, the hourly RTM Bid Cost Uplift is allocated in proportion to their MSS Aggregation Net Measured Demand. For Scheduling Coordinators of MSS Operators that have elected to follow their Load, the RTM Bid Cost Uplift shall be allocated in proportion to their MSS Net Negative Uninstructed Deviation. Accordingly, each Scheduling Coordinator shall be charged an amount equal to its Measured Demand times the RTM Bid Cost Uplift rate, where the RTM Bid Cost Uplift rate is computed as the Net RTM Bid Cost Uplift amount divided by the sum of Measured Demand across all Scheduling Coordinators for the Trading Hour.

11.9 Inter-SC Trades.

11.9.1 Physical Trades.

Inter-SC Trades of Energy in the Day-Ahead Market will be settled separately from Inter-SC Trades of Energy in the HASP. Both the Day-Ahead and HASP Inter-SC Trades of Energy will be settled on an hourly basis and the two respective Settlement amounts between the two parties for each market shall net to zero. All MWh quantities of Physical Trades submitted to the CAISO for Settlement in the Day-Ahead Market that are confirmed through the Physical Trade post market confirmation as provided in Section 28.1.6.3 shall be settled at the Day-Ahead LMP at the relevant PNode. All MWh quantities of

11.10.1.4 Voltage Support.

The total payments for each Scheduling Coordinator for Voltage Support in any Settlement Period shall be the sum of the opportunity costs of limiting Energy output to enable reactive energy production in response to a CAISO instruction. The opportunity cost shall be calculated based on the product of the Energy amount that would have cleared the market at the price of the Resource-Specific Settlement Interval LMP minus the higher of the Energy Bid price or the Default Energy Bid price.

If applicable, Scheduling Coordinators shall also receive any payments under any long-term contracts due for the Settlement Period. Exceptional Dispatches for incremental or decremental Energy needed for Voltage Support procured through Exceptional Dispatch pursuant to Section 34.9.2 will be paid and settled in accordance with Sections 11.5.6.1 and 11.5.6.2.5.2. RMR Units providing Voltage Support are compensated in accordance with the RMR Contract rather than this Section 11.10.1.4.

11.10.1.5 Black Start.

The total payments for each Scheduling Coordinator for Black Start shall consist of any payments under any long-term contracts due for the Settlement Period. If the Energy price and Start-Up Costs are not specified in the long-term contract, the Black Start Energy will be paid as an Exceptional Dispatch in accordance with Section 11.5.6.1 and the resource will be entitled to Bid Cost Recovery. RMR Units providing Black Start are compensated in accordance with the RMR Contract rather than this Section 11.10.1.5.

11.10.7 Voltage Support.

The Voltage Support user rate for any Settlement Period shall be calculated based on the sum of Voltage Support payments made to Scheduling Coordinators in accordance with Section 11.10.1.4, divided by Measured Demand, excluding metered Demand inside an MSS except as provided by Section 4.9.4.4.

The Voltage Support charge for any Settlement Period payable by a Scheduling Coordinator is the Voltage Support user rate multiplied by the quantity of Measured Demand, excluding Demand within an MSS except as provided by Section 4.9.4.4, for which that Scheduling Coordinator is responsible in that Settlement Period.

11.10.8 Black Start.

The Black Start Energy payment user rate for any Settlement Period will be calculated based on the sum of Black Start Energy payments to Scheduling Coordinators paid in accordance with Section 11.10.1.5, including any Exceptional Dispatch Instructed Imbalance Energy payments for Black Start, in the applicable Settlement Period divided by Measured Demand, excluding exports to neighboring Balancing Authority Areas and excluding Demand within an MSS except as provided by Section 4.9.4.5.

The Black Start Energy user charge for any Settlement Period for a Scheduling Coordinator will be the Black Start Energy payment user rate multiplied by the quantity of Measured Demand, excluding Demand within an MSS except as provided by Section 4.9.4.4, for which that Scheduling Coordinator is responsible in that Settlement Period.

11.10.9 Settlements of Rescission of Payments for Ancillary Services Capacity that is Undispatchable, Unavailable, and Undelivered Capacity.

The rescission of payments for Ancillary Services for Undispatchable, Unavailable, and Undelivered Capacity applies to Ancillary Services that are awarded in the Day-Ahead Market, HASP or Real-Time Market and the rescission will be the weighted average of the Ancillary Service Marginal Prices (ASMPs) and Ancillary Services Award amounts for a resource across the Day-Ahead Market, HASP and Real-Time Market. For Self-Provided Ancillary Service capacity that becomes Undispatchable Capacity, Unavailable Capacity, or Undelivered Capacity, the rescission of Ancillary Services self-provision in the Day-Ahead Market, HASP and Real-Time Market reduces the relevant Scheduling Coordinator's effective Ancillary Services self-provision in the Ancillary Services cost allocation, effectively resulting in a charge back at the relevant Ancillary Services rate. The rescission of payments in this Section 11.10.9 shall not apply to a capacity payment for any particular Ancillary Service if the Ancillary Service Marginal Price (ASMP) is less than or equal to zero.

- (b) For any given Trading Hour in which the Scheduling Coordinator's Net Negative CAISO Demand Deviation in its applicable LAP is greater than or equal to twenty percent (20%) of the Scheduling Coordinator's cleared total CAISO Demand as represented in its Day-Ahead Schedule in its applicable LAP, the Scheduling Coordinator shall pay \$250/MWh for its Net Negative CAISO Demand Deviation greater than or equal to twenty percent (20%) of its cleared total CAISO Demand as represented in its Day-Ahead Schedule in the applicable LAP in that Trading Hour.

11.24.3 Exemptions from the Interim Scheduling Charge.

The Interim Scheduling Charge shall not apply to the following circumstances:

- (a) For any given Trading Day for Scheduling Coordinators in each applicable LAP in which the CAISO's daily Day-Ahead peak CAISO Forecast of CAISO Demand is ninety-five percent (95%) or less than daily actual metered CAISO Demand in the respective northern and southern regions of the CAISO Balancing Authority Area as further described in the Business Practice Manuals.
- (b) For any given Trading Hour when a Scheduling Coordinator's metered CAISO Demand is less than or equal to 500 MW in a particular LAP, that Scheduling Coordinator shall not be subject to the Interim Scheduling Charge.
- (c) For metered CAISO Demand by Participating Loads.
- (d) For metered CAISO Demand that is MSS Load following Demand.
- (e) For any given Trading Hour when the Hourly Real-Time LAP Price is less than the Day-Ahead LAP Price for the same Trading Hour in the applicable LAP.
- (f) For metered CAISO Demand of Station Power Loads.

- (b) The CAISO may limit trading, which may include rejection of Bids, including Self-Schedules, rejection or cancellation of Inter-SC Trades in their entirety (*i.e.*, both sides of the Inter-SC Trade) at any time, and/or limiting other CAISO Market activity, including limiting eligibility to participate in a CRR Allocation or CRR Auction. In such case, the CAISO shall notify the Market Participant of its action and the Market Participant shall not be entitled to participate in the CAISO Markets or CRR Auctions or submit further Bids, including Self-Schedules, or otherwise participate in the CAISO Markets until the Market Participant posts an additional Financial Security Amount that is sufficient to ensure that the Market Participant's Aggregate Credit Limit is at least equal to its Estimated Aggregate Liability.
- (c) The CAISO may require the Market Participant to post an additional Financial Security Amount in lieu of an Unsecured Credit Limit for a period of time.
- (d) The CAISO may restrict, suspend, or terminate the Market Participant's CRR Entity Agreement or any other service agreement.
- (e) The CAISO may resell the CRR Holder's CRRs in whole or in part, including any Long Term CRRs, in a subsequent CRR Auction or bilateral transaction, as appropriate.
- (f) The CAISO will not implement the transfer of a CRR if the transferee or transferor has an Estimated Aggregate Liability in excess of its Aggregate Credit Limit.

In addition, the CAISO may restrict or suspend a Market Participant's right to submit further Bids, including Self-Schedules, or require the Market Participant to increase its Financial Security Amount if at any time such Market Participant's potential additional liability for Imbalance Energy and other CAISO charges is determined by the CAISO to be excessive by comparison with the likely cost of the amount of Energy reflected in Bids or Self-Schedules submitted by the Market Participant.

In addition, scheduling deadlines and operational procedures associated with Existing Rights will be honored by the CAISO, provided such information is explicitly included in the TRTC Instructions. The CAISO will accommodate and honor Existing Rights as follows:

- (1) For Existing Rights that permit Interchange Schedule changes over Scheduling Points with other Balancing Authority Areas, the CAISO will reserve transmission capacity equal to the Existing Rights transmission capacity and make a corresponding adjustment in its determination of ATC. For Existing Rights that permit Interchange Schedule changes after the Market Close of the Day-Ahead Market, the CAISO will reserve transmission capacity equal to the unscheduled ETC amount of transmission capacity for that Scheduling Point.
- (2) For Existing Rights within the CAISO Balancing Authority Area, the CAISO will not set-aside capacity associated with the Existing Rights transmission capacity.
- (3) In the HASP, the CAISO will give valid ETC Self-Schedules priority over other non-ETC Day-Ahead Schedules and HASP Bids. In the event of a reduction in capacity on the transmission path associated with the Existing Right, the CAISO will honor the Existing Rights priority in accordance with this Section 16.
- (4) When the Existing Contract permits, the CAISO will allow the holder of Existing Rights to make changes to the scheduled amounts of Supply after the submission of HASP ETC Self-Schedules in accordance with the TRTC Instructions established for such changes. The CAISO will, as necessary, redispatch non-ETC resources to accommodate valid ETC Self-Schedule changes in Real-Time.

16.6.1 Validation of ETC Self-Schedules.

An ETC Self-Schedule is a valid ETC Self-Schedule when the CAISO has determined that the ETC Self-Schedule, submitted to the CAISO pursuant to the requirements for Bids in Sections 30, properly reflects Existing Rights consistent with the TRTC Instructions, is labeled with a unique Existing Contract identifier, and includes balanced sources and sinks, within the ETC's capacity limits.

16.6.2 Treatment of Invalid ETC Self-Schedules.

16.6.2.1 Inconsistent with the TRTC Instructions.

Except for the reasons listed below in 16.6.2, if the CAISO finds that the ETC Self-Schedule is not consistent with the TRTC Instructions, the CAISO shall find that the ETC Self-Schedule is not valid. If the CAISO finds the ETC Self-Schedule to be invalid, the CAISO shall notify the Scheduling Coordinator and convert the ETC Self-Schedule to an ordinary Self-Schedule and treat the ETC Self-Schedule as an ordinary Self-Schedule as such for terms of scheduling priority and Settlements. Where multiple ETC, TOR or Converted Rights Self-Schedules are submitted in an ETC, TOR or Converted Rights chain, in order for all ETC, TOR, or Converted Rights Self-Schedules in the chain to continue to remain valid, all individual ETC, TOR, or Converted Rights Self-Schedules links in the chain must remain individually valid, including the simultaneous but separate use of an individual ETC, TOR or Converted Rights Self-Schedule, in order for the chain to remain valid.

16.6.2.2 Unbalanced ETC Self-Schedules.

If the ETC Self-Schedule is not balanced, the ETC Self-Schedule will not be a valid ETC Self-Schedule and the CAISO will: (i) remove any scheduling priority for the entire ETC Self-Schedule; (ii) apply the ETC Settlement treatment pursuant to Sections 11.2.1.5 and 11.5.7.1 to the valid balanced portions only; and (iii) assess any charges, and make any payments, consistent with the treatment of ordinary Self-Schedules for the unbalanced portions.

16.6.2.3 Exceeds Capacity Limits in Existing Contracts as Reflected in TRTC Instructions.

If the ETC Self-Schedule exceeds the capacity limits in Existing Contracts as reflected in TRTC Instructions, the ETC Self-Schedule will not be a valid ETC-Self-Schedule and the CAISO will: (i) remove any scheduling priority for the entire ETC Self-Schedule; (ii) apply the ETC Settlement treatment pursuant to Sections 11.2.1.5 and 11.5.7.1 to the valid balanced portions within the capacity limits of the Existing Contract as reflected in the TRTC Instructions; and (iii) assess any charges, and make any payments, consistent with the treatment of ordinary Self-Schedules for the portions in excess of the capacity limits of the Existing Contract as reflected in the TRTC Instructions.

between the CAISO and a Balancing Authority, the agreement will govern. For this purpose CAISO operating orders to shed Load shall not be considered as an impairment to public health or safety. This section does not prohibit a Scheduling Coordinator from modifying its Bid or re-purchasing Energy in the HASP or RTM.

17.3 Valid TOR Self-Schedules.

The CAISO will accept a valid TOR Self-Schedule from a Scheduling Coordinator. That Scheduling Coordinator shall be either the holder of the TOR or its designee. TOR Self-Schedules submitted by Scheduling Coordinators to the CAISO must be submitted in accordance with this CAISO Tariff.

17.3.1 Validation of TOR Self-Schedules.

A TOR Self-Schedule is a valid TOR Self-Schedule when the CAISO has determined that the TOR Self-Schedule, submitted to the CAISO pursuant to the requirements for Bids in Section 30, properly reflects TORs consistent with the TRTC Instructions, is labeled with a unique TOR identifier, and includes balanced sources and sinks, within the TOR capacity limits.

17.3.2 Treatment of Invalid TOR Self-Schedules.

17.3.2.1 Inconsistent with the TRTC Instructions.

Except for the reasons listed below in 17.3.2, if the CAISO finds that the TOR Self-Schedule is not consistent with the TRTC Instructions, the CAISO shall find that the TOR Self-Schedule is not valid. If the CAISO finds the TOR Self-Schedule to be invalid, the CAISO shall notify the Scheduling Coordinator and convert the TOR Self-Schedule to an ordinary Self-Schedule and treat the TOR Self-Schedule as an ordinary Self-Schedule as such for terms of scheduling priority and Settlements. Where multiple ETC, TOR or Converted Rights Self-Schedules are submitted in an ETC, TOR or Converted Rights chain, in order for all ETC, TOR, or Converted Rights Self-Schedules in the chain to continue to remain valid, all individual ETC, TOR, or Converted Rights Self-Schedules links in the chain must remain individually valid, including the simultaneous but separate use of an individual ETC, TOR or Converted Rights Self-Schedule, in order for the chain to remain valid.

17.3.2.2 Unbalanced TOR Self-Schedules.

If the TOR Self-Schedule is not balanced, the TOR Self-Schedule will not be a valid TOR Self-Schedule and the CAISO will: (i) remove any scheduling priority for the entire TOR Self-Schedule; (ii) apply the TOR Settlement treatment pursuant to Sections 11.2.1.5 and 11.5.7.1 to the valid balanced portions only; and (iii) assess any charges and make any payments consistent with the treatment of ordinary Self-Schedules for the unbalanced portions.

22.1.3 Audit Results.

Exceptions identified as a result of an audit will be reviewed with the CAISO Audit Committee. The results of the audits and actions to be taken by the CAISO as a result of the audit shall be mailed to Market Participants upon request.

22.1.4 Availability of Records.

The CAISO will provide full and complete access to all financial books, cost statements, accounting records, and all documentation pertaining to the requirements of the specific audits being performed. Records relating to audits will be retained until the records retention requirements of the CAISO are satisfied or until the audit issues are fully resolved, whichever is the later. The right of access to records does not require the creation of new records, reports, studies, or evaluations not already available.

22.1.5 Confidentiality of Information.

All proprietary information obtained through any audits will remain strictly confidential. All auditors shall sign a confidentiality agreement prior to being accepted as auditors by the CAISO Audit Committee.

22.1.6 Payments.

Any payments agreed to between Market Participants and the CAISO as a result of an audit, or directed by FERC, or disclosed by the CAISO in reviews of its own books and records shall include Interest computed at the rate calculated in accordance with the methodology specified for interest on refunds in FERC's regulations at 18 C.F.R. § 35.19a(a)(2)(iii) (as amended from time to time) from the due date to the date such adjustments are due.

24.10.4 Once a New Participating TO has executed the Transmission Control Agreement and it has become effective, the cost for New High Voltage Facilities for all Participating TOs shall be included in the CAISO Grid-wide component of the High Voltage Access Charge in accordance with Schedule 3 of Appendix F, unless and with respect to Western Path 15 only, cost recovery is provided in Section 24.10.3. The Participating TO who is supporting the cost of the New High Voltage Facility shall include such costs in its High Voltage Transmission Revenue Requirement, regardless of which TAC Area the facility is geographically located.

26.1.4.1 Wheeling Access Charge.

The Wheeling Access Charge shall be determined by the TAC Area and transmission ownership or Entitlement, less all Encumbrances, associated with the Scheduling Point at which the Energy exits the CAISO Controlled Grid. The Wheeling Access Charge for Scheduling Points contained within a single TAC Area, that are not joint facilities, shall be equal to the High Voltage Access Charge for the applicable TAC Area in accordance with Schedule 3 of Appendix F plus the applicable Low Voltage Access Charge if the Scheduling Point is on a Low Voltage Transmission Facility. Wheeling Access Charges shall not apply for Wheeling under a bundled non-economy Energy coordination agreement of a Participating TO executed prior to July 9, 1996.

26.1.4.2 Wheeling Over Joint Facilities.

To the extent that more than one Participating TO owns or has Entitlement to transmission capacity, less all Encumbrances, exiting the CAISO Controlled Grid at a Scheduling Point, the Scheduling Coordinator shall pay the CAISO each month a rate for Wheeling at that Scheduling Point which reflects an average of the Wheeling Access Charge applicable to those Participating TOs, weighted by the relative share of such ownership or Entitlement to transmission capacity, less all Encumbrances, at such Scheduling Point. If the Scheduling Point is located at High Voltage Transmission Facilities, the Wheeling Access Charge will consist of a High Voltage Wheeling Access Charge component. Additionally, if the Scheduling Point is located at Low Voltage Transmission Facilities, the applicable Low Voltage Wheeling Access Charge component will be added to the Wheeling Access Charge. The methodology for developing the weighted average rate for Wheeling at each Scheduling Point is set forth in Appendix F, Schedule 3, Section 14.4.

26.1.4.3 Disbursement of Wheeling Revenues.

The CAISO shall collect and pay to Participating TOs and other entities as provided in Section 24.10.3 all Wheeling revenues at the same time as other CAISO charges and payments are settled. For Wheeling revenues associated with CRRs allocated to Load Serving Entities outside the CAISO Balancing Authority Area, the CAISO shall pay to the Participating TOs and other entities as provided in Section 24.10.3 any

excess prepayment amounts within thirty (30) days of the end of the term of the CRR Allocation. The CAISO shall provide to the applicable Participating TO and other entities as provided in Section 24.10.3 a statement of the aggregate amount of Energy delivered to each Scheduling Coordinator using such Participating TO's Scheduling Point to allow for calculation of Wheeling revenue and auditing of disbursements. Wheeling revenues shall be disbursed by the CAISO based on the following:

26.1.4.3.1 Scheduling Point with All Participating TOs in the Same TAC Area.

With respect to revenues received for the payment of High Voltage Wheeling Access Charges for Wheeling to a Scheduling Point at which all of the facilities and Entitlements, less all Encumbrances, are owned by Participating TOs in the same TAC Area, Wheeling revenues shall be disbursed to each such Participating TO based on the ratio of each Participating TO's High Voltage Transmission Revenue Requirement to the sum of all such Participating TO's High Voltage Transmission Revenue Requirements. If the Scheduling Point is located at a Low Voltage Transmission Facility, revenues received with respect to Low Voltage Wheeling Access Charges for Wheeling to that Scheduling Point shall be disbursed to the Participating TOs that own facilities and Entitlements making up the Scheduling Point in proportion to their Low Voltage Transmission Revenue Requirements. Additionally, if a Participating TO has a transmission upgrade or addition that was funded by a Project Sponsor, the Wheeling revenue allocated to such Participating TO shall be disbursed as provided in Section 24.10.3.

26.1.4.3.2 Scheduling Point without All Participating TOs in the Same TAC Area.

With respect to revenues received for the payment of Wheeling Access Charges for Wheeling to a Scheduling Point at which the facilities and Entitlements, less all Encumbrances, are owned by Participating TOs in different TAC Areas, Wheeling revenues shall be disbursed to such Participating TOs as follows. First, the revenues shall be allocated between such TAC Areas in proportion to the ownership and Entitlements of transmission capacity, less all Encumbrances, at the Scheduling Point of the Participating TOs in each such TAC Area. Second, the revenues thus allocated to each TAC Area shall be disbursed among the Participating TOs in the TAC Area in accordance with Section 26.1.4.3.1.

California Public Utilities Code (as added by AB 1890). The recovery and payments shall be based on an amortization period not exceeding three years in the case of electric corporations regulated by the CPUC or five years for Local Publicly Owned Electric Utilities.

26.3 Addition of New Facilities After CAISO Implementation.

The costs of transmission facilities placed in service after the CAISO Operations Date shall be recovered consistent with the cost recovery determinations made pursuant to Appendix F, Schedule 3 and Section 24.10.3.

26.4 Effect on Tax-Exempt Status.

Nothing in this Section 26 shall compel any Participating TO to violate any restrictions applicable to facilities financed with tax-exempt bonds or contractual restrictions and covenants regarding the use of transmission facilities.

26.5 Transition Mechanism.

During the ten-year TAC Transition Period described in Section 4 of Schedule 3 of Appendix F, the Original Participating TOs collectively shall pay to the CAISO each year an amount equal to, annually, for all New Participating TOs, the amount, if any, by which the New Participating TO's cost of Existing High Voltage Facilities associated with Gross Loads in the PTO Service Territory of the New Participating TO is increased by the implementation of the High Voltage Access Charge described in Schedule 3 of Appendix F. Responsibility for such payments shall be allocated to Original Participating TOs in accordance with Schedule 3 of Appendix F. Amounts payable by Original Participating TOs under this section shall be recoverable as part of the Transition Charge calculated in accordance with Schedule 3 of Appendix F. Amounts received by the CAISO under this section shall be disbursed to New Participating TOs with Existing High Voltage Facilities based on the ratio of each New Participating TO's net increase in costs in the categories described in the first sentence of this section, to the sum of the net increases in such costs for all New Participating TOs with Existing High Voltage Facilities.

Energy Bid Curves. The LMP at any given PNode is comprised of three cost components: the System Marginal Energy Cost (SMEC); Marginal Cost of Losses (MCL); and Marginal Cost of Congestion (MCC). The IFM calculates LMPs for each Trading Hour of the next Trading Day. The HASP, which is an hourly run of the RTUC with the Time Horizon that starts at the beginning of the next Trading Hour, calculates fifteen-minute LMPs (HASP Intertie LMPs) for that Trading Hour. The simple average of the four fifteen-minute LMPs for the Trading Hour computed at each Scheduling Point produces hourly LMPs for HASP Settlement of Energy at that Scheduling Point. The Real-Time Dispatch runs every five (5) minutes throughout each Trading Hour and calculates five-minute LMPs for the next Dispatch Interval. The CAISO uses the Resource-Specific Settlement Interval LMPs for Settlements of the Real-Time Market.

27.1.1.1 System Marginal Energy Cost.

The System Marginal Energy Cost (SMEC) component of the LMP reflects the marginal cost of providing Energy from a designated reference Location. For this designated reference Location the CAISO will utilize a distributed Reference Bus whose constituent PNodes are weighted in proportions referred to as Reference Bus distribution factors. The SMEC shall be the same throughout the system.

27.1.1.2 Marginal Cost of Losses.

For all PNodes and Aggregated PNodes in the CAISO Balancing Authority Area, including Scheduling Points, the use of the FNM in the DAM and the RTM processes incorporates Transmission Losses. At each PNode or Aggregated PNode, the Marginal Cost of Losses is the System Marginal Energy Cost multiplied by the Marginal Loss factor at that PNode or Aggregated PNode. The Marginal Cost of Losses at a Location (PNode or APNode) may be positive or negative depending on whether an increase in Demand at that Location marginally increases or decreases the cost of Transmission Losses, using the distributed Reference Bus to balance it. The Marginal Loss factors are determined through a process that calculates the sensitivities of Transmission Losses with respect to changes in injection at each Location in the FNM. For CAISO Controlled Grid facilities outside the CAISO Balancing Authority Area, the CAISO

27.2.2.1 IFM LAP Prices.

The IFM LAP Price for a given Trading Hour is the weighted average of the individual IFM LMPs at the PNodes within the LAP, with the weights equal to the nodal proportions of Demand associated with that LAP that is scheduled by the IFM, excluding Demand specified in Sections 27.2.1 and 30.5.3.2.

27.2.2.2 Real-Time Market LAP Prices.

The Hourly Real-Time LAP Price is computed as described in Section 11.5.2.2. The weights used for calculating the Hourly Real-Time LAP Price at the time the RTM runs will not exclude the Demand specified in Sections 27.2.1 and 30.5.3.2. The weights used for calculating Hourly Real-Time LAP Price used for Settlements will be calculated based on Meter Data and will appropriately exclude the Demand specified in Sections 27.2.1 and 30.5.3.2. Hourly Real-Time LAP Price are further adjusted for Settlements purposes as described in Section 11.5.2.2.

27.3 Trading Hubs.

The CAISO shall create and maintain Trading Hubs, including Existing Zone Generation Trading Hubs, to facilitate bilateral Energy transactions in the CAISO Balancing Authority Area. Each Trading Hub will be based on a pre-defined set of PNodes. The CAISO shall calculate Trading Hub prices for each Settlement Period or Settlement Interval based on an average of the LMPs at the PNodes that constitute the Trading Hub. There will be three Existing Zone Generation Trading Hubs, which correspond geographically to the three Existing Zones. Each Existing Zone Generation Trading Hub will be comprised of an aggregation of PNodes for Generating Units within the corresponding Existing Zone, whose associated LMPs will be used to establish an Existing Zone Generation Trading Hub price representing the weighted-average price paid to Generating Units in that Existing Zone. The weights applied to the constituent nodal LMPs in each Existing Zone will be determined annually and separately

27.5.1 Description of FNM for CAISO Markets.

The FNM is a representation of the CAISO Balancing Authority Area that enables the CAISO to conduct power flow analyses to identify transmission Constraints for the optimization of the CAISO Markets. External Balancing Authority Areas and external transmission systems are modeled to the extent necessary to support the commercial requirements of the CAISO Markets. External connections are retained between Intertie branches within Transmission Interfaces. Certain external loops are modeled, which allows the CAISO to increase the accuracy of the Congestion Management process. Resources are modeled at the appropriate network Nodes. The pricing Location (PNode) of a Generating Unit generally coincides with the Node where the relevant revenue quality meter is connected or corrected, to reflect the point at which the Generating Units are connected to the CAISO Controlled Grid. The Dispatch, Schedule and LMP of a Generating Unit refers to a PNode, but the Energy injection is modeled in the FNM for network analysis purposes at the corresponding Generating Unit(s) (at the physical interconnection point), taking into account any losses in the transmission network leading to the point where Energy is delivered to DemandFor the CAISO Markets Processes, the FNM incorporates Transmission Losses and models and enforces all network Constraints within the CAISO Balancing Authority Area, which are reflected in the Day-Ahead Schedules, AS Awards and RUC Awards, HASP Intertie Schedules, Dispatch Instructions and the LMPs resulting from each CAISO Markets Process. For portions of the FNM that are external to the CAISO Balancing Authority Area, the CAISO may model the resistive component for accurate modeling of Transmission Losses, but accounts for losses in the external portions of the FNM separately from Transmission Losses within the CAISO Balancing Authority Area, and does not allow such losses to determine the Marginal Cost of Losses in the LMPs that apply to the CAISO Markets. For portions of the FNM that are external to the CAISO Balancing Authority Area, the CAISO only enforces network Constraints that reflect limitations of the transmission facilities and Entitlements turned over to the Operational Control of the CAISO by a Participating TO, or that affect Congestion Management within the CAISO Balancing Authority Area or on Interties. For the HASP, STUC, RTUC and the RTD processes, the Real-Time power flow parameters developed from the State Estimator are applied to the FNM.

27.5.2 Metered Subsystems.

The FNM includes a full model of MSS transmission networks used for power flow calculations and Congestion Management in the CAISO Markets Processes. Network Constraints (i.e. circuit ratings, thermal ratings, etc.) within the MSS, or at the its boundaries, shall be monitored but not enforced in the

Estimator is not capable of providing CAISO with a solution to clear the CAISO Markets, the CAISO shall use the last best State Estimator solution for determining Dispatch Instructions, provided the State Estimator is not unavailable for an extended period. If the State Estimator is not available for an extended period of time, the CAISO shall use the Load Distribution Factors from the Load Distribution Factors library as applicable to the prevailing system and time of use conditions to determine Dispatch Instructions.

27.7 Constrained Output Generators.

27.7.1 Election of Constrained Output Generator Status.

A Scheduling Coordinator on behalf of a Generating Unit eligible for COG status must make an election to have the resource treated as a COG before each calendar year by registering the resource's PMin in the Master File as equal to its PMax less 0.01 MW ($P_{Min} = P_{Max} - 0.01 \text{ MW}$) within the timing requirements specified for Master File changes described in the applicable Business Practice Manual. Generating Units with COG status will be eligible to set LMPs in the IFM and RTM based on their Calculated Energy Bids.

As with all Generating Units, a Scheduling Coordinator on behalf of a COG must elect either the Proxy Cost option or the Registered Cost option, as provided in Section 30.4, for determining its Start-Up Costs and Minimum Load Costs. A COG's Calculated Energy Bid will be calculated based on this election. Whenever a Scheduling Coordinator for a COG submits an Energy Bid into the IFM or RTM, the CAISO will override that Bid and substitute the Calculated Energy Bid if the submitted Bid is different from the Calculated Energy Bid.

27.7.2 Election to Waive COG Status.

A Scheduling Coordinator on behalf of a Generating Unit eligible for COG status may elect to waive COG status. If such Generating Unit has a non-zero operating range (PMax greater than PMin), it is eligible to participate in the CAISO Markets like any other resource.

27.7.3 Constrained Output Generators in the IFM.

In the IFM, resources electing COG status are modeled as though they are not constrained and can operate flexibly between zero (0) and their PMax. A COG is eligible to set IFM LMPs based on its Calculated Energy Bid in any Settlement Period in which a portion of its output is needed as a flexible resource to serve Demand. A COG is not eligible for recovery of Minimum Load Costs or BCR in the IFM due to the conversion of its Minimum Load Cost to an Energy Bid and its treatment by the IFM as a flexible resource. A COG is eligible for Start-Up Cost recovery based on its Commitment Period as determined in the IFM, RUC, HASP, STUC or RTUC.

27.7.4 Constrained Output Generators in RUC.

In RUC, any COG that has capacity that did not fully clear in the IFM is treated as constrained, so that the entire capacity of the COG is committed by RUC. Any such RUC commitment would apply to scheduled capacity in RUC in excess of the higher of: (a) the relevant Day-Ahead Schedule; or

(b) the relevant Minimum Load. In the event of a RUC commitment, the COG is not eligible to receive a RUC Award.

27.7.5 Constrained Output Generators in the Real-Time Market.

A COG that can be started up and complete its Minimum Run Time within a five-hour period can be committed by the STUC. A COG that can be started up within the Time Horizon of a RTUC run can be committed by the RTUC. The RTD will dispatch a COG up to its PMax or down to zero (0) to ensure a feasible Real-Time Dispatch. The COG is eligible to set the RTM LMP in any Dispatch Interval in which a portion of its output is needed to serve Demand, not taking into consideration its Minimum Run Time constraint. For the purpose of making this determination and setting the RTM LMP, the CAISO treats a COG as if it were flexible with an infinite Ramp Rate between zero (0) and its PMax, and uses the COG's Calculated Energy Bid. In any Dispatch Interval where none of the output of a COG is needed as a flexible resource to serve Demand, the CAISO shall not dispatch the unit. In circumstances in which the output of the COG is not needed as a flexible resource to serve Demand, but the unit nonetheless is online as a result of a previous commitment or Dispatch Instruction by the CAISO, the COG is eligible for Minimum Load Cost compensation.

28 INTER-SC TRADES

28.1 INTER-SC TRADES OF ENERGY

28.1.1 Purpose.

Scheduling Coordinators submit Inter-SC Trades of Energy consistent with the provisions in this Section 28.

28.1.2 Availability of Inter-SC Trades of Energy.

The CAISO allows Inter-SC Trades of Energy at individual PNodes of Generating Units and unique Aggregated Pricing Nodes of Physical Scheduling Plants within the CAISO Balancing Authority Area and at Aggregated Pricing Nodes that are either defined Trading Hubs or Default LAPs. The CAISO does not allow Inter-SC Trades of Energy at Scheduling Points. The CAISO allows submission of Inter-SC Trades of Energy in the DAM and the HASP. Inter-SC Trades of Energy submitted for the DAM are settled at the hourly DAM LMP at the applicable Aggregated Pricing Nodes or PNodes. Inter-SC Trades of Energy submitted in the HASP are settled hourly based on the simple average of the RTM Dispatch Interval LMPs at the applicable Aggregated Pricing Nodes or PNodes.

28.1.3 Submission of Inter-SC Trades of Energy.

A Scheduling Coordinator may submit Inter-SC Trades of Energy that it intends to have settled based on DAM LMPs at any time during the Day-Ahead Inter-SC Trade Period and may submit Inter-SC Trades of Energy for a particular hour that it intends to have settled based on the simple average of the RTM Dispatch Interval LMPs during that hour at any time during the HASP Inter-SC Trade Period.

28.1.4 Information Requirements.

An Inter-SC Trade of Energy must consist of trades from both Scheduling Coordinators and contain the following information: (i) the Scheduling Coordinator ID Code (SCID) of the Scheduling Coordinator from which the Energy is traded; (ii) the SCID of the Scheduling Coordinator to which the Energy is traded; (iii) the location of the Energy trade; (iv) the CAISO Market the trade is to be settled in; (v) the time period over which the bilateral Energy trade will take place, including the start-date and Trading Hour and the end-date and Trading Hour; and (vi) the quantity (MWh) of the Energy traded.

28.1.5 General Validation Rules for Inter-SC Trades.

For all Inter-SC Trades of Energy the CAISO shall verify that the Scheduling Coordinators for the Inter-SC Trade of Energy mutually agree on the quantity, location, time period, and CAISO Market (for pricing purposes, i.e., DAM or RTM) for settling the Inter-SC Trade of Energy. Any individual Inter-SC Trade of Energy that is deemed invalid by the CAISO due to inconsistencies between the trading Scheduling Coordinators on these terms will be rejected. The CAISO will notify trading Scheduling Coordinators within a reasonable time if their Inter-SC Trades of Energy fail these general validation rules as described in the Business Practice Manuals.

28.1.6 Validation Procedures for Physical Trades.

All Inter-SC Trades at PNodes and all Inter-SC Trades of Physical Scheduling Plants at their unique Aggregated Pricing Nodes will be subject to validation procedures as specified in this Section. Physical Trades can occur at any individual Generating Unit's PNode or a Physical Scheduling Plant's Aggregated Pricing Node provided the Physical Trade satisfies the CAISO's Physical Trades validation procedures described herein. The Scheduling Coordinators must demonstrate that the trade is supported (directly or through an Inter-SC Trade of Energy with another Scheduling Coordinator) by a Day-Ahead Schedule or HASP Advisory Schedule for a Generating Unit or Physical Scheduling Plant at the same location for the Inter-SC Trade of Energy at a level greater than or equal to the amount of the Inter-SC Trade of Energy. The CAISO's validation procedures for Physical Trades include three components: (1) Physical Trade submittal screening, (2) Physical Trade pre-market validation, and (3) Physical Trade post-market confirmation.

28.1.6.1 Physical Trade Submittal Screening.

The CAISO's Physical Trade validation procedures begin upon initial submission of a Physical Trade to the CAISO. The first stage of that process, Physical Trade submittal screening, validates that the submitted Physical Trade does not exceed the PMax of the identified Generating Unit or Physical Scheduling Plant. The CAISO will reject Physical Trades that exceed the PMax and notify the responsible Scheduling Coordinators.

28.1.6.2 Physical Trade Pre-Market Validation.

The purpose of the pre-market validation is to determine whether the total MWh quantity of all submitted Physical Trades at a PNode of an individual Generating Unit or the Aggregated Pricing Node of a Physical Scheduling Plant exceeds the resource's Energy Bid MWh. Pre-market validation is performed on all Physical Trades that pass the submittal screening set forth in Section 28.1.6.1. Scheduling Coordinators are notified within a reasonable time of their Physical Trades status as the CAISO conducts the pre-market validation to indicate, at a minimum, whether the Physical Trade is currently "conditionally valid", "conditionally invalid", or "conditionally modified." These Physical Trade notices are preliminary and subject to change until the final pre-market validation at the close of the relevant Inter-SC Trade Period. A Physical Trade with a "conditionally valid" or "conditionally modified" status may be rendered "conditionally invalid" due to the actions of the Scheduling Coordinators to that Physical Trade or by other trading activities that are linked to the Generating Unit identified for the relevant Physical Trade whenever the quantities specified in the relevant Inter-SC Trades cannot be supported by the underlying Bid. Scheduling Coordinators can use these status notices to make modifications to complete or correct invalid Physical Trades. The CAISO also performs cyclic pre-market validation prior to the close of the relevant Inter-SC Trade Period. Physical Trades that are individually valid are concatenated (daisy chained) with other supporting Physical Trades at the same PNode or Aggregated Pricing Node of the Generating Unit or Physical Scheduling Plant. Once that concatenation is complete, the CAISO will determine whether the concatenated Physical Trades are physically supported by either another Inter-SC Trade of Energy at that same location or the Bid submitted in the relevant CAISO Market on behalf of the resource for that Physical Trade, individually and in the aggregate. If a Physical Trade is not adequately physically supported, the quantities in the Physical Trades of that Scheduling Coordinator and its downstream trading counter-parties are reduced on a pro-rata basis until those Physical Trades are valid. In performing physical pre-market validation of Inter-SC Trades of Energy in HASP, the CAISO also

considers final Inter-SC Trades of Energy for the DAM in determining whether the HASP Physical Trades are physically supported individually or in the aggregate. Specifically, the CAISO determines whether the resource's submitted Bid in HASP is greater than or equal to the sum of: (1) final Day-Ahead Inter-SC Trades of Energy at that location, (2) the additional Inter-SC Trades of Energy for the HASP at that location and (3) the sum of all upward Day-Ahead Ancillary Services Awards at that location. If the amounts are greater than the resource's submitted Bids in HASP, the CAISO will adjust down on a prorated basis the HASP Physical Trades. Final Day-Ahead Physical Trades are not adjusted in the HASP pre-market validation. The CAISO does not perform any Settlement on Physical Trade quantities (MWh) that are curtailed during Physical Trade pre-market validation.

28.1.6.3 Physical Trade Post-Market Confirmation.

The CAISO conducts post-market confirmation of Physical Trades that pass pre-market validation in Section 28.1.6.2 after the Market Clearing and the market results are posted to ensure that the Generating Unit or Physical Scheduling Plant has a Schedule that can support all of the Physical Trades. During the post-market confirmation process, the MWh quantity of Physical Trades that passed the CAISO's pre-market validation process may be reduced if the resource supporting the Physical Trades has a HASP Advisory Schedule that is, on average, below the quantity of Physical Trades at that Location. The MWh quantities of Physical Trades that are reduced during the post-market confirmation process are settled at the Existing Zone Generation Trading Hub price for the Existing Zone associated with the resource identified in the Inter-SC Trade of Energy. The portion of Physical Trades that remains intact will be settled at the relevant LMP for the identified PNode for the Generating Unit or Aggregated Pricing Node for the Physical Scheduling Plant.

28.1.6.4 Inter-SC Trades of Energy at Aggregated Pricing Nodes.

Inter-SC Trades of Energy at Aggregated Pricing Nodes that are also defined Trading Hubs or Default LAPs are subject to the general validation procedures in Section 28.1.5 but are not subject to the three-stage physical validation procedures for Physical Trades described in Section 28.1.6 above.

Unit may include Generation Distribution Factors as part of its Supply Bid. If the Scheduling Coordinator has not submitted the Generation Distribution Factors applicable for the Bid, the CAISO will use default Generation Distribution Factors stored in the Master File. All Generation Distribution Factors used by the CAISO will be normalized based on Outage data that is available to the automated market systems. Combined-cycle Generating Units may only be registered under a single Resource ID.

30.5.2.3 Supply Bids for Participating Loads, Including Pumped-Storage Hydro Units and Aggregated Participating Loads.

In addition to the common elements listed in Section 30.5.2.1, Scheduling Coordinators submitting Supply Bids for Participating Loads, which includes Pumping Load or Pumped-Storage Hydro Units, may include the following components: Pumping Level (MW), Minimum Load Bid (Generation mode only of a Pumped-Storage Hydro Unit), Load Distribution Factor, Ramp Rate, Energy Limit, Pumping Cost, and Pump Shut-Down Costs. If no values for Pumping Cost or Pump Shut-Down Costs are submitted, the CAISO will generate these Bid components based on values in the Master File. Scheduling Coordinators may only submit Supply Bids for Aggregated Participating Loads by using a Generating Unit or Physical Scheduling Plant Resource ID for the Demand reduction capacity represented by the Aggregated Participating Load as set forth in a Business Practice Manual. The CAISO will use Generation Distribution Factors provided by the Scheduling Coordinator for the Aggregated Participating Load.

30.5.2.4 Supply Bids for System Resources.

In addition to the common elements listed in Section 30.5.2.1, Supply Bids for System Resources shall also contain: the relevant Ramp Rate; Start-Up Costs; and Minimum Load Costs. Resource-Specific System Resources may elect the Proxy Cost option or Registered Cost option for Start-Up Costs and Minimum Load Costs as provided in Section 30.4. Other System Resources are not eligible to recover Start-Up Costs and Minimum Load Costs. Resource-Specific System Resources are eligible to

\$/MW per hour as desired for each Ancillary Service. The Bid for each Ancillary Services is a single Bid segment. Only resources certified by the CAISO as capable of providing Ancillary Services are eligible to provide Ancillary Services. In addition to the common elements listed in Section 30.5.2.1, all Ancillary Services Bid components of a Supply Bid must contain the following: (1) the type of Ancillary Service for which a Bid is being submitted; (2) Ramp Rate (Operating Reserve Ramp Rate and Regulation Ramp Rate, if applicable); (3) Distribution Curve for Physical Scheduling Plant or System Unit; and (4) Maximum Operating Limit (MOLmax) and Minimum Operating Limit (MOLmin). An Ancillary Services Bid submitted to the Day-Ahead Market when submitted to the Day-Ahead Market may be, but is not required to be, accompanied by an Energy Bid that covers the capacity offered for the Ancillary Service. Submissions to Self-Provide an Ancillary Services submitted to the Day-Ahead Market when submitted to the Day-Ahead Market may be, but are not required to be, accompanied by an Energy Bid that covers the capacity to be self-provided; provided, however, that such an Energy Bid shall be submitted prior to the close of the Real-Time Market for the day immediately following the Day-Ahead Market in which the Ancillary Service Bid was submitted if the Submission to Self-Provide an Ancillary Service is qualified as specified in Section 8.6. Submissions to Self-Provide an Ancillary Services submitted in the Day-Ahead Market must be accompanied by a Self-Schedule. When submitting Ancillary Service Bids in the Real-Time, Scheduling Coordinators for resources that either have been awarded or self-provide Spinning Reserve or Non-Spinning Reserve capacity in the Day-Ahead Market must submit an Energy Bid for at least the awarded or self-provided Spinning Reserve or Non-Spinning Reserve capacity, otherwise the CAISO will apply the Bid validation rules described in Section 30.7.6.1. As provided in Section 30.5.2.6.4, a Submission to Self-Provide an Ancillary Service shall contain all of the requirements of a Bid for Ancillary Services with the exception of Ancillary Service Bid price information. In addition, Scheduling Coordinators must comply with the Ancillary Services requirements of Section 8.

30.5.2.6.1 Regulation Up or Regulation Down Bid Information.

In the case of Regulation Up or Regulation Down, the Ancillary Services Bid must also contain: (a) the upward and downward range of generating capacity over which the resource is willing to provide Regulation within a range from a minimum of ten (10) minutes to a maximum of thirty (30) minutes; and (b) the Bid price of the capacity reservation, stated separately for Regulation Up and Regulation Down (\$/MW). In the case of Regulation Up or Regulation Down from Dynamic System Resources, the Ancillary Services Bid must also contain: (a) the Scheduling Point (the name), (b) Interchange ID code of the selling entity, (c) external Balancing Authority Area ID, (d) Schedule ID (NERC ID number), and (e) the Contract Reference Number, if applicable. Ancillary Services Bids submitted to the Real-Time Market for Regulation need not be accompanied by an Energy Bid that covers the Ancillary Services capacity being offered into the Real-Time Market. A Regulation Down Bid will be erased unless there is an Energy Bid or Self-Schedule at a level that would permit the resource to provide Regulation Down to its lower Regulation Limit.

30.5.2.6.2 Spinning Reserve Capacity Bid Information.

In the case of Spinning Reserve capacity, the Ancillary Services Bid must also contain: (a) MW of additional capability synchronized to the system, immediately responsive to system frequency, and available within ten (10) minutes; (b) Bid price of capacity reservation, and (c) an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency (Contingency Flag). In the case of Spinning Reserve capacity from System Resources, the Ancillary Services Bid must also contain: (a) Interchange ID code of the selling entity, (b) Schedule ID (NERC ID number, and (c) a Contract Reference Number, if applicable. Ancillary Services Bids and Submissions to Self-Provide an Ancillary Services submitted to the Real-Time Market for Spinning Reserves must also submit an Energy Bid that covers the Ancillary Services capacity being offered into the Real-Time Market.

30.5.2.6.3 Non-Spinning Reserve Capacity.

In the case of Non-Spinning Reserve, the Ancillary Service Bid must also contain: (a) the MW capability available within ten (10) minutes; (b) the Bid price of the capacity reservation; (c) time of synchronization following notification (minutes); and (d) an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency (Contingency Flag). In the case of Non-Spinning Reserve Capacity from System Resources, the Ancillary Services Bid must also contain: (a) Interchange ID code of the selling entity, (b) Schedule ID (NERC ID number); and (c) a Contract Reference Number, if applicable. In the case of Non-Spinning Reserve Capacity from Participating Load within the CAISO Balancing Authority Area, the Ancillary Service Bid must also contain: (a) a Load identification name and Location Code, (b) Demand reduction available within ten (10) minutes, (c) time to interruption following notification (minutes), and (d) maximum allowable curtailment duration (hour). In the case of Aggregated Participating Load, Scheduling Coordinators must submit Bids using a Generating Unit or Physical Scheduling Plant Resource ID for the Demand reduction capacity of the Aggregated Participating Load through a Bid to provide Non-Spinning Reserve or a Submission to Self-Provide an Ancillary Service for Non-Spinning Reserve. Ancillary Services Bids and Submissions to Self-Provide an Ancillary Services submitted to the Real-Time Market for Non-Spinning Reserves must also submit an Energy Bid that covers the Ancillary Services capacity being offered into the Real-Time Market.

30.5.2.6.4 Additional Rules For Self-Provided Ancillary Services.

Scheduling Coordinators electing to self-provide Ancillary Services shall supply the information referred to in this Section 30.5 in relation to each Ancillary Service to be self-provided, excluding the capacity price information, but including the name of the trading Scheduling Coordinator in the case of Inter-Scheduling Coordinator Ancillary Service Trades. The portion of the Energy Bid that corresponds to the high end of the resource's operating range, shall be allocated to any awarded or Self-Provided Ancillary

30.5.3.1 Demand Bids Components.

Demand Bids must have the following components: Scheduling Coordinator ID code; a Demand Bid curve that is a monotonically decreasing staircase function of no more than ten (10) segments defined by eleven (11) ordered pairs of MW and \$/MWh; Location Code for the LAP, Custom LAP or PNode, as applicable; and hourly scheduled MWh within the range of the Bid curve, including any zero values, for each Settlement Period of the Trading Day.

30.5.3.2 Exceptions to Requirement for Submission of Demand Bids and Settlement at the LAP.

The following are exceptions to the requirement that Demand Bids be submitted and settled at the LAP:

- (a) ETC or TOR Self-Schedules submitted consistent with the submitted TRTC Instructions;
- (b) Participating Load and Aggregated Participating Load Bids for Supply and Demand may be submitted and settled at a PNode or Custom LAP, as appropriate; and
- (c) Export Bids are submitted and settled at Scheduling Points, which do not constitute a LAP.

30.5.4 Wheeling Through Transactions.

A Wheeling Through transaction consists of an Export Bid and an Import Bid with the same Wheeling reference (a unique identifier for each Wheeling Through transaction). If the Wheeling reference does not match at the time the relevant market closes, the Wheeling Through transaction will be erased; this includes any Energy Bid or Self-Schedule for the resource for that Trading Hour. Wheeling Through transactions with matching Wheeling references will be kept balanced in the IFM and in the HASP and RTM; that is, to the extent an Export Bid or Import Bid or Self-Schedule specify different quantities, only that matching quantity will clear the CAISO Markets.

capacity for Regulation, or Operating Reserves on the Generating Units, System Units, Participating Loads and external imports/exports bid. The Scheduling Coordinator will be notified within a reasonable time of any validation errors. For each error detected, an error message will be generated by the CAISO in the Scheduling Coordinator's notification screen, which will specify the nature of the error. The Scheduling Coordinator can then look at the notification messages to review the detailed list of errors, make changes, and resubmit if it is still within the CAISO's timing requirements. The Scheduling Coordinator is also notified of successful validation. If a resource is awarded or has qualified Self-Provided Ancillary Services in the Day-Ahead Market, if no Energy Bid is submitted to cover the awarded or Self-Provided Ancillary Services by the Market Close of HASP and the RTM, the CAISO will generate or extend an Energy Bid as necessary to cover the awarded or Self-Provided Ancillary Services capacity using the registered values in the Master File and relevant fuel prices as described in the Business Practice Manuals for use in the HASP and IFM. If an AS Bid or Submission to Self-Provide an AS is submitted in the Real-Time for Spinning Reserve or Non-Spinning Reserve without an accompanying Energy Bid at all, the AS Bid or Submission to Self-Provide an Ancillary Service will be erased. If an AS Bid or Submission to Self-Provide an AS is submitted in the Real-Time Market for Spinning Reserve and Non-Spinning Reserve with only a partial Energy Bid for the AS capacity, the CAISO will generate an Energy Bid for the uncovered portions. For Generating Units with certified Regulation capacity, if there no Bid for Regulation in the Real-Time Market, but there is a Day-Ahead award for Regulation Up or Regulation Down or a submission to self-provide Regulation Up or Regulation Down, respectively, the CAISO will generate a Regulation Up or Regulation Down Bid at the default Ancillary Service Bid price of \$0 up to the certified Regulation capacity for the Generating Unit minus any Regulation awarded or self-provided in the Day-Ahead. If there is a Bid for Regulation Up or Regulation Down in the Real-Time Market, the CAISO will increase the respective Bid up to the certified Regulation capacity for the Generating Unit minus any Regulation awarded or self-provided in the Day-Ahead. If a Self-Schedule amount is greater than the Regulation Limit for Regulation Up, the Regulation Up Bid will be erased.

- (d) The last Ramp Rate entry shall be equal to the previous Ramp Rate entry and represent the maximum operating capacity of the resource as registered in the Master File. The resulting Operational Ramp Rate segments must lie between the minimum and maximum Operational Ramp Rates, as registered in the Master File.
- (e) The submitted Operational Ramp Rate must be the same for each hour of the Trading Day, i.e., the Operational Ramp Rate submitted for a given Trading Hour must be the same with the one(s) submitted earlier for previous Trading Hours in the same Trading Day.
- (f) Outages that affect the submitted Operational Ramp Rate must be due to physical constraints, reported in SLIC and are subject to CAISO approval. All approved changes to the submitted Operational Ramp Rate will be used in determination of Dispatch Instructions for the shorter period of the balance of the Trading Day or duration of reported Outage.
- (g) Operational Ramp Rate derates in SLIC may be declared for any operational segment established in the Master File. Ramping capability through Forbidden Operating Regions are not affected by derates entered in SLIC.
- (h) The amount of change in Ramp Rates from one operating range to a subsequent operating range must not exceed a 10 to 1 ratio, and any Ramp Rate change in excess will be adjusted to achieve the 10 to 1 ratio. This adjustment will also include the implicit ramp rate in the Forbidden Operating Region.
- (i) For all CAISO Dispatch Instructions of Reliability Must-Run Units the Operational Ramp Rate will be the Ramp Rate declared in the Reliability Must Run Contract Schedule A.

using Demand Bids as in the IFM the MPM-RRD process optimizes resources to meet one hundred percent of the CAISO Demand Forecast and Export Bids to the extent the Export Bids are selected in the MPM-RRD process, and meet one hundred percent of Ancillary Services requirements based on Supply Bids submitted to the DAM. The pool of resources identified in the MPM-RRD process is then passed to the IFM to constitute the pool of resources available for commitment in the IFM. The CAISO performs the MPM-RRD for the DAM for the twenty-four (24) hours of the targeted Trading Day.

31.2.1 The Reliability and Market Power Mitigation Runs.

The first run of the MPM-RRD procedures is the Competitive Constraints Run (CCR), in which only limits on transmission lines pre-designated as competitive are enforced. The only RMR Units considered in the CCR are Condition 1 RMR Units that have provided market Bids for the DAM and Condition 2 RMR Units when obligated to submit a Bid pursuant to an RMR Contract. The second run is the All Constraints Run (ACR), during which all transmission Constraints are enforced. All RMR Units, Condition 1 and Condition 2, are considered in the ACR. The resources committed in the ACR form the pool of resources that is available for commitment in the IFM.

31.2.2 Bid Mitigation.

The CAISO shall compare the resource dispatch levels derived from CCR and ACR and will mitigate Bids as follows.

31.2.2.2 Non-RMR Units.

If the dispatch level produced through the ACR is greater than the dispatch level produced through CCR, then the resource is subject to Local Market Power Mitigation, in which case the entire portion of the unit's Energy Bid Curve that is above the CCR dispatch level will be mitigated to the lower of the Default Energy Bid as specified in Section 39, or the DAM Bid, but no lower than the unit's highest Bid price that cleared the CCR. When the ACR dispatch level is higher than the CCR level, the market Bid at and below the CCR dispatch level will be retained in the IFM. If the dispatch level produced through the ACR is not greater than the dispatch level produced through the CCR, the unit's original, unmitigated DAM Bid will be retained in its entirety.

31.3 Integrated Forward Market.

After the MPM-RRD and prior to RUC, the CAISO shall perform the IFM. The IFM performs Unit Commitment and Congestion Management, clears the Energy Bids as modified and in the MPM-RRD, taking into account transmission limits and honoring technical and inter-temporal operating Constraints, such as Minimum Run Times, and procures Ancillary Services to meet one hundred percent (100%) of the CAISO Forecast of CAISO Demand requirements. The IFM utilizes a set of integrated programs that: (1) determine Day-Ahead Schedules and AS Awards, and related LMPs and ASMPs; and (2) optimally commits resources that are bid in to the DAM. The IFM utilizes a SCUC algorithm that optimizes Start-Up Costs, Minimum Load Costs, and Energy Bids along with any Bids for Ancillary Services as well as Self-Schedules submitted by Scheduling Coordinators. The IFM also provides for the optimal management of Use-Limited Resources. The ELS Resources committed through the ELC Process conducted two days before the day the IFM process is conducted for the next Trading Day as described in Section 31.7 are binding.

31.3.1.3 Reduction of Self-Scheduled LAP Demand.

In the IFM, to the extent the market software cannot resolve a non-competitive transmission Constraint utilizing Effective Economic Bids such that Self-Scheduled Load at the LAP level would otherwise be reduced to relieve the Constraint, the CAISO Market software will adjust Non-priced Quantities in accordance with the process and criteria described in Section 27.4.3. For this purpose the priority sequence, starting with the first type of Non-priced Quantity to be adjusted, will be:

(a) Schedule the Energy from Self-Provided Ancillary Service Bids from capacity that is obligated to offer an Energy Bid under a must-offer obligation such as from an RMR Unit or a Resource Adequacy Resource. Consistent with Section 8.6.2, the CAISO Market software could also utilize the Energy from Self-Provided Ancillary Service Bids from capacity that is not under a must-offer obligation such as from an RMR or a Resource Adequacy Resource, to the extent the Scheduling Coordinator has submitted an Energy Bid for such capacity. The associated Energy Bid prices will be those resulting from the MPM process.

(b) Relax the Constraint consistent with Section 27.4.3.1, and establish prices consistent with Section 27.4.3.2. No Constraints on Interties with adjacent Balance Authority Areas will be relaxed in this procedure.

31.3.1.4 Eligibility to Set the Day-Ahead LMP.

All Generating Units, Participating Loads, non-Participating Loads, System Resources, System Units, or Constrained Output Generators subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates, Forbidden Operating Regions, or other temporal constraints are eligible to set the LMP, provided that (a) the Schedule for the Generating Unit or Resource-Specific System Resource is between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Schedule for the Participating Load, non-Participating Load, non-Resource-Specific System Resource, or System Unit is between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Schedule is constrained by its

Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, (c) the resource is constrained by a boundary of a Forbidden Operating Region or is Ramping through a Forbidden Operating Region, or (d) the resource's full Ramping capability is constraining its inter-hour change in Schedule, the resource cannot be marginal and thus is not eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A Constrained Output Generator will be eligible to set the hourly LMP if any portion of its Energy is necessary to serve Demand.

each hour of the next Trading Day. RUC Capacity is selected by a SCUC optimization that uses the same FNM used in the IFM to help ensure the deliverability of Energy from the RUC Capacity.

31.5.1 RUC Participation.

31.5.1.1 Capacity Eligible for RUC Participation.

RUC participation is voluntary for capacity that has not been designated as Resource Adequacy Capacity. Scheduling Coordinators may make such capacity available for participation in RUC by submitting a RUC Availability Bid, provided the Scheduling Coordinator has also submitted an Energy Bid for such capacity into the IFM. Capacity from Non-Dynamic System Resources that has not been designated Resource Adequacy Capacity is not eligible to participate in RUC. Capacity from resources including System Resources that has been designated as qualified Resource Adequacy Capacity must participate in RUC. RUC participation is required for Resource Adequacy Capacity to the extent that Resource Adequacy Capacity is not committed following the IFM. System Resources eligible to participate in RUC will be considered on an hourly basis; that is, RUC will not observe any multi-hour block constraints. RUC will observe the Energy Limits that may have been submitted in conjunction with Energy Bids to the IFM. RMR Unit capacity will be considered in RUC in accordance with Section 31.5.1.3. MSS resources may participate in RUC in accordance with Section 31.5.2.3. COG resources are accounted for in RUC, but may not submit or be paid RUC Availability Payments. The ELS Resources committed through the ELC Process conducted two days before the day the RUC process is conducted for the next Trading Day as described in Section 31.7 are binding.

31.5.1.2 RUC Availability Bids.

Scheduling Coordinators may only submit RUC Availability Bids for capacity (above the Minimum Load) for which they are also submitting an Energy Bid to participate in the IFM. The RUC Availability Bid for the Resource Adequacy Capacity submitted by a Scheduling Coordinator must be \$0/MW per hour for the entire Resource Adequacy Capacity. If the Scheduling Coordinator fails to submit a \$0/MW per hour for

Resource Adequacy Capacity, the CAISO will insert the \$0/MW per hour for the full amount of Resource Adequacy Capacity for a given resource. Scheduling Coordinators may submit non-zero RUC Availability Bids for the portion of a resource's capacity that is not Resource Adequacy Capacity.

31.5.1.3 RMR Generation Resources.

If a resource is determined to have an RMR Generation requirement for any Trading Hour of the next day, either by the MPM-RRD process or by the CAISO through a manual RMR Dispatch Notice, and if any portion of the RMR Generation requirement has not been cleared in the IFM, the entire portion of the RMR Generation requirement will be represented as a RMR Generation Self-Schedule in the RUC.

31.5.1.4 Eligibility to Set the RUC Price.

All resources that are eligible for RUC participation as described in Section 31.5.1.1 with RUC Bids that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the RUC Price, provided that (a) the RUC Schedule for the Generating Unit or Resource-Specific System Resource is between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Schedule for the eligible resource other than a Generating Unit or Resource-Specific System Resource is between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Schedule is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch or (c) the resource's full Ramping capability is constraining its inter-hour change in Schedule, the resource cannot be marginal and thus is not eligible to set the RUC Price. Resources identified as MSS Load following resources are not eligible to set the RUC Price.

31.5.2 Metered Subsystem RUC Obligation.

MSS Operators are permitted to make an annual election to opt-in or opt-out of RUC participation. MSS Operators that elect to Load follow are automatically considered to opt-out of the RUC participation. Prior to the deadline for the annual CRR Allocation and CRR Auction process, as specified in Section 36, an MSS Operator that has selected not to Load follow shall notify the CAISO of its RUC participation option for the following CRR cycle.

31.5.2.1 MSS Operator Opts-In to RUC Procurement.

If the MSS Operator opts-in to the RUC procurement process, the Scheduling Coordinator for the MSS will be treated like any other Scheduling Coordinator that submits a Bid in the DAM with respect to RUC procurement by the CAISO and allocation of RUC costs. The CAISO will consider the CAISO Demand Forecast of the MSS Demand in setting the RUC procurement target, and the Scheduling Coordinator for the MSS will be responsible for any applicable allocation of costs related to the Bid Cost Recovery for RUC as provided in Section 11.8.

31.5.2.2 MSS Operator Opts-out of RUC Procurement.

If an MSS Operator opts out of the RUC procurement process, the CAISO shall not consider the CAISO Demand Forecast of the MSS Demand in setting the RUC procurement target, and will not commit

Generation Units, net imports and Participating Loads plus the Minimum Load Energy committed by RUC is not greater than a configurable percentage of the system CAISO Forecast of CAISO Demand.

- (c) The CAISO can limit the amount of RUC Capacity it will procure from resources that could otherwise be started during the Operating Day based on operational factors such as: 1) historical confidence that a Short Start Unit actually starts when needed based on the assessment of the CAISO Operators of the historical performance of Short Start Units; 2) need to conserve the number of run-hours and number of starts per year for critical loading periods; and 3) seasonal Constraints such as Overgeneration. The CAISO will verify that the total Day-Ahead Schedules and RUC Capacity from such resources is not greater than a configurable percentage of the total available capacity of all such resources.

31.5.5 Selection and Commitment of RUC Capacity.

Capacity that is not already scheduled in the IFM may be selected as RUC Capacity through the RUC process of the DAM. The RUC optimization will select RUC Capacity and produce nodal RUC Prices by minimizing total Bid cost based on RUC Availability Bids and Start-Up and Minimum Load Bids. RUC will not consider Start-Up and Minimum Load Bids for resources already committed in the IFM. The RUC Capacity of a resource is the incremental amount of capacity selected in RUC above the resource's Day-Ahead Schedule. The resource's Day-Ahead Schedule plus its RUC Capacity comprise the resource's RUC Schedule. The CAISO will only issue RUC Start-Up Instructions to resources committed in RUC that must receive a Start-Up Instruction in the Day-Ahead in order to be available to meet Real-Time Demand. RUC Schedules will be provided to Scheduling Coordinators even if a RUC Start-Up Instruction is not issued at that time. RUC shall not reverse commitments issued through the IFM. If the RUC process cannot find a feasible solution given the resources committed in the IFM, the RUC process will adjust Constraints as described in Section

31.5.7.1 Rescission of Payments for Undispatchable RUC Capacity.

The CAISO shall calculate the Real-Time ability of each Generating Unit, Participating Load, System Unit or System Resource to deliver Energy from or capacity committed in RUC for each Settlement Interval based on its maximum operating capability, actual telemetered output, and Operational Ramp Rate as described in Section 30.10. If the Undispatchable Capacity is capacity committed in RUC and is from a Generating Unit, System Unit or System Resource that is a Resource Adequacy Resource, there is no payment obligation to the CAISO for the Undispatchable Capacity. The CAISO will report the instance of non-compliance by the Resource Adequacy Resource to the appropriate Local Regulatory Authority.

31.5.7.2 Rescission of Payments for Undelivered RUC Capacity.

For each Settlement Interval in which a Generating Unit, Participating Load, System Unit or System Resource fails to supply Energy from capacity committed in RUC in accordance with a Dispatch Instruction, or supplies only a portion of the Energy specified in the Dispatch Instruction, the RUC Availability Payment will be reduced to the extent of the deficiency, in accordance with the provisions of Section 11.2.2.2.2.

31.6 Timing of Day-Ahead Scheduling.

31.6.1 The CAISO may at its sole discretion implement any temporary variation or waiver of the timing requirements of this Section 31 and Section 6.5.3 (including the omission of any step) if any of the following criteria are met:

33. HOUR-AHEAD SCHEDULING PROCESS (HASP).

The HASP is the hour-ahead process during the Real-Time which consists of the following activities. The HASP includes a special hourly run of the Real-Time Unit Commitment (RTUC), which is also one of the component processes of the RTM. The RTUC utilizes a SCUC optimization and runs every fifteen (15) minutes, as fully described in Section 34. This Section 33 describes the special features of the specific hourly HASP run of the RTUC. The HASP combines provisions for the CAISO to issue hourly pre-dispatch instructions to System Resources that submit Energy Bids to the RTM and for the procurement of Ancillary Services on an hourly basis from System Resources, with provisions for Scheduling Coordinators to self-schedule changes to their Day-Ahead Schedules as provided in Section 33.1, and submit Bids to export Energy at Scheduling Points. The HASP also performs the MPM-RRD procedure with respect to the Bids that will be used in the HASP optimization and in the RTM processes for the same Trading Hour.

33.1 Submission of Bids for the HASP and RTM.

Scheduling Coordinators may submit Bids, including Self-Schedules, for Supply that will be used for the HASP and the RTM processes starting from the time Day-Ahead Schedules have been posted until seventy-five (75) minutes prior to each applicable Trading Hour in the Real-Time. This includes Self-Schedules by Participating Load that is modeled using the Pumped-Storage Hydro Unit. Scheduling Coordinators may not submit Bids, including Self-Schedules, for CAISO Demand in the HASP and RTM. Scheduling Coordinators may submit Bids, including Self-Schedules, for exports at Scheduling Points in the HASP and RTM. The rules for submitted Bids specified in Section 30 apply to Bids submitted to the HASP and RTM. After the Market Close of the HASP and the RTM the CAISO performs a validation process consistent with the provisions set forth in Section 30.7 and the following additional rules. The CAISO will generate a Self-Schedule to cover any RUC Award or Day-Ahead Schedule in the absence of any Self-Schedule or Economic Bid components, or to fill in any gaps between any Self-Schedule Bid and any Economic Bid components to cover a RUC Award or Day-Ahead Schedule. Bids submitted to the HASP and the RTM to supply Energy and Ancillary Services will be considered in the various HASP and RTM processes, including the MPM-RRD process, the HASP optimization, the STUC, the RTUC and the RTD.

33.2 The HASP Optimization.

After the Market Close for the HASP and RTM for the relevant Trading Hour, the Bids have been validated and the MPM-RRD process has been performed, the HASP optimization determines feasible but non-binding HASP Advisory Schedules for Generating Units for each fifteen-minute interval of the Trading Hour, as well as binding hourly HASP Intertie Schedules and binding hourly HASP AS Awards from Non-Dynamic System Resources for that Trading Hour. The HASP may also commit resources whose Start-Up Times are within its Time Horizon. The HASP, like the other runs of the RTUC, utilizes the same SCUC optimization and FNM as the IFM, with the FNM updated to reflect changes in system conditions as appropriate, to ensure that HASP Intertie Schedules are feasible. Instead of clearing against Demand Bids as in the IFM, the HASP clears Supply against the CAISO Forecast of CAISO Demand plus submitted Export Bids, to the extent the Export Bids are selected in the MPM-RRD process. The HASP optimization also factors in forecasted unscheduled flow at the Interties. The HASP optimization produces Settlement prices for hourly imports and exports to and from the CAISO Balancing Authority Area reflected in the HASP Intertie Schedule and for the HASP AS Awards for System Resources.

33.3 Treatment of Self-Schedules in HASP.

The HASP optimization clears Bids, including Self-Schedules, while preserving all priorities in this process consistent with Section 34.10. The HASP optimization does not adjust submitted Self-Schedules unless it is not possible to balance Supply and the CAISO Forecast of CAISO Demand plus Export Bids and manage Congestion using the available Economic Bids, in which case the HASP performs non-economic adjustments to Self-Schedules. The MWh quantities of Self-Schedules of Supply that clear in the HASP constitute a feasible Dispatch for the

33.5 [NOT USED]

33.6 HASP Results.

The CAISO publishes the binding HASP Intertie Schedules and HASP AS Awards for System Resources, as well as HASP Advisory Schedules and HASP AS Awards for internal Generating Units no later than forty-five (45) minutes prior to the Trading Hour.

33.7 [NOT USED]

33.8 HASP Prices for HASP Intertie Schedules and HASP AS Awards.

The RTUC will produce fifteen-minute LMPs for the four fifteen-minute RTUC intervals for the applicable Trading Hour. The fifteen-minute LMPs corresponding to the Scheduling Points are then used to derive a simple average hourly price for the Settlement of hourly Intertie Schedules at each Scheduling Point. HASP Intertie Schedules are settled in accordance with Section 11.4.

33.8.1 Eligibility to Set the HASP Intertie LMP.

All Generating Units, Participating Loads, System Resources, System Units, or COGs subject to the provisions in Section 27.7 with Bids, including Generated Bids, that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the HASP Intertie LMP, provided that (a) the Generating Unit or Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Participating Load, non-Resource-Specific System Resource, or System Unit is Dispatched between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Dispatch is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, or (c) the resource's full Ramping capability is constraining its Dispatch for additional Energy in a target interval, the resource cannot be marginal and thus is not eligible to set the HASP Intertie LMP. Resources identified as MSS Load following resources are not eligible to set the HASP Intertie LMP. A Constrained Output Generator that has the ability to be committed or shut off within the Time Horizon of HASP will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of Regulation resources to a Dispatch Operating Point by SCED will be eligible to set the HASP Intertie LMP.

34. REAL-TIME MARKET.

The RTM is the market conducted by the CAISO during any given Operating Day in which Scheduling Coordinators may provide Real-Time Imbalance Energy and Ancillary Services. The Real-Time Market consists of the Real-Time Unit Commitment (RTUC), the Short-Term Unit Commitment (STUC) and the Real-Time Dispatch (RTD) processes. The Short-Term Unit Commitment (STUC) runs once per hour near the top of the hour and utilizes the SCUC optimization to commit Medium Start, Short Start and Fast Start Units to meet the CAISO Demand Forecast. The CAISO shall dispatch all resources, including Participating Load pursuant to submitted Bids or pursuant to the provisions below on Exceptional Dispatch. In Real-Time, resources are required to follow Real-Time Dispatch Instructions. The Time Horizon of the STUC starts with the third fifteen-minute interval of the current Trading Hour and extends for the next four Trading Hours. The RTUC runs every fifteen (15) minutes and utilizes the SCUC optimization to commit Fast Start and some Short Start resources and to procure any needed AS on a fifteen-minute basis. Any given run of the RTUC will have a Time Horizon of approximately sixty (60) to 105 minutes (four to seven fifteen-minute intervals) depending on when during the hour the run occurs. Not all resources committed in a given STUC or 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. The RTD uses a Security Constrained Economic Dispatch (SCED) algorithm every five minutes throughout the Trading Hour to determine optimal Dispatch Instructions to balance Supply and Demand. Updates to the FNM used in the RTM optimization include current estimates of real-time unscheduled flow at the Interties. The RTD optimization utilizes up to a sixty-five-minute Time Horizon (thirteen (13) five-minute intervals), but the CAISO issues Dispatch Instructions only for the next target five-minute Interval. The RTUC, STUC and RTD processes of the RTM use the same FNM used in the DAM and the HASP, subject to any necessary updates of the FNM pursuant to changes in grid conditions after the DAM has run.

34.1 Inputs to the Real-Time Market.

The RTM utilizes results produced by the DAM and HASP for each Trading Hour of the Trading Day, including the combined commitments contained in the Day-Ahead Schedules, Day Ahead AS Awards, RUC Awards, HASP Intertie Schedules, HASP Self-Schedules, HASP Intertie AS Awards and the MPM-RRD that is run as part of the HASP to determine reliability needs and mitigated bids for each relevant Trading Hour. These results, plus the short-term Demand Forecast, Real-Time Energy Bids, Real-Time Ancillary Service Bids, updated FNM, State Estimator output, resource outage and de-rate information constitute the inputs to the RTM processes. Bids submitted in HASP for all Generating Units and Participating Load shall be used in the Real-Time Market.

34.2 Real-Time Unit Commitment.

The Real-Time Unit Commitment (RTUC) process uses SCUC and is run every fifteen (15) minutes to: (1) make commitment decisions for Fast Start and Short Start resources having Start-Up Times within the Time Horizon of the RTUC process, and (2) 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. 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 four times an hour, at the following times for the following Time Horizons: (1) at approximately 7.5 minutes prior to the next Trading Hour, in conjunction with 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 37.5 minutes into the current hour for T to T+60 minutes where T is the beginning of the next Trade Hour. The HASP, described in Section 33, is a special RTUC run that is performed at approximately 7.5 minutes before each hour and has the additional responsibility of: (1) pre-dispatching Energy and awarding Ancillary Services for hourly dispatched System Resources for the Trading Hour that begins 67.5 minutes later, and (2) performing the necessary MPM-RRD for that Trading Hour.

34.3 Real-Time Dispatch.

The RTD can operate in three modes: RTED, RTCD and RTMD. The RTED uses a Security Constrained Economic Dispatch (SCED) algorithm every five (5) minutes throughout the Trading Hour to determine optimal Dispatch Instructions to balance Supply and Demand. The CAISO will use the Real-Time Economic Dispatch (RTED) under most circumstances to optimally dispatch resources based on their Bids. The RTED can be used to Dispatch Contingency Only Operating Reserves, pursuant to Section 34.8, when needed to avoid an imminent System Emergency. The Real-Time Contingency Dispatch (RTCD) can be invoked in place of the RTED when a transmission or generation contingency occurs and will include all Contingency Only Operating Reserves in the optimization. The Real Time Manual Dispatch (RTMD) will be invoked as a fall-back mechanism only when the RTED or RTCD fails to provide a feasible Dispatch. These three modes of the RTD are described in Sections 34.3.1 to 34.3.3.

- (5) The Dispatch Instructions of a resource for a subsequent Dispatch Interval shall take as a point of reference the actual output obtained from either the State Estimator solution or the last valid telemetry measurement and the resource's operational ramping capability;
- (6) In determining the Dispatch Instructions for a target Dispatch Interval while at the same time achieving the objective to minimize Dispatch costs to meet the forecasted conditions of the entire Time Horizon, the Dispatch for the target Dispatch Interval will be affected by: (a) Dispatch Instructions in prior intervals, (b) actual output of the resource, (c) forecasted conditions in subsequent intervals within the Time Horizon of the optimization, and (d) operational Constraints of the resource, such that a resource may be dispatched in a direction for the immediate target Dispatch Interval that is different than the direction of change in Energy needs from the current Dispatch Interval to the next immediate Dispatch Interval;
- (7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads, over the Time Horizon for the RTM based on submitted Bids, Start-Up Costs and Minimum Load Costs, Pumping Cost and Pump Shut-Down Costs, as appropriate for the resource, consistent with operating characteristics of the resources that the SCED is able to enforce. In making Start-Up or Shut-Down decisions in the RTM, the CAISO may factor in limitations on number of run hours or Start-Ups of a resource to avoid exhausting its maximum number of run hours or Start-Ups during periods other than peak loading conditions;
- (8) The CAISO shall only start up resources that can start within the Time Horizon used by the RTM optimization methodology;

- (9) The RTM optimization may result in resources being shut down consistent with their Bids and operating characteristics provided that: (1) the resource does not need to be on-line to provide Energy, (2) the resource is able to start up within the RTM optimization Time Horizon, (3) the Generating Unit is not providing Regulation or Spinning Reserve, and (4) Generating Units online providing Non-Spinning Reserve may be shut down if they can be brought up within ten (10) minutes as such resources are needed to be online to provide Non-Spinning Reserves; and
- (10) For resources that are both providing Regulation and have submitted Energy Bids for the RTM, Dispatch Instructions will be based on the Operational Ramp Rate if the Dispatch Operating Point remains within the Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation.

34.6 Dispatch Instructions for Generating Units and Participating Load.

The CAISO may issue Dispatch Instructions covering:

- (a) Ancillary Services;
- (b) Energy, which may be used for:
 - (i) Congestion relief;
 - (ii) provision of Imbalance Energy; or
 - (iii) replacement of an Ancillary Service;
- (c) agency operation of Generating Units, Participating Loads or Interconnection schedules, for example:
 - (i) output or Demand that can be Dispatched to meet Applicable Reliability Criteria;
 - (ii) Generating Units that can be Dispatched for Black Start;
 - (iii) Generating Units that can be Dispatched to maintain governor control regardless of their Energy schedules;

a Contingency or an imminent or actual System Emergency. The CAISO may designate any reserve not previously identified as Contingency Only by Scheduling Coordinator as Contingency Only reserves, as necessary to maintain Applicable Reliability Criteria. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the CAISO may dispatch Contingency Only reserves. If Contingency Only reserves are dispatched through the RTCD, which as described in Section 34.3.2, only Dispatches in the event of a Contingency. Such Dispatch and pricing will be based on the original Energy Bids. If Contingency Only reserves are dispatched in response to a System Emergency that has occurred because the CAISO has run out of Economic Bids when no Contingency event has occurred, the RTED will Dispatch such Contingency Only reserves using maximum Bid prices as provided in Section 39.6.1 as the Energy Bids for such reserves and will set prices accordingly. If a Participating Generator, Participating Load, System Unit or System Resource that is supplying Operating Reserve is dispatched to provide Energy, the CAISO shall replace the Operating Reserve as necessary to maintain Applicable Reliability Criteria. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy Applicable Reliability Criteria, the CAISO shall restore the Operating Reserves to the extent necessary to meet Applicable Reliability Criteria through either the procurement of additional Operating Reserve in the RTM or the Dispatch of other Energy Bids in SCED to allow the resources that were providing Energy from the Operating Reserve to return to their Dispatch Operating Point. The Energy Bid Curve is not used by the AGC system when Dispatching Energy from Regulation. For Regulation Up capacity, the upper portion of the resource capacity from its Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve. For a resource providing Regulation Up or Operating Reserves the remaining Energy Bid Curve shall be allocated to any RTM AS Awards in the following order from higher to lower capacity where applicable: (a) Spinning Reserve; and (b) Non-Spinning Reserve. For resources providing Regulation Up, the applicable upper Regulation Limit shall be used as the basis of allocation if it is lower than the upper portion of the Energy Bid Curve. The remaining portion of the Energy Bid Curve, if there is any, shall constitute a Bid for RTM Energy. For Regulation Down capacity, the lower portion of the resource capacity from its applicable Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve.

34.9 Exceptional Dispatch.

The CAISO may issue Exceptional Dispatches for the circumstances described in this Section 34.9, which may require the issuance of forced Shut-Downs or forced Start-Ups and shall be consistent with Good Utility Practice. Dispatch Instructions issued pursuant to Exceptional Dispatches shall be entered manually by the CAISO Operator into the Day-Ahead or RTM optimization software so that they will be accounted for and included in the communication of Day-Ahead Schedules and Dispatch Instructions to Scheduling Coordinators. Exceptional Dispatches are not derived through the use of the IFM or RTM optimization software and are not used to establish the LMP at the applicable PNode. The CAISO will record the circumstances that have led to the Exceptional Dispatch. Except as provided in this Section 34.9, the CAISO shall consider the effectiveness of the resource along with Start-Up Costs and Minimum Load Costs when issuing Exceptional Dispatches to commit a resource to operate at Minimum Load. When the CAISO issues Exceptional Dispatches for Energy, the CAISO shall also consider Energy Bids, if available and as appropriate. The goal of the CAISO will be to issue Exceptional Dispatches on a least-cost basis. Imbalance Energy delivered or consumed pursuant to the various types of Exceptional Dispatch is settled according to the provisions in Section 11.5.6.

34.9.1 System Reliability Exceptional Dispatches.

The CAISO may issue a manual Exceptional Dispatch for Generation Units, System Units, Participating Loads, Dynamic System Resources, and Condition 2 RMR Units pursuant to Section 41.9, in addition to or instead of resources with a Day-Ahead Schedule dispatched by RTM optimization software during a System Emergency, or to prevent an imminent System Emergency or a situation that threatens System Reliability and cannot be addressed by the RTM optimization and system modeling. To the extent possible, the CAISO shall utilize available and effective Bids from resources before dispatching resources without Bids. To deal with any threats to System Reliability, the CAISO may also issue a manual Exceptional Dispatch in the Real-Time for Non-Dynamic System Resources that have not been or would not be selected by the RTM for Dispatch, but for which the relevant Scheduling Coordinator has submitted a Bid into the HASP.

34.9.2 Other Exceptional Dispatch.

The CAISO may also issue manual Exceptional Dispatches for resources in addition to or instead of resources with a Day-Ahead Schedule or dispatched by the RTM optimization software to: (1) perform Ancillary Services testing; (2) perform pre-commercial operation testing for Generating Units; (3) perform PMax testing; (4) mitigate for Overgeneration; (5) provide for Black Start; (6) provide for Voltage Support; (7) accommodate TOR or ETC Self-Schedule changes after the Market Close of the HASP; (8) reverse a commitment instruction issued through the IFM that is no longer optimal as determined through RUC; or (9) in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption; or (10) reverse the operating mode of a Pumped-Storage Hydro Unit. The CAISO will not consider Start-Up Costs, Minimum Load Costs, or Energy Bids in connection with the issuance of Exceptional Dispatches to perform Ancillary Services testing, to perform PMax testing, or to perform pre-commercial operation testing for Generating Units.

34.9.3 Transmission-Related Modeling Limitations.

The CAISO may also manually Dispatch resources in addition to or instead of resources with a Day-Ahead Schedule or dispatched by the RTM optimization software, during or prior to the Real-Time as appropriate, to address transmission-related modeling limitations in the Full Network Model.

Transmission-related modeling limitations for the purposes of Exceptional Dispatch, including for settlement of such Exceptional Dispatch as described in Section 11.5.6, shall consist of any FNM modeling limitations that arise from transmission maintenance, lack of Voltage Support at proper levels as well as incomplete or incorrect information about the transmission network, for which the Participating TOs have primary responsibility. The CAISO shall also manually Dispatch resources under this Section 34.9.3 in response to system conditions including threatened or imminent reliability conditions for which the timing of the Real-Time Market optimization and system modeling are either too slow or incapable of bringing the CAISO Controlled Grid back to reliable operations in an appropriate time-frame based on the timing and physical characteristics of available resources to the CAISO.

34.12 Metered Subsystems.

Scheduling Coordinators that represent MSSs may submit Bids for Supply of Energy to the RTM, irrespective of whether the MSS is a Load following MSS. All Bids submitted for MSS generating resources for the RTM and all Dispatch Instructions shall be generating resource-specific. MSS non-Load following resources are responsible for following Dispatch Instructions. Load following MSS Operators shall provide the CAISO with an estimate of the number of MWs the applicable generating resource(s) will be generating over the next two hours in five-minute interval resolution. The Dispatch Instructions for Load following resources are incorporated with Generation estimates provided by MSS Operators. Such MSS Load following resources can deviate from the Dispatch Instructions in Real-Time to facilitate the following of Load without being subject to the Uninstructed Deviation Penalty as further described in Section 11.23. The State Estimator will estimate all MSS Load in Real-Time and the CAISO will incorporate the information provided by the Load following MSS Operator for utilization in clearing the RTM and its Dispatch Instructions.

34.13 Treatment of Resource Adequacy Capacity in the Real-Time Market.

Resource Adequacy Resources required to offer their Resource Adequacy Capacity in accordance with Section 40 shall be required to submit Energy Bids for: (1) all such Resource Adequacy Capacity and (2) any Ancillary Services capacity awarded or self-provided in the Day-Ahead or Real-Time Market. In the absence of submitted Bids, as part of the validation described in 30.7, Generated Bids will be used for Resource Adequacy Resources required to offer their Resource Adequacy Capacity in accordance with Section 40. For any capacity from a Resource Adequacy Resource not required to offer Resource Adequacy Capacity in accordance with Section 40 that was awarded or is self-providing Operating Reserves capacity in the Day-Ahead Market, Scheduling Coordinators must submit an Energy Bid for no less than the amount of awarded or self-provided Operating Reserves capacity above their Day-Ahead

- (c) Operational Ramp Rates and Start-Up Times. The submitted Operational Ramp Rate for resources shall be used as the basis for all Dispatch Instructions, provided that the Dispatch Operating Point for resources that are providing Regulation remains within their applicable Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation. The Ramp Rate for Non-Dynamic System Resources cleared in the HASP will not be observed. Rather, the ramp of the Non-Dynamic System Resource will respect inter-Balancing Authority Area Ramping conventions established by WECC. Ramp Rates for Dynamic System Resources will be observed like Participating Generators in the RTD. Each Energy Bid shall be Dispatched only up to the amount of Imbalance Energy that can be provided within the Dispatch Interval based on the applicable Operational Ramp Rate. The Dispatch Instruction shall consider the relevant Start-Up Time as, if the resource is off-line, the relevant Operational Ramp Rate function, and any other resource constraints or prior commitments such as Schedule changes across hours and previous Dispatch Instructions. The Start-Up Time shall be determined from the Start-Up Time function and when the resource was last shut down. The Start-Up Time shall not apply if the corresponding resource is on-line or expected to start.

- (d) Maximum number of daily Start-Ups. The SCED shall not cause a resource to exceed its daily maximum number of Start-Ups.
- (e) Minimum Run Time and Down Time. The SCED shall not start up off-line resources before their Minimum Down Time expires and shall not shut down on-line resources before their Minimum Run Time expires.
- (f) Operating (Spinning and Non-Spinning) Reserve. The SCED shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.16.3.
- (g) Non-Dynamic System Resources. If Dispatched, each Non-Dynamic System Resource flagged for hourly pre-dispatch in the next Trading Hour shall be Dispatched to operate at a constant level over the entire Trading Hour. The HASP shall perform the hourly pre-dispatch for each Trading Hour once prior to the Operating Hour. The hourly pre-dispatch shall not subsequently be revised by the SCED and the resulting HASP Intertie Schedules are financially binding and are settled pursuant to Section 11.4.
- (h) Daily Energy use limitation to the extent that Energy limitation is expressed in a resource's Bid. If the Energy Limits are violated for purposes of Exceptional Dispatches for System Reliability, the Bid will be settled as provided in Section 11.5.6.1.

34.15.2 Calculation of Dispatch Operating Points Pursuant to Start-Up and Shut-Down Instructions.

The RTED process shall calculate Dispatch Operating Points as follows:

- (a) After RTUC issues a Start-Up Instruction, RTED moves the Dispatch Operating Point of a resource immediately from zero (0) MW to the PMin, as defined in the Master File or as modified via SLIC, of a Generating Unit at the start of the Dispatch Interval pertaining to the Start-Up Instruction. The Dispatch Operating Point shall then be determined using the resource's applicable Operational Ramp Rate as further described in Sections 34.15.4, 34.15.5, and 34.15.6.
- (b) After RTUC issues a Shut-Down Instruction, RTED shall first ramp the Dispatch Operating Point down to the PMin, as defined in the Master File or as modified via SLIC, of a Generating Unit at the end of the Dispatch Interval pertaining to the Shut-Down Instruction, using the resource's applicable Operational Ramp Rate. The Dispatch Operating Point shall then be set immediately to zero (0) MW.

34.15.3 [NOT USED]

34.15.4 Inter-hour Dispatch of Resources With Real-Time Energy Bids.

Dispatch Instructions associated with the ramp between the Real-Time Market Bid in one hour and the Real-Time Market Bid in the immediately succeeding Trading Hour shall be determined optimally by the SCED if the CAISO has Bids for either or both relevant Operating Hours. For any Operating Hour(s) for which Bids have been submitted Dispatch Instructions will be optimized such that the Dispatch Operating Point is within the Bid range(s). For any Operating Hour without submitted Bids, Dispatch Instructions will be optimized such that the Dispatch Operating Point conforms to the Schedule within the Operating Hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with Section 11.5.1. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with Section 11.5.1. Energy delivered or consumed as a result

of CAISO Dispatch of a resource's Energy Bid in one Operating Hour to a Dispatch Operating Point such that the resource cannot return to its successive Operating Hour Schedule or to an infra-marginal operating point by the beginning of the next Operating Hour is Residual Imbalance Energy and shall be settled as Instructed Imbalance Energy as provided for in Section 11.5.1 and also may be eligible for recovery of its applicable Energy Bid Costs in accordance with Section 11.8. Similarly, Energy delivered or consumed as a result of CAISO Dispatch of a resource's Energy Bid in a future Operating Hour to a Dispatch Operating Point different from its current Operating Point prior to the end of the current Operating Hour is also considered Residual Imbalance Energy and shall be settled as Instructed Imbalance Energy as provided for in Section 11.5.1 and also may be eligible for recovery of its applicable Energy Bid Costs in accordance with Section 11.8. When Ramping Energy Deviation and Residual Imbalance Energy coexist within a given Dispatch Interval, the Ramping Energy Deviation shall be the portion of Instructed Imbalance Energy that is produced or consumed within the Schedule-change band defined by the accepted HASP Bids of the two consecutive Settlement Periods; the Residual Imbalance Energy shall be the portion of Instructed Imbalance Energy that is produced or consumed outside the Schedule-change band.

34.15.5 Inter-hour Dispatch of Resources Without Real-Time Energy Bids.

Dispatch Instructions shall be issued for each Dispatch Interval as needed to prescribe the ramp between a resource's accepted Self-Schedule in one Trading Hour and its accepted Self-Schedule in the immediately succeeding Trading Hour. Such Dispatch Instructions shall be based on the lesser of: (1) the applicable Operational Ramp Rate as provided for in Section 30.7.7 and (2) the Ramp Rate associated with the Standard Ramp. The Dispatch Instructions for Ramping of Generating Units without Real-Time Energy Bids in both Operating Hours shall ramp the resource between hourly Schedules symmetrically to the extent possible subject to the Regulation Ramping limitations across hourly boundaries in twenty (20) to sixty (60) minutes assuming Congestion can be resolved utilizing Economic Bids. The minimum twenty (20)-minute ramp is required for smooth hourly Schedule changes and is consistent with Intertie

scheduling agreements between Balancing Authority Areas. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with Section 11.5.1.

Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with Section 11.5.1.

34.15.6 Intra-Hour Exceptional Dispatches.

For the special case where an Exceptional Dispatch begins in the new hour and the rules above would result in the violation of the resource's inter-temporal constraint(s), the following rules are applied and the Energy is settled as Exceptional Dispatch Energy as described in Section 11.5.6.

- (a) If the ramp time is greater than one hour or greater than what can be achieved when RTM receives the Constraint, RTM starts the ramp at the earliest possible time and continues Ramping the resource in the new Trading Hour.
- (b) If the ramp time results in starting the ramp less than ten (10) minutes before the start of the hour, RTM instead starts the ramp at ten (10) minutes before the start of the hour and ramps the resource at a uniform rate so that it meets the Constraint by the start time of the Exceptional Dispatch.
- (c) If the new hour's Day-Ahead Schedule is beyond the Exceptional Dispatch Constraint, RTM resumes the basic Ramping rules after the Exceptional Dispatch Constraint is met, but limits the Ramp Rate as necessary to ensure that the resource does not complete its ramp before ten (10) minutes after the hour.

34.16 Ancillary Services in the Real-Time Market.

34.16.1 [NOT USED]

34.16.2 Dispatch of Self-Provided Ancillary Services.

Where a Scheduling Coordinator has chosen to self-provide the whole of the additional Operating Reserve required to cover any Interruptible Imports which it has submitted through Self-Schedules in the Day-Ahead Market and has identified specific Generating Units, Participating Loads, System Units or System Resources as the providers of the additional Operating Reserve concerned, the CAISO shall Dispatch only the designated Generating Units, Participating Loads, System Units or System Resources in the event of the CAISO being notified that the on demand obligation is being curtailed. The Scheduling Coordinator scheduling an Interruptible Import will be responsible for Operating Reserves associated with the Interruptible Import, regardless of whether the Scheduling Coordinator is an LSE or not. For all other Submissions to Self-Provide an Ancillary Service, the Energy Bid shall be used to determine the Dispatch, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 34.10.

34.16.3 Ancillary Services Requirements for RTM Dispatch.

The following requirements apply to the Dispatch of Ancillary Services in the RTM:

34.16.3.1 Regulation.

- (a) Regulation provided from Generating Units or System Resources must meet the standards specified in this CAISO Tariff and Part A of Appendix K;
- (b) The CAISO will Dispatch Regulation through the EMS, which Dispatch of Regulation by EMS does not set the RTM LMP;
- (c) In the event of an unscheduled increase in system Demand or a shortfall in Generation output and Regulation margin drops, the CAISO will use Dispatch Energy in the RTM or Dispatch Operating Reserve to restore Regulation margin; and
- (d) When scheduled Operating Reserve is used for restoration of Regulation reserve, the CAISO shall arrange for the replacement of that Operating Reserve.

34.16.3.2 Operating Reserve.

- (a) Spinning Reserve:
 - (i) Spinning Reserve provided from Generating Units and System Resources must meet the standards specified in Part B of Appendix K;
 - (ii) The CAISO will Dispatch Spinning Reserve as may be required to meet the Applicable Reliability Criteria;
 - (iii) The CAISO may Dispatch Spinning Reserve as balancing Energy to return Regulation Generating Units to their Set Points and restore full Regulation margin; and
 - (iv) The CAISO will Dispatch Spinning Reserve as determined by the SCED, subject to Sections 34.3 and 34.8.

- (b) Non-Spinning Reserve:
 - (i) Non-Spinning Reserve provided from Generating Units, Demands, and System Resources must meet the standards specified in Part C of Appendix K;
 - (ii) The CAISO may Dispatch Non-Spinning Reserve in place of Spinning Reserve to meet Applicable Reliability Criteria;
 - (iii) The CAISO will Dispatch Non-Spinning Reserve as determined by the SCED, subject to Sections 34.3 and 34.8; and
 - (iv) The CAISO may Dispatch Non-Spinning Reserve to replace Spinning Reserve if there is a shortfall in Spinning Reserve because of a deficiency of balancing Energy.

34.16.3.3 Replacement of Operating Reserve.

If Operating Reserve is used for Energy, the CAISO may replace such Operating Reserve through Dispatch of additional Energy available from Energy Bids submitted in the HASP for the RTM or through procurement of additional reserves based on optimization of a resource's RTM Ancillary Service Bid and its Energy Bid.

34.16.3.4 Voltage Support.

- (a) Voltage Support provided from Generating Units shall meet the standards specified in this Tariff and the Part E of Appendix K;
- (b) the CAISO may Dispatch Generating Units to increase or decrease MVar output within the power factor limits of 0.9 lagging to 0.95 leading (or within other limits specified by the CAISO in any exemption granted pursuant to Section 8.2.3.3 of the CAISO Tariff) at no cost to the CAISO when required for System Reliability;
- (c) may Dispatch each Generating Unit to increase or decrease MVar output outside of established power factor limits, but within the range of the Generating Unit's capability curve, at a price calculated in accordance with CAISO Tariff;
- (d) If Voltage Support is required in addition to that provided pursuant to 34.16.3.4 (b) and (c), the CAISO will reduce output of Participating Generators certified in accordance with Appendix K . The CAISO will select Participating Generators in the vicinity where such additional Voltage Support is required; and
- (e) the CAISO will monitor voltage levels at Interconnections to maintain them in accordance with the applicable inter-Balancing Authority Area agreements.

[NOT USED]

[NOT USED]

34.17 Dispatch Information and Instructions.

34.17.1 Dispatch Information To Be Supplied by the CAISO.

Communication of Dispatch information provided by the CAISO shall be in accordance with Section 6.3.

34.17.2 Dispatch Information To Be Supplied by Scheduling Coordinator.

Each Scheduling Coordinator shall be responsible for the submission of Bids and Dispatch of Generation and Demand in accordance with its Day-Ahead Schedule. Each Scheduling Coordinator shall keep the CAISO apprised of any change or potential change in the current status of all Generating Units and Intertie Schedules. This will include any changes in Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of a Generating Unit. Each Scheduling Coordinator shall immediately pass to the CAISO any information which it receives from a Generator which the Generator provides to the Scheduling Coordinator pursuant to Section 36.11.1. Each Scheduling Coordinator shall immediately pass to the CAISO any information it receives from a MSS Operator which the MSS Operator provides to the Scheduling Coordinator regarding any change or potential change in the current status of all Generating Units, System Units

and Intertie Schedules. This information includes any changes in MSS System Units and Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of the System Unit or Generating Unit.

34.17.3 Dispatch Information To Be Supplied by UDCs.

Each UDC shall keep the CAISO informed of any change or potential change in the status of its transmission lines and station equipment at the point of Interconnection with the CAISO Controlled Grid. Each UDC shall keep the CAISO informed as to any event or circumstance in the UDC's service territory that could affect the reliability of the CAISO Controlled Grid. This would include adverse weather conditions, fires, bomb threats, etc.

34.17.4 Dispatch Information To Be Supplied by PTOs.

Each PTO shall report any change or potential change in equipment status of the PTO's transmission assets turned over to the control of the CAISO or in equipment that affects transmission assets turned over to the control of the CAISO immediately to the CAISO (this will include line and station equipment, line protection, Remedial Action Schemes and communication problems, etc.). Each PTO shall also keep the CAISO immediately informed as to any change or potential change in the PTO's transmission system that could affect the reliability of the CAISO Controlled Grid. This would include adverse weather conditions, fires, bomb threats, etc.

Each PTO shall schedule all Outages of its lines and station equipment which are under the Operational Control of the CAISO in accordance with the appropriate procedures in Section 9.3. Each PTO shall coordinate any requests for or responses to Forced Outages on its transmission lines or station equipment which are under the Operational Control of the CAISO directly with the appropriate CAISO Control Center as defined in Section 7.1.

34.19.1 General Principles.

Instructed and Uninstructed Imbalance Energy shall be paid or charged the applicable Resource-Specific Settlement Interval LMP except for hourly pre-dispatched Instructed Imbalance Energy, which shall be settled as set forth in Section 11.5.2. These prices are determined using the Dispatch Interval LMPs. The Dispatch Interval LMPs shall be based on the Bid of the marginal Generating Units, System Units, and Participating Loads dispatched by the CAISO to increase or reduce Demand or Energy output in each Dispatch Interval as provided in Section 34.19.2.1.

The CAISO will respond to the Dispatch Instructions issued by the SCED to the extent practical in the time available and acting in accordance with Good Utility Practice. The CAISO will record the reasons for any variation from the Dispatch Instructions issued by the SCED.

34.19.2 Determining Real-Time LMPs.

34.19.2.1 Dispatch Interval Real-Time LMPs.

34.19.2.2 Computation.

For each Dispatch Interval, the CAISO will compute updated Imbalance Energy needs and will Dispatch Generating Units, System Units, Dynamic System Resources and Participating Load according to the CAISO's SCED during that time period to meet Imbalance Energy requirements. The RTM transactions will be settled at the Dispatch Interval LMPs in accordance with Section 11.5.

34.19.2.3 Eligibility to Set the Real-Time LMP.

All Generating Units, Participating Loads, Dynamic System Resources, System Units, or COGs subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the LMP, provided that (a) a Generating Unit or a Dynamic Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) a Participating Load, a Dynamic System Resource that is not a Resource-Specific System Resource, or a

System Unit is Dispatched between zero (0) MW and the highest MW value within its submitted Economic Bid range or Generated Bid. If a resource is Dispatched below its Minimum Operating Limit or above the highest MW value in its Economic Bid range or Generated Bid, or the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, the resource will not be eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A resource constrained at an upper or lower operating limit or dispatched for a quantity of Energy such that its full Ramping capability is constraining the ability of the resource to be dispatched for additional Energy in target interval, cannot be marginal (i.e., it is constrained by the Ramping capability) and thus is not eligible to set the Dispatch Interval LMP. Non-Dynamic System Resources are not eligible to set the Dispatch Interval LMP. Dynamic System Resources are eligible to set the Dispatch Interval LMP. A Constrained Output Generator that has the ability to be committed or shut off within the Time Horizon of the RTM will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of Regulation resources by EMS in response to AGC will not set the RTM LMP. Dispatches of Regulation resources to a Dispatch Operating Point by RTM SCED will be eligible to set the RTM LMP.

34.19.2.4 [NOT USED]

34.19.2.5 Price for Uninstructed Deviations for Participating Intermittent Resources.

Deviations associated with each Participating Intermittent Resource in a Scheduling Coordinator's portfolio shall be settled as provided in Section 11.12 at the monthly weighted average Dispatch Interval LMP, as calculated in accordance with Section 11.5.4.1 at each Pnode associated with the Participating Intermittent Resource, and using the monthly weighted average with weights equal to total Real-Time Generation.

35 Market Validation and Price Correction.

35.1 Market Validation.

The CAISO shall monitor the Market Clearing software solutions for the Day-Ahead Market, the RUC process, the Hour-Ahead Scheduling Process, and the Real-Time Market for all market intervals to determine whether prices are calculated accurately, consistent with the provisions of the CAISO Tariff. To the extent reasonably practicable, the CAISO shall correct erroneous prices identified through such monitoring and re-run the relevant CAISO Markets prior to publication of prices on its Open Access Same-Time Information System (OASIS) or provision of prices directly to Market Participants, if applicable.

35.2 Timing of the Price Correction Process.

Prices for each Trading Day shall become subject to the CAISO's price correction process once the CAISO publishes them on its OASIS or provides them directly to Market Participants, if applicable. The price correction process for each Trading Day shall end no later than 1700 hours of the eighth calendar day following that Trading Day. The CAISO may establish an earlier end-time for the price correction process in the applicable Business Practice Manual and may complete the price correction process for any Trading Day earlier than the end-time established in this Section 35 or in the Business Practice Manual. The CAISO shall provide notification on the CAISO Website when it has completed the price correction process for each Trading Day. If the CAISO does not provide such notification, the price correction process will be deemed complete at 1700 hours of the eighth calendar day following that Trading Day, unless an earlier time is established by the applicable Business Practice Manual.

35.3 Finality of Prices Subject to the Price Correction Process.

All prices shall be considered provisional until the CAISO has completed the price correction process regarding them. All prices for each Trading Day shall be considered final for purposes of this Section 35 once the price correction process for that Trading Day has ended, except that the CAISO may adjust, recalculate, or otherwise correct such prices after the conclusion of the price correction process to the extent authorized by the provisions of the CAISO Tariff other than this Section 35.

35.4 Scope of Price Corrections.

The CAISO may correct all financially binding prices whenever the CAISO identifies an invalid market solution or invalid prices in an otherwise valid market solution. The circumstances in which the CAISO may determine that an invalid market solution or invalid prices exist include the following: the occurrence of data input failure; the occurrence of hardware or software failure; or a result that is inconsistent with the CAISO Tariff.

35.5 Price Correction Methodology.

The CAISO shall correct prices to conform with the relevant provisions of the CAISO Tariff to the extent such correction is practicable. To the extent such correction is not practicable, the CAISO shall correct prices so that they are as close as reasonably possible to the prices that should have resulted under the relevant provisions of the CAISO Tariff, using the most accurate data available, and in a manner that is consistent with the prevalent system conditions existing at that time. The CAISO shall correct prices using the first applicable and practicable correction method of the following:

- (a) The CAISO shall selectively recalculate incorrect financially binding prices when the invalid prices are isolated and can be corrected such that no other financially binding prices are affected by the correction.
- (b) If the correction method in Section 35.5(a) is not applicable and practicable, the CAISO shall recalculate prices for the invalidated market interval when all market inputs applicable to the market interval to be recalculated are either (i) preserved from the original market run, for data that was not the cause of the invalidated price, (ii) corrected, in the case of invalid initial data in the initial Market Clearing, or (iii) recreated or replicated data using the best available alternate data sources, in the case of missing data in the initial Market Clearing.

- (c) If the correction methods in Sections 35.5(a) and 35.5(b) are not applicable and practicable, the CAISO shall use, in place of prices for the binding interval of an invalidated market solution, replicated prices from binding or advisory intervals from the validated market solution in which the market conditions were most similar to the market conditions in the invalidated market solution, for the affected interval. In no case will an invalidated Day-Ahead Market solution be replaced with a valid Day-Ahead Market solution from a previous Trading Day. The method set forth in this Section 35.5(c) shall apply in the Day-Ahead Market only when some but not all hourly market intervals within a valid market run are deemed to be invalid and prices are not recalculated pursuant to the method set forth in Section 35.5(b), above.

The CAISO shall include details concerning the CAISO's price correction methodology in the applicable Business Practice Manual.

35.6 Weekly Price Correction Report.

The CAISO shall summarize all price corrections that occur within a week in a report that shall be posted on the CAISO Website by the seventh day of the following week. For all price corrections that occur during each week, the price correction report shall specify: (a) which market intervals were affected, (b) which price locations were affected, (c) a brief description of the reason for the price correction, and (d) the method of price corrective action undertaken.

40.4.3 General Qualifications for Supplying Net Qualifying Capacity.

Resource Adequacy Resources included in a Resource Adequacy Plan submitted by a Scheduling Coordinator on behalf of a Load Serving Entity serving Load in the CAISO Balancing Authority Area must:

- (1) Be available for testing by the CAISO to validate Qualifying Capacity, which can be no less than a resource's PMin even if the resource's contractual Resource Adequacy Capacity is less than its PMin, and determine Net Qualifying Capacity for the next Resource Adequacy Compliance Year;
- (2) Provide any information requested by the CAISO to apply the performance criteria to be adopted by the CAISO pursuant to Section 40.4.5;
- (3) Submit Bids into the CAISO Markets as required by this CAISO Tariff;
- (4) Be in compliance, as of the date that the CAISO performs any testing or otherwise determines Net Qualifying Capacity for the next Resource Adequacy Compliance Year, with the criteria for Qualifying Capacity established by the CPUC, relevant Local Regulatory Authority, or federal agency and provided to the CAISO;
- (5) Be subject to Sanctions for non-performance as specified in the CAISO Tariff;
and
- (6) For a resource with contractual Resource Adequacy Capacity less than PMin, make the PMin available to the CAISO for commitment or dispatch at PMin, subject to Section 11.8 provisions for Bid Cost Recovery, so that the resource's Resource Adequacy Capacity can be utilized as required by this CAISO Tariff.

40.4.4 Reductions for Testing.

In accordance with the procedures specified in the Business Practice Manual, the Generating Unit of a Participating Generator or other Generating Units, System Units or Loads of Participating Loads included in a Resource Adequacy Plan submitted by a Scheduling Coordinator on behalf of a Load Serving Entity can have its Qualifying Capacity reduced, for purposes of the Net Qualifying Capacity annual report under Section 40.4.2 for the next Resource Adequacy Compliance Year, if a CAISO testing program determines that it is not capable of supplying the full Qualifying Capacity amount.

Adequacy Capacity must remain available to the CAISO through Real-Time for the full value of their Resource Adequacy Capacity.

40.6.8 Use of Generated Bids.

Prior to completion of the Day-Ahead Market, the CAISO will determine if dispatchable Resource Adequacy Capacity from Resource Adequacy Resources has not been reflected in a Bid and will insert a Generated Bid for any dispatchable Resource Adequacy Capacity that is not reflected in a Bid into the CAISO Day-Ahead Market and for which the CAISO has not received notification of an Outage. In addition, the CAISO will determine if all dispatchable Resource Adequacy Capacity from Short Start Units, not otherwise selected in the IFM or RUC, is reflected in a Bid into the HASP and will insert a Generated Bid for any remaining dispatchable Resource Adequacy Capacity for which the CAISO has not received notification of an Outage.

40.6.9 Availability Requirements for Grandfathered Firm Liquidated Damages Contracts.

Resource Adequacy Capacity represented by a Firm Liquidated Damages Contract and relied upon by a Scheduling Coordinator in a monthly or annual Resource Adequacy Plan shall be submitted as a Self-Schedule or Bid in the Day-Ahead IFM to the extent such scheduling right exists under the Firm Liquidated Damages Contract.

40.6.10 Exports of Energy from Resource Adequacy Capacity.

Resource Adequacy Capacity may be utilized to serve an Export Bid. An Export Bid may be submitted into the CAISO Markets and be cleared by the Energy being provided by Resource Adequacy Capacity.

40.6.11 Curtailment of Exports in Emergency Situations.

At its sole discretion, the CAISO may curtail exports from Resource Adequacy Capacity to prevent or alleviate a System Emergency. An Export Bid or a Self-Schedule to provide exports included in a binding Schedule accepted in the IFM or HASP will not be distinguished from a Demand Bid or Self-Schedule to serve Load within the CAISO Balancing Authority Area included in a binding Schedule accepted in the IFM or HASP for purposes of curtailment under this Section, except as consistent with Good Utility Practice.

deficiencies, at least ten (10) days prior the effective month of the relevant Resource Adequacy Plan, the Scheduling Coordinator for the Load Serving Entity shall (i) demonstrate that the identified deficiency is cured by submitting a revised Resource Adequacy Plan or (ii) advise the CAISO that the CPUC, Local Regulatory Authority, or federal agency, as appropriate, has determined that no deficiency exists. In the case of a mismatch between Resource Adequacy Plan(s) and Supply Plan(s), if resolved, the relevant Scheduling Coordinator(s) must provide the CAISO with revised Resource Adequacy Plan(s) or Supply Plans, as applicable, at least ten (10) days prior to the effective month. If the CAISO is not advised that the deficiency or mismatch is resolved at least ten (10) days prior to the effective month, the CAISO will use the information contained in the Supply Plan to set the obligations of Resource Adequacy Resources under this Section 40 and/or to assign any costs incurred under this Section 40 and Section 43.

40.7.1 Other Compliance Issues.

Scheduling Coordinators representing Generating Units, System Units or System Resources supplying Resource Adequacy Capacity that fail to provide the CAISO with an annual or monthly Supply Plan, as applicable, as set forth in Section 40.7, shall be subject to Section 37.6.1. Further, Scheduling Coordinators representing Generating Units, System Units or System Resources supplying Resource Adequacy Capacity that fail to provide the CAISO with information required for the CAISO to determine Net Qualifying Capacity shall not be eligible for inclusion in the Net Qualifying Capacity annual report under Section 40.4.2 for the next Resource Adequacy Compliance Year and may be subject to Sanctions under Section 37.6.1.

40.7.2 Penalties for Non-Compliance.

The failure of a Resource Adequacy Resource or Resource Adequacy Capacity to be available to the CAISO in accordance with the requirements of this Section 40 and the failure to operate a Resource Adequacy Resource by placing it online or in a manner consistent with a submitted Bid or Generated Bid shall be subject to the Sanctions set forth in Section 37.2. However, any failure of the Resource Adequacy Resource to satisfy any obligations prescribed under this Section 40 during a Resource

While the CAISO does not have to designate the full capability of a resource, the CAISO may designate under the ICPM an amount of ICPM Capacity from a resource that exceeds the amount of capacity identified to ensure compliance with the Reliability Criteria set forth in Section 40.3 due to the PMin or other operational requirements/limits of a resource that has available capacity to provide ICPM service. The CAISO shall not designate the capacity of a resource for an amount of capacity that is less than the resource's PMin.

43.4 Obligations of a Resource Designated under the ICPM.

43.4.1 Availability Obligations.

Capacity from resources designated under the ICPM shall be subject to all of the availability, dispatch, testing, reporting, verification and any other applicable requirements imposed under Section 40.6 on Resource Adequacy Resources identified in Resource Adequacy Plans. In accordance with those requirements, ICPM Capacity designated under the ICPM shall meet the Day-Ahead availability requirements specified in Section 40.6.1 and the Real-Time availability requirements of Section 40.6.2. Also in accordance with those requirements, Generating Units designated under the ICPM that meet the definition of Short Start Units shall have the obligation to meet the additional availability requirements of Section 40.6.3, and Generating Units designated under the ICPM that meet the definition of Long Start Units will have the rights and obligations specified in Section 40.6.7.1.

If the CAISO has not received an Economic Bid or a Self-Schedule for ICPM Capacity, the CAISO shall utilize a Generated Bid in accordance with the procedures specified in Section 40.6.8.

In addition to Energy Bids, resources designated under the ICPM shall submit Ancillary Service Bids for their ICPM Capacity to the extent that the resource is certified to provide the Ancillary Service.

Business Associate Identification (BAID)	Identification characters assigned to each Business Associate by the CAISO.
Business Day	Monday through Friday, excluding federal holidays and the day after Thanksgiving Day.
Business Practice Manual Proposed Revision Request (BPM PRR)	A request to make any change to a BPM, including any attachments thereto, as described in Section 22.11.1.
Business Practice Manuals (BPMs)	A collection of documents made available by the CAISO on the CAISO Website that contain the rules, policies, procedures and guidelines established by the CAISO for operational, planning, accounting and settlement requirements of CAISO Market activities, consistent with the CAISO Tariff.
CAISO	The California Independent System Operator Corporation, a state chartered, California non-profit public benefit corporation that operates the transmission facilities of all Participating TOs and dispatches certain Generating Units and Loads.
CAISO Account	The CAISO Clearing Account, the CAISO Reserve Account or such other trust accounts as the CAISO deems necessary or convenient for the purpose of efficiently implementing the funds transfer system under the CAISO Tariff.
CAISO ADR Procedures	The procedures for resolution of disputes or differences set out in Section 13.
CAISO Alternative Dispute Resolution Committee (CAISO ADR Committee)	The Committee appointed by the CAISO Governing Board pursuant to Article IV, Section 3 of the CAISO bylaws to perform functions assigned to the CAISO ADR Committee in the CAISO ADR Procedures in Section 13.
CAISO Audit Committee	A committee of the CAISO Governing Board appointed pursuant to Article IV, Section 5 of the CAISO bylaws to (1) review the CAISO's annual independent audit (2) report to the CAISO Governing Board on such audit, and (3) monitor compliance with the CAISO Code of Conduct.

CAISO IFM Commitment Period	The portion of a Commitment Period in the IFM that is not a Self-Commitment Period.
CAISO Invoice	The invoices issued by the CAISO to the Responsible Utilities or RMR Owners based on the Revised Estimated RMR Invoice and the Revised Adjusted RMR Invoice.
CAISO Markets	Any of the markets administered by the CAISO under the CAISO Tariff, including, without limitation, the DAM, HASP, RTM, transmission, and Congestion Revenue Rights.
CAISO Markets Processes	The MPM-RRD, IFM, RUC, STUC, RTUC, and RTD. HASP is an hourly run of the RTUC.
CAISO Memorandum Account	The memorandum account established by each California IOU pursuant to California Public Utilities Commission Order D. 96-08-038 date August 2, 1996 which records all CAISO start up and development costs incurred by that California IOU.
CAISO Metered Entity	<p>(a) any one of the following entities that is directly connected to the CAISO Controlled Grid:</p> <ul style="list-style-type: none">i. a Generator other than a Generator that sells all of its Energy (excluding any Station Power that is netted pursuant to Section 10.1.3) and Ancillary Services to the Utility Distribution Company or Small Utility Distribution Company in whose Service Area it is located;ii. an MSS Operator; oriii. a Utility Distribution Company or Small Utility Distribution Company; and <p>(b) any one of the following entities:</p> <ul style="list-style-type: none">i. a Participating Generator;ii. a Participating TO in relation to its Tie Point Meters with other TOs or Balancing Authority Areas;iii. a Participating Load;iv. a Participating Intermittent Resource; orv. a utility that requests that Unaccounted for Energy for its Service Area be calculated separately, in relation to its meters at points of connection of its Service Area with the systems of other utilities.

CAISO-WECC Billing Services Agreement	The agreement between the CAISO and the WECC entered into by those parties in August 2007, as it may be amended from time to time, regarding the CAISO's performance of certain billing services to facilitate the WECC's collection of NERC/WECC Charges.
Calculated Energy Bid	The Energy Bid utilized in the IFM and RTM on behalf of a COG calculated by dividing its Minimum Load Cost by the MW quantity of its PMax.
Candidate CRR Holder	An entity that is registered and qualified by the CAISO to participate in the CRR Allocation, the CRR Auction, or the Secondary Registration System to become a CRR Holder and is a party to a fully executed CRR Entity Agreement, and therefore must comply with the requirements for Candidate CRR Holders under the CAISO Tariff.
Capacity Benefit Margin (CBM)	The factor defined in Appendix L.
CBM	Capacity Benefit Margin
CCR	Competitive Constraints Run
CDWR-SWP	The California Department of Water Resources, State Water Project.
CDWR-SWP Participating Generating Units	The Generating Units operated by the California Department of Water Resources, State Water Project, that are subject to a Participating Generator Agreement with the CAISO.
CEC	The California Energy Commission or its successor.
Certificate of Compliance	A certificate issued by the CAISO which states that the Metering Facilities referred to in the certificate satisfy the certification criteria for Metering Facilities contained in the CAISO Tariff.
C.F.R.	Code of Federal Regulations.
Charge Code	A numeric identifier used to specify Settlement calculations in the Business Practice Manual.
Clean Bid	A valid Bid submitted by a Scheduling Coordinator that requires no modification, a Default Modified Bid, or a Generated Bid deemed to be acceptable for submission to the CAISO Market applications.
Clustering	The process whereby a group of Interconnection Requests is studied together, instead of serially, for the purpose of conducting the Interconnection System Impact Study.
COG	Constrained Output Generator

Congestion Revenue Right (CRR)	A CRR Obligation or CRR Option.
Connected Entity	A Participating TO or any party that owns or operates facilities that are electrically interconnected with the CAISO Controlled Grid.
Constrained Output Generator (COG)	A Generating Unit with an operating range (PMax - PMin) that is no greater than the higher of three (3) MW or five percent (5%) of its PMax that elects, on an annual basis, to utilize a Calculated Energy Bid in the IFM and RTM as described in Section 27.7.
Constraints	Physical and operational limitations on the transfer of electrical power through transmission facilities.
Construction Activities	Actions by a Participating TO that result in irrevocable financial commitments for the purchase of major electrical equipment or land for Participating TO's Interconnection Facilities or Network Upgrades assigned to the Interconnection Customer that occur after receipt of all appropriate governmental approvals needed for the Participating TO's Interconnection Facilities or Network Upgrades.
Contingency	A potential Outage that is unplanned, viewed as possible or eventually probable, which is taken into account when considering approval of other requested Outages or while operating the CAISO Balancing Authority Area.
Contingency Flag	The daily Bid component that indicates that the Spinning Reserves and Non-Spinning Reserves being offered in the CAISO Market are Contingency Only reserves.
Contingency Only	A resource providing Operating Reserve capacity that may be Dispatched by the CAISO only in the event of a Contingency or System Emergency.
Contract Reference Number (CRN)	The Bid component that indicates the specific contract identification number issued by the CAISO to Scheduling Coordinators transactions under Existing Contracts or TORs.

DSHBAOA	Dynamic Scheduling Host Balancing Authority Operating Agreement
Dynamic Resource-Specific System Resource	A Dynamic System Resource that is a specific generation resource outside the CAISO Balancing Authority Area.
Dynamic Schedule	A telemetered reading or value which is updated in Real-Time and which is used as an Interchange Schedule in the CAISO Energy Management System calculation of Area Control Error and the integrated value of which is treated as an Interchange Schedule for Interchange accounting purposes.
<u>Dynamic Scheduling Agreement for Scheduling Coordinators</u>	An agreement between the CAISO and a Scheduling Coordinator regarding the terms by which a Scheduling Coordinator may submit Dynamic Schedules, a <i>pro forma</i> version of which is set forth in Appendix B.5.
Dynamic Scheduling Host Balancing Authority Operating Agreement (DSHBAOA)	An agreement entered into between the CAISO and a Host Balancing Authority governing the terms of dynamic scheduling between the Host Balancing Authority and the CAISO in accordance with the Dynamic Scheduling Protocol set forth in Appendix X, a <i>pro forma</i> version of which agreement is set forth in Appendix B.9
Dynamic System Resource	A System Resource that has satisfied the CAISO's contractual and operational requirements for submitting a Dynamic Schedule, and for which a Dynamic Schedule has been submitted, including a Dynamic Resource-Specific System Resource.
E&P Agreement	Engineering & Procurement Agreement
Economic Bid	A Bid that includes quantity (MWh or MW) and price (\$) for specified Trading Hours.
Economic Planning Study	A study performed to provide a preliminary assessment of the potential cost effectiveness of mitigating specifically identified Congestion.
EEP	Electrical Emergency Plan
Effective Economic Bid	An Economic Bid that is not an Ineffective Economic Bid.
ELC Process	Extremely Long-Start Commitment Process
Electrical Emergency Plan (EEP)	A plan to be developed by the CAISO in consultation with Utility Distribution Companies to address situations when Energy reserve margins are forecast to be below established levels.

Electric Facility	An electric resource, including a Generating Unit, System Unit, or a Participating Load.
Eligible Capacity	Capacity of Generating Units, System Units, System Resources, or Participating Load that is not already under a contract to be a Resource Adequacy Resource, is not under an RMR Contract or is not currently designated as ICPM Capacity that effectively resolves a procurement shortfall or reliability concern and thus is eligible to be designated under the ICPM in accordance with Section 43.1.
Eligible Customer	(i) any utility (including Participating TOs, Market Participants and any power marketer), Federal power marketing agency, or any person generating Energy for sale or resale; Energy sold or produced by such entity may be Energy produced in the United States, Canada or Mexico; however, such entity is not eligible for transmission service that would be prohibited by Section 212(h)(2) of the Federal Power Act; and (ii) any retail customer taking unbundled transmission service pursuant to a state retail access program or pursuant to a voluntary offer of unbundled retail transmission service by the Participating TO.
Eligible Intermittent Resource	A Generating Unit that is powered by one of the following sources, except for a de minimis amount of Energy from other sources: 1) wind, 2) solar energy, or 3) hydroelectric potential derived from small conduit water distribution facilities that do not have storage capability.
ELS Resource	Extremely Long-Start Resource
Emissions Cost Demand	The level of Demand specified in Section 11.18.3.
Emissions Cost Invoice	The invoice submitted to the CAISO in accordance with Section 11.18.6.
Emissions Costs	The mitigation fees, excluding capital costs, assessed against a Generating Unit by a state or federal agency, including air quality districts, for exceeding applicable NOx emission limitations.
Emissions Eligible Generator	A Generator with a Generating Unit that is a BCR Eligible Resource.
EMS	Energy Management System

Energy Bid Curve	The Bid component that indicates the prices and related quantity at which a resource offers Energy in a monotonically increasing (decreasing for Participating Load) staircase function, consisting of no more than 10 segments defined by 11 pairs of MW operating points and \$/MWh, which may be different for each Trading Hour of the applicable Bid time period. If the resource has Forbidden Operating Regions, each Forbidden Operating Region must be reflected as a single, separate Energy Bid Curve segment.
Energy Export	For purposes of calculating the Grid Management Charge, Energy included in an Interchange Schedule submitted to the CAISO, or dispatched by the CAISO, to serve a load located outside the CAISO's Balancing Authority Area, whether the Energy is produced by a Generator in the CAISO Balancing Authority Area or a resource located outside the CAISO Balancing Authority Area.
Energy Limit	The Bid component that indicates the maximum and minimum daily Energy limits for the Generating Unit. Energy Limit applies to net pumping Demand and Generation over the Operating Day for a Pumped-Storage Hydro Unit.
Energy Management System (EMS)	A computer control system used by electric utility dispatchers to monitor the real-time performance of the various elements of an electric system and to control Generation and transmission facilities.
Energy Resource Area (ERA)	A geographic region certified by the California Public Utilities Commission and the California Energy Commission as an area in which multiple LCRIGs could be located, provided that, for the interim period before those agencies certify such areas and for LCRIFs that are proposed to connect LCRIGs located outside the State of California, an Energy Resource Area shall mean a geographic region that would be connected to the CAISO Controlled Grid by an LCRIF with respect to which the CAISO Governing Board determines that all of the requirements of Section 24.1.3 are satisfied, except for the requirement that the LCRIGs to which the LCRIF would connect are located in an area certified as an ERA by those agencies.

Existing Zone Generation Trading Hub	Trading Hubs specifically developed to represent the average price paid to generation resources within Existing Zones.
Expanded System Region	The System Region and Intertie Scheduling Points with interconnected Balancing Authority Areas.
Expected Congestion Revenue	The mean value based on the probability distribution of the historic Congestion revenue of a CRR.
Expected Energy	The total Energy that is expected to be generated or consumed by a resource, based on the Dispatch of that resource, as calculated by the Real-Time Market (RTM), and as finally modified by any applicable Dispatch Operating Point corrections. Expected Energy includes the Energy scheduled in the IFM, and it is calculated the applicable Trading Day. Expected Energy is calculated for Generating Units, System Resources, Resource-Specific System Resources, and Participating Loads. The calculation is based on the Day-Ahead Schedule and the Dispatch Operating Point trajectory for the three-hour period around the target Trading Hour (including the previous and following hours), the applicable Real-Time LMP for each Dispatch Interval of the target Trading Hour, and any Exceptional Dispatch Instructions. Energy from Non-Dynamic System Resources is converted into HASP Intertie Schedules. Expected Energy is used as the basis for Settlements.
Export Bid	A Demand Bid submitted to a CAISO Market at a Scheduling Point.
Exporting Participating Intermittent Resource	A Participating Intermittent Resource with a PIR Export Percentage greater than zero (0).
Extremely Long-Start Commitment Process (ELC Process)	The CAISO process for Unit Commitment for Extremely Long-Start Resources, as set forth in Section 31.7.
Extremely Long-Start Resource (ELS Resource)	A Generating Unit that has a Start-Up Time greater than 18 hours or a System Resource that is either: 1) a non-Resource-Specific System Resource with contractual limitations that require the Energy be transacted (i.e., committed) prior to the publishing time of the Day-Ahead Market results (1300 hours on the day before the Trading Day) or 2) a Resource-Specific System Resource that has a Start-Up Time greater than 18 hours.

Fifth Percentile Congestion Revenue	The fifth percentile value based on the probability distribution of the historic Congestion revenue of a CRR.
Final Approval	A statement of consent by the CAISO Control Center to initiate a scheduled Outage.
Final Invoice	The invoice due from a RMR Owner to the CAISO at termination of the RMR Contract.
Final NERC/WECC Charge Invoice	A final invoice issued by the CAISO that reflects an allocation of NERC/WECC Charges to a Scheduling Coordinator based on the Final NERC/WECC Charge Rate for the NERC/WECC Charge Assessment Year.
Final NERC/WECC Charge Rate	The rate to be paid by Scheduling Coordinators for NERC/WECC Charges based on the WECC invoice to the CAISO for NERC/WECC Charges for a given year and on the NERC/WECC Metered Demand for the NERC/WECC Charge Assessment Year.
Financial Security	Any of the types of financial instruments listed in Section 12 that are posted by a Market Participant, CRR Holder or Candidate CRR Holder.
Financial Security Amount	The level of Financial Security posted in accordance with Section 12 by a Market Participant, Candidate CRR Holder or CRR Holder.
Firm Liquidated Damages Contract	A contract utilizing or consistent with Service Schedule C of the Western Systems Power Pool Agreement or the Firm Liquidated Damages product of the Edison Electric Institute pro forma agreement, or any other similar firm Energy contract that does not require the seller to source the Energy from a particular unit, and specifies a delivery point internal to the CAISO Balancing Authority Area.

FPA	Parts II and III of the Federal Power Act, 16 U.S.C. § 824 et seq., as they may be amended from time to time.
Frequently Mitigated Unit	A Generating Unit that is eligible for a Bid Adder pursuant to Section 39.8.
Full Capacity Deliverability Status	The condition whereby a Large Generating Facility interconnected with the CAISO Controlled Grid, under coincident CAISO Balancing Authority Area peak Demand and a variety of severely stressed system conditions, can deliver the Large Generating Facility's full output to the aggregate of Load on the CAISO Controlled Grid, consistent with the CAISO's Reliability Criteria and procedures and the CAISO On-Peak Deliverability Assessment.
Full Network Model (FNM)	A computer-based model that includes all CAISO Balancing Authority Area transmission network (Load and Generating Unit) busses, transmission Constraints, and Intertie busses between the CAISO Balancing Authority Area and interconnected Balancing Authority Areas. The FNM models the transmission facilities internal to the CAISO Balancing Authority Area as elements of a looped network and models the CAISO Balancing Authority Area Interties with interconnected Balancing Authority Areas as specified in Section 27.5.
GADS	Generating Availability Data System
GDF	Generation Distribution Factor
Generated Bid	A post-market Clean Bid generated by the CAISO in accordance with the provisions of Section 40 or other applicable provisions of the CAISO Tariff when a Bid is not submitted by the Scheduling Coordinator and is required for a resource adequacy requirement, an Ancillary Services Award, a RUC Award or a Day-Ahead Schedule.
Generation	Energy delivered from a Generating Unit.
Generation Distribution Factor (GDF)	The Bid template component that indicates the proportions of how the Bid is distributed for the resources participating in Physical Scheduling Plants or System Units.
Generating Facility	An Interconnection Customer's Generating Unit(s) used for the production of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

**Grid Management Charge
(GMC)**

The CAISO monthly charge on all Scheduling Coordinators that provides for the recovery of the CAISO's costs listed in Section 11.22.2 through the service charges described in Section 11.22.2.5 calculated in accordance with the formula rate set forth in Appendix F, Schedule 1, Part A. The charges that comprise the Grid Management Charge consist of: 1) the Core Reliability Services – Demand Charge, 2) the Core Reliability Services – Energy Exports Charge, 3) the Energy Transmission Services – Net Energy Charge, 4) the Energy Transmission Services – Uninstructed Deviations Charge, 5) the Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge, 6) the Forward Scheduling Charge, 7) the Market Usage Charge, and 8) the Settlements, Metering, and Client Relations Charge.

Gross Load

For the purposes of calculating the transmission Access Charge, Gross Load is all Energy (adjusted for distribution losses) delivered for the supply of End-Use Customer Loads directly connected to the transmission facilities or directly connected to the Distribution System of a Utility Distribution Company or MSS Operator located in a PTO Service Territory. Gross Load shall exclude (1) Load with respect to which the Wheeling Access Charge is payable, (2) Load that is exempt from the Access Charge pursuant to Section 4.1 of Appendix I, and (3) the portion of the Load of an individual retail customer of a Utility Distribution Company, Small Utility Distribution Company or MSS Operator that is served by a Generating Unit that: (a) is located on the customer's site or provides service to the customer's site through arrangements as authorized by Section 218 of the California Public Utilities Code; (b) is a qualifying small power production facility or qualifying cogeneration facility, as those terms are defined in the FERC's regulations implementing Section 201 of the Public Utility Regulatory Policies Act of 1978; and (c) secures Standby Service from a Participating TO under terms approved by a Local Regulatory Authority or FERC, as applicable, or can be curtailed concurrently with an Outage of the Generating Unit serving the Load. Gross Load forecasts consistent with filed Transmission Revenue Requirements will be provided by each Participating TO to the CAISO.

Group Study	The process whereby more than one Interconnection Request is studied together, instead of individually, for the purpose of conducting one or more of the Interconnection Studies or analyses therein.
HASP	Hour-Ahead Scheduling Process
HASP Advisory Schedule	The non-binding output of the HASP as it pertains to the Real-Time Market.
HASP and RTM Congestion Credit	A credit provided to Scheduling Coordinators to offset any HASP and RTM Congestions Charges that would otherwise be applied to the valid and balanced portions of any ETC or TOR Self-Schedules in the HASP and the Real-Time Market as provided in Section 11.5.7.
HASP AS Award	Awards for imports of Ancillary Services established through the HASP.
HASP Bid	A Bid received in HASP that can be used in the MPM-RRD conducted in HASP, the RTUC, STUC, or the RTD.
HASP Inter-SC Trade Period	The period commencing at midnight (0000 hours) on the applicable Trading Day and ending at forty-five (45) minutes prior to the start of the applicable Operating Hour, during which time the CAISO will accept from Scheduling Coordinators Inter-SC Trades of Energy for the HASP, Inter-SC Trades of Ancillary Services, and Inter-SC Trades of IFM Load Uplift Obligations.
HASP Intertie LMP	The average of four (4) 15-minute interval LMPs at Intertie Scheduling Points over a Trading Hour.
HASP Intertie Schedule	The binding output of the HASP including accepted Bids for imported Energy or Ancillary Services and associated LMPs and ASMPs.

IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules	A credit provided to Scheduling Coordinators pursuant to Section 17.3.3 to offset any IFM Marginal Cost of Losses that would otherwise be applied to the valid and balanced portions of any TOR Self-Schedule in the IFM as provided in Section 11.2.1.5.
IFM Marginal Losses Surplus	For each Settlement Period of the IFM, the IFM Marginal Losses Surplus is the difference between: (1) the Net Hourly Energy Charge; and (2) the total IFM Congestion Charges which do not include IFM Congestion Credits collected by the CAISO as specified in Section 11.2.1.5.
IFM Marginal Losses Surplus Credit	The amount of money distributed to Scheduling Coordinators in the allocation of IFM Marginal Losses Surplus in proportion to Scheduling Coordinator's Measured Demand in accordance with Section 11.2.1.6.
IFM Market Revenue	The amount received by BCR Eligible Resource from Energy scheduled and Ancillary Services awarded in the IFM for the purposes of Bid Cost Recovery, as calculated pursuant to Section 11.8.2.2.
IFM MSS Price	Either (1) The IFM LAP price for the MSS when the MSS scheduled internal Demand exceeds the MSS scheduled internal Supply; or (2) the weighted average of the IFM LMPs for all applicable PNodes within the relevant MSS when MSS scheduled internal Supply exceeds MSS scheduled internal Demand where weighting factors for computing the weighted average are based on the scheduled Supply at the corresponding PNodes.
IFM Pumping Bid Cost	For the applicable Settlement Interval, the Pumping Cost submitted to the CAISO in the IFM divided by the number of Settlement Intervals in a Trading Hour as further provided in Section 11.8.2.1.4.
IFM Self-Commitment Period	A Time Period determined by the CAISO pursuant to the rules in Section 11.8.1.1 for the purposes of deriving any Bid Cost Recovery amounts, related to the IFM.

IIE	Instructed Imbalance Energy
IIE Settlement Amount	The payment due a Scheduling Coordinator for positive Instructed Imbalance Energy or the charge assessed on a Scheduling Coordinator for negative Instructed Imbalance Energy, as calculated pursuant to Section 11.5.1.
Imbalance Energy	The deviation of Supply or Demand from Day-Ahead Schedule, positive or negative, as measured by metered Generation, metered Load, or Real-Time Interchange Schedules.
Import Bid	A Supply Bid submitted to a CAISO Market at a Scheduling Point.
Import Capability Load Share	A Load Serving Entity's proportionate share of the forecasted Resource Adequacy Compliance Year coincident peak Demand for the CAISO Balancing Authority Area relative to the total coincident peak Demand for the CAISO Balancing Authority Area as determined by the California Energy Commission.
Import Capability Load Share Ratio	A Load Serving Entity's Import Capability Load Share divided by the sum of the Import Capability Load Shares of all Load Serving Entities with unfulfilled requests for Available Import Capability on a particular Intertie.
Import Capability Transfer Registration Process	The electronic means by which Load Serving Entities and Market Participants must register with the CAISO any bilateral transfers of Existing Contract Import Capability, Pre-RA Import Commitment Capability, or Remaining Import Capability.
Incremental Change	The change in dollar value of a specific Charge Code from the Initial Settlement Statement T+33BD to the Initial Settlement Statement Reissue or Recalculation Settlement Statement including any new Charge Codes or Trading Day charges appearing for the first time on the Initial Settlement Statement Reissue or Recalculation Settlement Statement.

Independent Entity	The entity, not affiliated with the CAISO or any Market Participant, that assists the CAISO in the determination of reference prices.
Independent System Operator (ISO)	See California Independent System Operator Corporation.
Ineffective Economic Bid	An Economic Bid that is not accepted in a CAISO market because its impact on the value of the CAISO Markets objectives, as specified in Section 31.3 and 34.5, would exceed the impact of adjusting a Non-priced Quantity. The CAISO maintains in the Business Practice Manuals the current values of the scheduling parameters that specify the thresholds, including the provisions of Section 27.4.3.1, whereby the market software determines whether to adjust a Non-priced Quantity rather than accept Economic Bids.
Initial Settlement Statement Reissue	The reissue of an Initial Settlement Statement T+38BD by the CAISO on the fifty-first (51st) Business Day from the relevant Trading Day (T+51BD) if T+51BD falls on a calendar day that is on or before the day the Invoice or Payment Advice for the bill period containing the relevant Trading Day is scheduled to publish.
Initial Settlement Statement T+38BD	A Settlement Statement generated by the CAISO for the calculation of Settlements for a given Trading Day, which is published on the thirty-eight Business Day from the relevant Trading Day (T+38BD) and is prior to the Invoice or Payment Advice published for the relevant bill period.
In-Service Date	The date upon which the Interconnection Customer reasonably expects it will be ready to begin use of the Participating TO Interconnection Facilities to obtain back feed power.
Instructed Imbalance Energy (IIE)	The portion of Imbalance Energy resulting from Dispatch Instructions and HASP Intertie Schedules.

Integrated Balancing Authority Area (IBAA)	A Balancing Authority Area as provided in Section 27.5.3 that has been determined to have one or more direct interconnections with the CAISO Balancing Authority Area, such that power flows within the IBAA significantly affect power flows within the CAISO Balancing Authority Area, and whose network topology is therefore modeled in further detail in the CAISO's Full Network Model beyond the simple radial modeling of interconnections between the IBAA and the CAISO Balancing Authority Area.
Integrated Forward Market (IFM)	The pricing run conducted by the CAISO using SCUC in the Day-Ahead Market, after the MPM-RRD process, which includes Unit Commitment, Ancillary Service procurement, Congestion Management and Energy procurement based on Supply and Demand Bids.
Interchange	Imports and exports between the CAISO Balancing Authority Area and other Balancing Authority Areas.
Interchange Schedule	A final agreed-upon schedule of Energy to be transferred between the CAISO Balancing Authority Area and another Balancing Authority Area.

Interconnected Balancing Authority Area Operating Agreement (IBAAOA)

An agreement entered into between the CAISO and a Balancing Authority of a Balancing Authority Area interconnected to the CAISO Balancing Authority Area to govern operation of their interconnected electric systems.

Interconnected Control Area Operating Agreement (ICAOA)

An agreement entered into between the CAISO and a Balancing Authority of a Balancing Authority Area interconnected to the CAISO Balancing Authority Area to govern operation of their interconnected electric systems, a pro forma version of which has been accepted by FERC as a CAISO rate schedule in 87 FERC ¶ 61,231 (1999).

Interconnection

Transmission facilities, other than additions or replacements to existing facilities that: i) connect one system to another system where the facilities emerge from one and only one substation of the two systems and are functionally separate from the CAISO Controlled Grid facilities such that the facilities are, or can be, operated and planned as a single facility; or ii) are identified as radial transmission lines pursuant to contract; or iii) produce Generation at a single point on the CAISO Controlled Grid; provided that such interconnection does not include facilities that, if not owned by the Participating TO, would result in a reduction in the CAISO's Operational Control of the Participating TO's portion of the CAISO Controlled Grid.

Interconnection Agreement

A contract between a party requesting interconnection and the Participating TO that owns the transmission facility with which the requesting party wishes to interconnect.

Interconnection System Impact Study	An engineering study conducted by the Participating TO(s), CAISO, or a third party consultant for the Interconnection Customer that evaluates the impact of the proposed interconnection on the safety and reliability of the CAISO Controlled Grid and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the Generating Facility were interconnected without project modifications or system modifications, focusing on the Adverse System Impacts identified in the Interconnection Feasibility Study, or to study potential impacts, including but not limited to those identified in the Scoping Meeting as described in the Standard Large Generator Interconnection Procedures.
Interconnection System Impact Study Agreement	The form of agreement accepted by FERC and posted on the CAISO Website for conducting the Interconnection System Impact Study.
Interest	Interest shall be calculated in accordance with the methodology specified for interest on refunds in the regulations of FERC at 18 C.F.R. §35.19a (a)(2)(iii) (1996). Interest on delinquent amounts shall be calculated from the due date of the bill to the date of payment, except as provided in Section 11.29.13.1. When payments are made by mail, bills shall be considered as having been paid on the date of receipt.
Interim Black Start Agreement	An agreement entered into between the CAISO and a Participating Generator (other than a Reliability Must-Run Contract) for the provision by the Participating Generator of Black Start capability and Black Start Energy on an interim basis until the introduction by the CAISO of its Black Start auction (or until terminated earlier by either party in accordance with its terms).
Interim Capacity Procurement Mechanism (ICPM)	The Interim Capacity Procurement Mechanism, as set forth in Section 43.
Intermediary Balancing Authority	The Balancing Authority that operates an Intermediary Balancing Authority Area.

Intermediary Balancing Authority Area	Any Balancing Authority Area between a Host Balancing Authority Area and the CAISO Balancing Authority Area. An Intermediary Balancing Authority Area may, or may not, be directly interconnected with the CAISO Balancing Authority Area.
Interruptible Imports	Non-firm Energy sold by a Generator or resource located outside the CAISO Controlled Grid which by contract can be interrupted or reduced at the discretion of the seller. Interruptible Imports must be submitted through Self-Schedules in the Day-Ahead Market.
Inter-SC Trade	A trade between Scheduling Coordinators of Energy, Ancillary Services, or IFM Load Uplift Obligation in accordance with the CAISO Tariff.
Inter-SC Trade Period	Either the Day-Ahead Inter-SC Trade Period or the HASP Inter-SC Trade Period.
Intertie	A Scheduling Point at a point of interconnection between the CAISO Balancing Authority Area and an interconnected Balancing Authority Area.
Intertie Block Bid	A Bid from a System Resource in the DAM that offers the same quantity of Energy, RUC Availability, or Ancillary Services across multiple, contiguous hours of the Trading Day.
Invoice	A document published as a result of an invoicing run pursuant to the CAISO Payments Calendar in which a Business Associate's current net financial obligation is a positive Settlement amount.
IOU	An investor owned electric utility.
ISO	Independent System Operator
Joint Powers Agreement	An agreement governing a Joint Powers Authority that is subject to the California Joint Exercise of Powers Act (California Government Code, Section 6500, et seq.).
Joint Powers Authority	An authority authorized by law through which two or more public entities jointly exercise their powers.
LAP	Load Aggregation Point
LAP Price	The marginal price for a particular LAP, calculated as a weighted average of the nodal LMPs at the associated PNodes pursuant to Section 27.2.2.

Line Loss Correction Factor	The line loss correction factor as set forth in the technical specifications contained in the applicable Business Practice Manual.
LMP	Locational Marginal Price
LMPM	Local Market Power Mitigation
LMP Option	A method of calculating Default Energy Bids based on Locational Marginal Prices.
Load	An end-use device of an End-Use Customer that consumes Power. Load should not be confused with Demand, which is the measure of Power that a Load receives or requires.
Load Aggregation Point (LAP)	A set of Pricing Nodes as specified in Section 27.2 that are used for the submission of Bids and Settlement of Demand.

Market Interruption

Actions taken by the CAISO outside of the normal market operation of any of the CAISO Markets in the event of a Market Disruption, to prevent a Market Disruption, or minimize the extent of a Market Disruption as provided in Sections 7.7.15 and 34.9.

Market Manipulation

Has the meaning set forth in Section 37.7.

Market Monitoring Unit

The component of the CAISO organization (currently the "Department of Market Monitoring") that is assigned responsibility in the first instance for the functions of a Market Monitoring Unit, as that term is used in Docket No. EL01-118.

NERC/WECC Charges	The charges approved by FERC, pursuant to Section 215 of the FPA and FERC issuances related thereto, that provide funding for the statutory-related functions performed by NERC, the WECC, and regional advisory bodies that serve the WECC, or their successors or assignees.
NERC/WECC Charge Trust Account	An account to be established by the CAISO for the purpose of maintaining funds collected from Scheduling Coordinators and disbursing such funds to the WECC.
NERC/WECC Metered Demand	For purposes of calculating NERC/WECC Charges, a Scheduling Coordinator's net metered CAISO Demand plus Unaccounted for Energy for net metered CAISO Demand and Transmission Losses for metered CAISO Demand. A Scheduling Coordinator's net metered CAISO Demand equals the Scheduling Coordinator's metered CAISO Demand (which adds Energy associated with imports from and subtracts Energy associated with exports to other Balancing Authority Areas), less metered CAISO Demand for Station Power and for Energy required for storage at electric energy storage facilities, such as pumped storage. For purposes of calculating NERC/WECC Metered Demand, Unaccounted for Energy and Transmission Losses allocable to net metered CAISO Demand will be allocated pro rata to each Scheduling Coordinator based on the Scheduling Coordinator's net metered CAISO Demand.
Net Assets (NA)	For governmental and not-for-profit entities, defined as total assets minus total liabilities.
Net Hourly Energy Charge	Total charges to all Demand minus total payments to all Supply both based on the product of MWh amounts specified in all Day-Ahead Schedules and the relevant LMPs at the applicable PNodes or Aggregated Pricing Node.

Operating Reserve Obligation	The obligation of a Scheduling Coordinator to pay its share of costs incurred by the CAISO in procuring Operating Reserves.
Operating Reserve Ramp Rate	A single number included in Ancillary Service Bids and Submissions to Self-Provide Ancillary Services for Spinning Reserve and Non-Spinning Reserve that represents the Ramp Rate of a resource used in the procurement of Operating Reserve capacity.
Operating Transfer Capability (OTC)	The maximum capability of a transmission path to transmit real power, expressed in MW, at a given point in time, as further defined in Appendix L.
Operational Adjustment	The difference between the Energy scheduled in the Balancing Authority Area check-out process for Non-Dynamic System Resources and the sum of Dispatch Interval IIE.
Operational Control	The rights of the CAISO under the Transmission Control Agreement and the CAISO Tariff to direct Participating TOs how to operate their transmission lines and facilities and other electric plant affecting the reliability of those lines and facilities for the purpose of affording comparable non-discriminatory transmission access and meeting Applicable Reliability Criteria.
Operational Ramp Rates	A staircase function of up to 4 segments (in addition to Ramp Rate segments needed for modeling Forbidden Operating Regions). Operational Ramp Rates are submitted with Energy Bid data.
Operator	The operator of facilities that comprise the CAISO Controlled Grid or a Participating Generator.

Participating Generator Agreement (PGA)	An agreement between the CAISO and a Participating Generator, a <i>pro forma</i> version of which is set forth in Appendix B.2.
Participating Intermittent Resource	One or more Eligible Intermittent Resources that meets the requirements of the technical standards for Participating Intermittent Resources adopted by the CAISO and published on the CAISO Website.
Participating Intermittent Resource Export Fee	Fee based on Schedule 4 of Appendix F and Section 5.3 of Appendix Q.
Participating Intermittent Resource Fees	Fees set forth in Section 11.12.3.
Participating Load	An entity, including an entity with Pumping Load or Aggregated Participating Load, providing Curtailable Demand, which has undertaken in writing by execution of a Participating Load Agreement to comply with all applicable provisions of the CAISO Tariff.
Participating Load Agreement (PLA)	An agreement between the CAISO and a Participating Load, a <i>pro forma</i> version of which is set forth in Appendix B.4.
Participating TO or Participating Transmission Owner (PTO)	A party to the Transmission Control Agreement whose application under Section 2.2 of the Transmission Control Agreement has been accepted and who has placed its transmission assets and Entitlements under the CAISO's Operational Control in accordance with the Transmission Control Agreement. A Participating TO may be an Original Participating TO or a New Participating TO.
Participating TO Service Territory	The area in which an IOU, a Local Public Owned Electric Utility, or federal power marketing authority that has turned over its transmission facilities and/or Entitlements to CAISO Operational Control is obligated to provide electric service to Load. A PTO Service Territory may be comprised of the Service Areas of more than one Local Publicly Owned Electric Utility, if they are operating under an agreement with the CAISO for aggregation of their MSS and their MSS Operator is designated as the Participating TO.

Phase II Interconnection Study	An engineering and operational study conducted or caused to be performed by the CAISO, in coordination with the applicable Participating TO(s), to determine the Point of Interconnection and a list of facilities (including the Participating TO's Interconnection Facilities, Network Upgrades, Distribution Upgrades, and Stand Alone Network Upgrades), the cost of those facilities, and the time required to interconnect the Generating Facility(ies) with the CAISO Controlled Grid.
Physical Scheduling Plant	A group of two or more related Generating Units, each of which is individually capable of producing Energy, but which either by physical necessity or operational design must be operated as if they were a single Generating Unit and any Generating Unit or Units containing related multiple generating components which meet one or more of the following criteria: i) multiple generating components are related by a common flow of fuel which cannot be interrupted without a substantial loss of efficiency of the combined output of all components; ii) the Energy production from one component necessarily causes Energy production from other components; iii) the operational arrangement of related multiple generating components determines the overall physical efficiency of the combined output of all components; iv) the level of coordination required to schedule individual generating components would cause the CAISO to incur scheduling costs far in excess of the benefits of having scheduled such individual components separately; or v) metered output is available only for the combined output of related multiple generating components and separate generating component metering is either impractical or economically inefficient.
Physical Trade	An Inter-SC Trade of Energy at an individual Generating Unit's PNode or at the unique Aggregated Pricing Node of a Physical Scheduling Plant that is submitted to the CAISO for Settlement through the CAISO Market and is subject to physical validation.
PIR Export Percentage	The PIR Export Percentage will be calculated for each Participating Intermittent Resource as the ratio of the Participating Intermittent Resource's PMax in the CAISO Master File minus the MW subject to an exemption under Section 5.3.2 of the EIRP in Appendix Q on a MW basis to the Participating Intermittent Resource's PMax in the CAISO Master File.

PTO Service Territory	The area in which an IOU, a Local Public Owned Electric Utility, or federal power marketing authority that has turned over its transmission facilities and/or Entitlements to CAISO Operational Control is obligated to provide electric service to Load. A PTO Service Territory may be comprised of the Service Areas of more than one Local Publicly Owned Electric Utility, if they are operating under an agreement with the CAISO for aggregation of their MSS and their MSS Operator is designated as the Participating TO.
Public Utility Regulatory Policies Act (PURPA)	The Public Utility Regulatory Policies Act of 1978, incorporated in relevant part into the Federal Power Act.
Pumped-Storage Hydro Unit	A hydroelectric dam with the capability to produce electricity and the ability to pump water between reservoirs at different elevations to store such water for the production of electricity.
Pumping Cost	The hourly cost of pumping, expressed in \$/hour, submitted by a Participating Load.
Pumping Level	Level of MW that the Pumping Load resources would consume as submitted in their Bid.
Pumping Load	A hydro pumping resource that is capable of responding to Dispatch Instructions by ceasing to pump.
Pump Ramping Conversion Factor	A Master File entry submitted by Scheduling Coordinators that allows the Scheduling Coordinator to indicate the ratio of Energy expended to pump water into storage that can be used to produce Energy. A zero percent Pump Ramping Conversion Factor implies that no amount of Energy production capability is produced as a result of pumping water and the CAISO shall not use such unavailable Energy in its CAISO Markets optimization. A hundred percent Pump Ramping Conversion Factor indicates all the Energy expended to pump water is available for Generation and the CAISO shall use only the available portions in its CAISO Markets optimization. The Pump Ramping Conversion Factor submitted in the Master File need not be based on physical characteristics of the resource and is adjustable by the Scheduling Coordinator.

Queue Position	The order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, that is established based upon the date and time of receipt of the valid Interconnection Request by the CAISO.
Ramping	Changing the loading level of a Generating Unit in a constant manner over a fixed time (e.g., Ramping up or Ramping down). Such changes may be directed by a computer or manual control.
Ramping Energy Deviation	The portion of Imbalance Energy produced or consumed due to deviation from the Standard Ramp because of ramp constraints, Start-Up, or Shut-Down. Ramping Energy Deviation may overlap with Standard Ramping Energy, and both Standard Ramping Energy and Ramping Energy Deviation may overlap with Day-Ahead Scheduled Energy, but with no other IIE subtype. Ramping Energy Deviation may be composed of two parts: a) the part that overlaps with Standard Ramping Energy whenever the DOP crosses the Standard Ramping Energy region; and b) the part that does not overlap with Standard Ramping Energy. The latter part of Ramping Energy Deviation consists only of extra-marginal IIE contained within the hourly schedule change band and not attributed to Exceptional Dispatch or derates. Ramping Energy Deviation does not apply to Non-Dynamic System Resources (including Resource-Specific System Resources). Ramping Energy Deviation is settled as described in Section 11.5.1, and it is included in BCR only for market revenue calculations as provided in Section 11.8.1.4.5.
Ramp Rate	The Bid component that indicates the Operational Ramp Rate, Regulation Ramp Rate, and Operating Reserve Ramp Rate for a Generating Unit, and the Load drop rate and Load pick-up rate for Participating Loads, for which the Scheduling Coordinator is submitting Energy Bids or Ancillary Services Bids.

RAS	Remedial Action Schemes
Rated Governmental Entity	A municipal utility or state or federal agency that holds an issuer, counterparty, or underlying credit rating by a Nationally Recognized Statistical Rating Organization.
Rated Public/Private Corporation	An investor-owned or privately held entity that holds an issuer, counterparty, or underlying credit rating by a Nationally Recognized Statistical Rating Organization.
Real-Time	The period of time during the Operating Hour. Any time period during the twenty-four Operating Hours of any given day.
Real-Time Congestion Fund	For each Settlement Period of the HASP and RTM, the CAISO shall calculate the Real-Time Congestion Fund as the difference of 1) the sum of the products of the RTM or HASP MCC for Demand and the Demand Imbalance Energy at the relevant Location; and 2) the sum of the products of RTM or HASP MCC for Supply and the Supply Imbalance Energy at the relevant Location; including also the sum of RTM and HASP Congestion Charges for Intertie Ancillary Services Awards.
Real-Time Congestion Offset	A component of the neutrality adjustments as provided in Section 11.5.4.2 to account for the non-assessment of the Marginal Cost of Congestion to Measured Demand for ETCs and TOR Self-Schedules in the Real-Time as provided in Section 11.5.7.
Real-Time Contingency Dispatch (RTCD)	The mode of the Real-Time Dispatch that will be invoked when a transmission or generation Contingency occurs and will include all Contingency Only Operating Reserves in the optimization.
Real-Time Dispatch (RTD)	The SCED and SCUC software used by the CAISO to determine which Ancillary Service and Imbalance Energy resources to Dispatch and to calculate LMPs.

Real-Time Economic Dispatch (RTED)	The mode of the Real-Time Dispatch that will optimally dispatch resources based on their Energy Bids, excluding Contingency Only Operating Reserves except when needed to avoid an imminent System Emergency.
Real-Time Interchange Export Schedule	A final agreed-upon schedule of Energy to be transferred from the CAISO Balancing Authority Area to another Balancing Authority Area based on agreed-upon size (megawatts), start and end time, beginning and ending ramp times and rate, and type required for delivery and receipt of power and Energy between the source and sink Balancing Authority Areas involved in the transaction.
Real-Time Manual Dispatch (RTMD)	The mode of the Real-Time Dispatch that will be invoked as a fall-back mechanism only when the RTED or RTCD fails to provide a feasible Dispatch.
Real-Time Marginal Cost of Losses Offset	A component of the neutrality adjustments as provided in Section 11.5.4.2 to account for the non-assessment of Marginal Cost of Losses charges to Measured Demand for TOR Self-Schedules eligible for the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2.
Real-Time Market (RTM)	The spot market conducted by the CAISO using SCUC and SCED in the Real-Time, after the HASP is completed, which includes the RTUC, STUC and the RTD for the purpose of Unit Commitment, Ancillary Service procurement, Congestion Management and Energy procurement based on Supply Bids and CAISO Forecast of CAISO Demand.
Real-Time Market Pumping Bid Cost	For the applicable Settlement Interval, the Pumping Cost submitted to the CAISO in the HASP or RTM divided by the number of Settlement Intervals in a Trading Hour, as further provided in Section 11.8.4.1.4.

Real-Time Minimum Load Energy

IIE, exclusive of Standard Ramping Energy, Ramping Energy Deviation, and Residual Imbalance Energy, produced due to the Minimum Load of a Generating Unit that is committed in the RUC or the RTM and does not have a Day-Ahead Schedule or of a Constrained Output Generator (COG) that is committed in the IFM with a Day-Ahead Schedule below the registered Minimum Load. If the resource is committed in RTM for Load following by an MSS Operator, the Real-Time Minimum Load Energy is accounted as MSS Load Following Energy instead. Real-Time Minimum Load Energy is IIE above the Day-Ahead Schedule (or zero if there is no Day-Ahead Schedule of Energy) and below the registered Minimum Load. Real-Time Minimum Load Energy does not overlap with any other Expected Energy type. Real-Time Minimum Load Energy is settled as described in Section 11.5.1, and it is included in BCR as described in Section 11.8.4.1.2. IIE that is consumed when a resource that is scheduled in the DAM is shut down in the RTM is accounted as HASP Scheduled Energy or Optimal Energy and not as Real-Time Minimum Load Energy.

Real-Time Pumping Energy

IIE from a Participating Load Pumped-Storage Hydro Unit or Pumping Load, exclusive of Standard Ramping Energy and Ramping Energy Deviation, consumed below the Day-Ahead Schedule when dispatched in pumping mode, or produced from pumping operation due to pumping level reduction in Real-Time, including pump shut-down. Real-Time Pumping Energy does not overlap with any other Expected Energy type. Real-Time Pumping Energy is settled as described in Section 11.5.1, and it is included in BCR as described in Section 11.8.4.1.4.

Regulation Down or Regulation Down Reserve	Regulation reserve provided by a resource that can decrease its actual operating level in response to a direct electronic (AGC) signal from the CAISO to maintain standard frequency in accordance with established Reliability Criteria.
Regulation Down Reserve Cost	The revenues paid to the suppliers of the total awarded Regulation Down Reserve capacity in the Day-Ahead, HASP, and Real-Time Markets for the Settlement Period, minus the payments rescinded in the Settlement Period due to the unavailability of the Regulation Down under any of the provisions of Section 8.10.8.
Regulation Limits	The MW limits, up and down, set by a Generator for a Generating Unit's operation on Automatic Generation Control.
Regulation Ramp Rate	A single number included in Ancillary Service Bids and Submissions to Self-Provide Ancillary Services for Regulation that represents the Ramp Rate of a resource used in the procurement of Regulation capacity.
Regulation Up or Regulation Up Reserve	Regulation provided by a resource that can increase its actual operating level in response to a direct electronic (AGC) signal from the CAISO to maintain standard frequency in accordance with established Reliability Criteria.
Regulation Up Reserve Obligation	The obligation of a Scheduling Coordinator to pay its share of costs incurred by the CAISO in procuring Regulation Up Reserves.
Regulatory Must-Run Generation	Hydro Spill Generation and Generation which is required to run by applicable federal or California laws, regulations, or other governing jurisdictional authority. Such requirements include but are not limited to hydrological flow requirements, environmental requirements, such as minimum fish releases, fish pulse releases and water quality requirements, irrigation and water supply requirements of solid waste Generation, or other Generation contracts specified or designated by the jurisdictional regulatory authority as it existed on December 20, 1995, or as revised by federal or California law or Local Regulatory Authority.

Regulatory Must-Take Generation	Those Generation resources identified by CPUC, or a Local Regulatory Authority, the operation of which is not subject to competition. These resources will be scheduled by the relevant Scheduling Coordinator directly with the CAISO on a must-take basis. Regulatory Must-Take Generation includes Generation from Qualifying Facility Generating Units subject to a mandatory purchase obligation as defined by federal law, nuclear units and pre-existing power purchase contracts with minimum Energy take requirements.
Reliability Coordinator	The entity designated by WECC as responsible for reliability coordination in Real-Time for the area defined by WECC.
Reliability Criteria	Pre-established criteria that are to be followed in order to maintain desired performance of the CAISO Controlled Grid under Contingency or steady state conditions.
Reliability Must-Run Charge (RMR Charge)	The sum payable by a Responsible Utility to the CAISO pursuant to Section 41 for the costs, net of all applicable credits, incurred under the Reliability Must-Run Contract.
Reliability Must-Run Contract (RMR Contract)	A Must-Run Service Agreement between the owner of a Reliability Must-Run Unit and the CAISO.
Reliability Must-Run Generation (RMR Generation)	Generation that the CAISO determines is required to be on line to meet Applicable Reliability Criteria requirements. This includes i) Generation constrained on line to meet NERC and WECC reliability criteria for interconnected systems operation; ii) Generation needed to meet Load demand in constrained areas; and iii) Generation needed to be operated to provide voltage or security support of the CAISO or a local area.
Reliability Must-Run Unit (RMR Unit)	A Generating Unit of a Participating Generator which is the subject of a Reliability Must-Run Contract.

Reliability Network Upgrades

The transmission facilities at or beyond the Point of Interconnection identified in the Interconnection Studies as necessary to interconnect one or more Large Generating Facility(ies) safely and reliably to the CAISO Controlled Grid, which would not have been necessary but for the interconnection of one or more Large Generating Facility(ies), including Network Upgrades necessary to remedy short circuit or stability problems, or thermal overloads. Reliability Network Upgrades shall only be deemed necessary for thermal overloads, occurring under any system condition, where such thermal overloads cannot be adequately mitigated through Congestion Management, Operating Procedures, or Special Protection Systems based on the characteristics of the Large Generating Facilities included in the Interconnection Studies, limitations on market models, systems, or information, or other factors specifically identified in the Interconnection Studies. Reliability Network Upgrades also include, consistent with WECC practice, the facilities necessary to mitigate any adverse impact the Large Generating Facility's interconnection may have on a path's WECC rating.

Reliability Requirement Determination (RRD)

The reliability process conducted by the CAISO during the DAM, prior to the IFM, and in the HASP, prior to the RTUC, to determine whether unit(s) subject to a contract with the CAISO to provide local reliability services, which includes a Reliability Must-Run Contract and any successor instrument, are necessary to meet local reliability needs for the CAISO Balancing Authority Area.

Reliability Services Costs

The costs associated with services provided by the CAISO: 1) that are deemed by the CAISO as necessary to maintain reliable electric service in the CAISO Balancing Authority Area; and 2) whose costs are billed by the CAISO to the Participating TO pursuant to the CAISO Tariff. Reliability Services Costs include costs charged by the CAISO to a Participating TO associated with service provided under an Reliability Must-Run Contract, Exceptional Dispatches and Minimum Load Costs associated with units committed for local reliability requirements.

Reserve Margin	The amount of Resource Adequacy Capacity that a Scheduling Coordinator is required to maintain in accordance with Section 40.
Reserve Sharing LSE	A Load Serving Entity whose Scheduling Coordinator has informed the CAISO in accordance with Section 40.1 of its election to be a Reserve Sharing LSE.
Residual Imbalance Energy	Extra-marginal IIE produced or consumed at the start or end of a Trading Hour outside the hourly schedule-change band and not attributed to Exceptional Dispatch. Residual Imbalance Energy is due to a Dispatch Instruction in the previous Trading Hour or a Dispatch Instruction in the next Trading Hour. Residual Imbalance Energy may overlap only with Day-Ahead Scheduled Energy. Residual Imbalance Energy does not apply to Non-Dynamic System Resources (including Resource-Specific System Resources). Residual Imbalance Energy is settled as bid, based on the Real-Time Energy Bid of the reference hour, as described in Section 11.5.5, and it is not included in BCR as described in Section 11.8.4. The reference hour is the previous Trading Hour, if Residual Imbalance Energy occurs at the start of a Trading Hour, or the next Trading Hour, if Residual Imbalance Energy occurs at the end of a Trading Hour.
Residual Unit Commitment (RUC)	The process conducted by the CAISO in the Day-Ahead Market after the IFM has been executed to ensure sufficient Generating Units, System Units, System Resources and Participating Loads are committed to meet the CAISO Forecast of CAISO Demand.
Resource Adequacy Capacity or RA Capacity	The generation capacity of a Resource Adequacy Resource listed on a Resource Adequacy Plan and a Supply Plan.
Resource Adequacy Compliance Year	A calendar year from January 1 through December 31.

Resource Adequacy Plan	A submission by a Scheduling Coordinator for a Load Serving Entity in the form required by the Business Practice Manual to satisfy the requirements of Section 40.
Resource Adequacy Resource	A resource that is required to offer Resource Adequacy Capacity. The criteria for determining the types of resources that are eligible to provide Qualifying Capacity may be established by the CPUC or other applicable Local Regulatory Authority and provided to the CAISO.
Resource ID	Identification characters assigned by the CAISO to Generating Units, Loads, Participating Loads, System Units, System Resources, and Physical Scheduling Plants.
Resource Location	The Resource ID for a Generating Unit, Participating Load or System Resource.
Resource-Specific ASMP	The Ancillary Services Marginal Price as determined pursuant to Section 11.10.
Resource-Specific Settlement Interval LMP	The LMP at a PNode used for settlement of IIE, calculated as the IIE-weighted average, excluding the IIE weight for Residual Imbalance Energy, Energy from HASP Intertie Schedules, and Energy from Black Start and Voltage Support, of the individual LMPs for Dispatch Intervals within the given Settlement Interval for a resource, and if there is no Instructed Imbalance Energy, then it is calculated as the simple average of the individual LMPs for the Dispatch Intervals within the given Settlement Interval for a resource.
Resource-Specific System Resource	A Dynamic or Non-Dynamic Resource-Specific System Resource.
Resource-Specific Tier 1 UIE Settlement Interval Price	The price used to settle Tier 1 UIE as calculated pursuant to Section 11.5.2.1.

RMR Owner Facility Trust Account	The commercial bank account held in trust by the CAISO for the benefit of the owner of an RMR Unit subject to an RMR Contract as required and specified in Section 9.2 of the <i>pro forma</i> RMR Contract.
RMR Payment	Any amounts which the CAISO is obligated to pay to RMR Owners under the RMR Contracts, net of any applicable credits under the RMR Contracts.
RMR Payments Calendar	The payment calendar issued by the CAISO pursuant to Section 11.13.
RMR Proxy Bid	For Condition 1 RMR Units, for Energy, an amount calculated based on the hourly variable costs as defined in Schedule C of the applicable RMR Contract in the form of a monotonically increasing function consistent with the bidding rules in Section 30. For Condition 2 RMR Units, for Energy, the Energy Bid defined in Schedule M of the RMR Contract. For Condition 1 and 2 RMR Units, for Start-Up costs, the amount set forth in Schedule D of the applicable RMR Contract; and for Minimum Load costs, an amount calculated based on unit specific performance parameters as set for the applicable RMR Contract and the gas price calculated in accordance with Schedule C of the applicable RMR Contract.
RMR Refund	Any amounts which RMR Owners are obligated to pay to the CAISO and the CAISO is obligated to pay to the Responsible Utilities under the RMR Contracts, or resulting from any order by the FERC, for deposit into the Responsible Utility Facility Trust Account.
RMR Security	The form of security provided by a Responsible Utility to cover its liability under Section 11.13.
RMR Unit	Reliability Must-Run Unit
RPTOA	Responsible Participating Transmission Owner Agreement
RRD	Reliability Requirement Determination
RTCD	Real-Time Contingency Dispatch
RTD	Real-Time Dispatch
RTED	Real-Time Economic Dispatch

RTM Market Revenue	The amount received by BCR Eligible Resource from Energy scheduled and Ancillary Services awarded in the RTM for the purposes of Bid Cost Recovery.
RTM Pumping Bid Cost	Real-Time Market Pumping Bid Cost
RTM Self-Commitment Period	A time period determined by the CAISO for the purposes of deriving any Bid Cost Recovery amounts, related to the RTM.
RTUC	Real-Time Unit Commitment
RUC	Residual Unit Commitment
RUC Availability Bid	The quantity (MW) and price (\$/MW per hour) at or above which a Generating Unit, System Resource, System Unit or Participating Load has agreed to sell capacity for a specified interval of time to the CAISO to meet the Residual Unit Commitment requirement.
RUC Availability Bid Cost	As provided in Section 11.8.3.1.3, the product of the RUC Award and the relevant RUC Availability Bid price, divided by the number of Settlement Intervals in a Trading Hour.
RUC Availability Payment	The payment made for the RUC Availability Quantity as specified in Section 11.2.2.1.
RUC Availability Quantity	A RUC Award (MW) excluding any RUC Capacity that is actually unavailable due to a unit derate or Outage.
RUC Award	The portion of the RUC Capacity from resources eligible to receive RUC Availability Payments, exclusive of Minimum Load, capacity designated as RMR, and capacity under resource adequacy requirements as specified in Section 40.
RUC Bid Cost	The total Bid Costs associated with commitment by the CAISO through the RUC process used for determination of Unrecovered Bid Cost Uplift Payments and RUC Bid Cost Uplift allocation.

Scheduling Coordinator ID Code (SCID)	The Bid component that indicates the individual identification Code provided by the CAISO to the Scheduling Coordinator.
Scheduling Coordinator Metered Entity	A Generator, Eligible Customer or End-User that is not a CAISO Metered Entity.
Scheduling Point	A location at which the CAISO Controlled Grid or a transmission facility owned by a Transmission Ownership Right holder is connected, by a group of transmission paths for which a physical, non-simultaneous transmission capacity rating has been established for Congestion Management, to transmission facilities that are outside the CAISO's Operational Control.
SCID	Scheduling Coordinator ID Code
Scoping Meeting	The meeting among representatives of the Interconnection Customer, the applicable Participating TO, and the CAISO conducted for the purpose of discussing alternative interconnection options, to exchange information including any transmission data and earlier study evaluations that would be reasonably expected to impact such interconnection options, to analyze such information, and to determine the potential feasible Points of Interconnection.
SCUC	Security Constrained Unit Commitment
Seasonal Available CRR Capacity	The upper limit of network capacity that will be used in the annual CRR Allocation and annual CRR Auction calculated by effectively reducing OTC for Transmission Ownership Rights as if all lines will be in service for the relevant year in accordance with Section 36.4.
Seasonal CRR	A Congestion Revenue Right that is valid for one season and one time-of-use period in a given year.
Seasonal CRR Eligible Quantity	The MW quantity of CRRs a CRR Holder or Candidate CRR Holder is eligible to nominate for a specific season and time of use period in the annual CRR Allocation.

Settlement Account	An account held at a bank situated in California, designated by a Scheduling Coordinator, a CRR Holder or a Participating TO pursuant to the Scheduling Coordinator's Scheduling Coordinator Agreement, the CRR Holder's CRR Entity Agreement or in the case of a Participating TO, Section 2.2.1 of the Transmission Control Agreement, to which the CAISO shall pay amounts owing to the Scheduling Coordinator, the CRR Holder or the Participating TO under the CAISO Tariff.
Settlement Interval	The time period equal to or a multiple of the Dispatch Interval, over which the CAISO settles cost compensation amounts or deviations in Generation and Demand in CAISO Markets.
Settlement Interval Penalty Location Real-Time LMP	The optimal Instructed Imbalance Energy weighted average of the individual Dispatch Interval Real-Time LMPs for the resources in a UDP Aggregation established pursuant to Appendix R.
Settlement Period	For all CAISO transactions the period beginning at the start of the hour, and ending at the end of the hour. There are twenty-four Settlement Periods in each Trading Day, with the exception of a Trading Day in which there is a change to or from daylight savings time.
Settlement Quality Meter Data	Meter Data gathered, edited, validated, and stored in a settlement-ready format, for Settlement and auditing purposes.
Settlement Quality Meter Data Systems (SQMDS)	A collective name for the set of CAISO systems used to accept, analyze and report on Settlement Quality Meter Data.

**Settlements, Metering,
and Client Relations
Charge**

The component of the Grid Management Charge that provides for the recovery of the CAISO's costs, including, but not limited to the costs of maintaining customer account data, providing account information to customers, responding to customer inquiries, calculating market charges, resolving customer disputes, and the costs associated with the CAISO's Settlement, billing, and metering activities. Because this is a fixed charge per Scheduling Coordinator ID, costs associated with activities listed above also are allocated to other charges under the Grid Management Charge according to formula set forth in Appendix F, Schedule 1, Part A.

Settlement Statement

Any one of the following: Initial Settlement Statement T+38BD, Initial Settlement Statement Reissue, Recalculation Settlement Statement and Recalculation Settlement Statement T+76BD.

Settlement Statement Re-run

The recalculation of a Settlement Statement in accordance with the provisions of the CAISO Tariff.

SFT

Simultaneous Feasibility Test

Shadow Price

The marginal value of relieving a particular Constraint.

Short Start Unit

A Generating Unit that has a cycle time less than five hours (Start-Up Time plus Minimum Run Time is less than five hours), has a Start-Up Time less than two hours, and can be fully optimized with respect to this cycle time.

**Short-Term Unit
Commitment (STUC)**

The Unit Commitment procedure run at approximately T-52.5 minutes for a Time Horizon of approximately five (5) hours. The STUC determines whether some Medium Start Units need to be started early enough to meet the Demand within the STUC Time Horizon using the CAISO Forecast of CAISO Demand. The STUC produces a Unit Commitment solution for every 15-minute interval within the STUC Time Horizon and issues binding Start-Up Instructions only as necessary.

Small Utility Distribution Company Operating Agreement (SUDC Operating Agreement)	An agreement between the CAISO and an SUDC, a pro forma version of which is set forth in Appendix B.10.
SMEC	System Marginal Energy Cost
Special Protection System (SPS)	An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain System Reliability. Such action may include changes in Demand, Generation (MW and MVar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) Underfrequency Load Shedding or undervoltage Load Shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). An SPS is also sometimes called a Remedial Action Scheme.
Spinning Reserve	The portion of unloaded synchronized generating capacity that is immediately responsive to system frequency and that is capable of being loaded in ten minutes, and that is capable of running for at least two hours.
Spinning Reserve Cost	The revenues paid to the suppliers of the total awarded Spinning Reserve capacity in the Day-Ahead Market, HASP, and Real-Time Market for the Settlement Period, minus the payments rescinded in the Settlement Period due to the unavailability of the Spinning Reserve under any of the provisions of Section 8.10.2.
Spinning Reserve Obligations	The obligation of a Scheduling Coordinator to pay its share of costs incurred by the CAISO in procuring Spinning Reserve.
SPS	Special Protection System
SQMDS	Settlement Quality Meter Data Systems

STUC	Short-Term Unit Commitment
Study Plan	The plan to be developed pursuant to Section 24.2.1, which sets forth the technical studies to be performed during the annual Transmission Planning Process.
Sub-LAP	A CAISO defined subset of PNodes within a Default LAP.
Submission to Self- Provide an Ancillary Service	A submission to the CAISO containing all of the bidding requirements for an Ancillary Service with the exception of price information.
Sub-Region	A region identified by the CAISO for procurement of Ancillary Services within the System Region.
SUDC	Small Utility Distribution Company.
SUDC Operating Agreement	Small Utility Distribution Company Operating Agreement
Supervisory Control and Data Acquisition (SCADA)	A computer system that allows an electric system operator to remotely monitor and control elements of an electric system.
Supply	The Energy delivered from a Generating Unit, System Unit, Physical Scheduling Plant, System Resource or the Curtailable Demand provided by a Participating Load.
Supply Plan	A submission by a Scheduling Coordinator for a Resource Adequacy Resource in order to satisfy the requirements of Section 40.
System Emergency	Conditions beyond the normal control of the CAISO that affect the ability of the CAISO Balancing Authority Area to function normally, including any abnormal system condition which requires immediate manual or automatic action to prevent loss of Load, equipment damage, or tripping of system elements which might result in cascading Outages or to restore system operation to meet Applicable Reliability Criteria.

System Marginal Energy Cost (SMEC)	The component of the LMP that reflects the marginal cost of providing Energy from a designated reference Location.
System Planning Studies	Reports summarizing studies performed to assess the adequacy of the CAISO Controlled Grid as regards conformance to Reliability Criteria.
System Region	The CAISO Balancing Authority Area.
System Reliability	A measure of an electric system's ability to deliver uninterrupted service at the proper voltage and frequency.
System Resource	A group of resources, single resource, or a portion of a resource located outside of the CAISO Balancing Authority Area, or an allocated portion of a Balancing Authority Area's portfolio of generating resources that are either a static Interchange schedule or directly responsive to that Balancing Authority Area's Automatic Generation Control (AGC) capable of providing Energy and/or Ancillary Services to the CAISO Balancing Authority Area, provided that if the System Resource is providing Regulation to the CAISO it is directly responsive to AGC.
System Unit	One or more individual Generating Units and/or Loads within a Metered Subsystem controlled so as to simulate a single resource with specified performance characteristics, as mutually determined and agreed to by the MSS Operator and the CAISO. The Generating Units and/or Loads making up a System Unit must be in close physical proximity to each other such that the operation of the resources comprising the System Unit does not result in significant differences in flows on the CAISO Controlled Grid.
TAC	Transmission Access Charge
TAC Area	Transmission Access Charge Area
TAC Benefit	The amount, if any, for each year by which the cost of Existing High Voltage Transmission Facilities associated with deliveries of Energy to Gross Loads in the PTO Service Territory is reduced by the implementation of the High Voltage Access Charge described in Schedule 3 to Appendix F. The TAC Benefit of a New Participating TO shall not be less than zero.

Trading Hub	An aggregation of network Pricing Nodes, such as Existing Zone Generation Trading Hubs, maintained and calculated by the CAISO for settlement and trading purposes posted by the CAISO on its CAISO Website.
Trading Interval	A Settlement Period.
Trading Month	The period beginning at the start of the hour ending 0100 and ending at the end of the hour ending 2400 for each calendar month, except where there is a change to and from daylight savings time on the first or last day of a month.
Transformer and Line Loss Correction Factor	The transformer and line loss correction factor as set forth in the applicable Business Practice Manual or Technical Specifications to be applied to revenue quality meters of CAISO Metered Entities which are installed on the low voltage side of step-up transformers.
Transition Charge	The component of the Access Charge collected by the CAISO with the High Voltage Access Charge in accordance with Section 5.7 of Appendix F, Schedule 3.
Transmission Access Charge (TAC)	Access Charge
Transmission Access Charge Area (TAC Area)	A portion of the CAISO Controlled Grid with respect to which Participating TOs' High Voltage Transmission Revenue Requirements are recovered through a High Voltage Access Charge. TAC Areas are listed in Section 3 of Schedule 3 of Appendix F.
Transmission Control Agreement (TCA)	The agreement between the CAISO and Participating TOs establishing the terms and conditions under which TOs will become Participating TOs and how the CAISO and each Participating TO will discharge their respective duties and responsibilities, as may be modified from time to time.

**Transmission Reliability
Margin (TRM)**

A factor described in Appendix L.

**Transmission Revenue
Balancing Account
(TRBA)**

A mechanism to be established by each Participating TO which will ensure that all Transmission Revenue Credits and other credits specified in Sections 6, 8, and 13 of Appendix F, Schedule 3, flow through to transmission customers.

**Transmission Revenue
Credit**

For an Original Participating TO, the proceeds received from the CAISO for Wheeling service, plus (a) the revenues received from any LCRIG with respect to an LCRIF, unless FERC has approved an alternative mechanism to credit such revenues against the Original Participating TO's TRR, and (b) the shortfall or surplus resulting from any cost differences between Transmission Losses and Ancillary Service requirements associated with Existing Rights and the CAISO's rules and protocols, minus any Low Voltage Access Charge amounts paid for the use of the Low Voltage Transmission Facilities of a Non-Load-Serving Participating TO pursuant to Section 26.1 and Appendix F, Schedule 3, Section 13. For a New Participating TO during the 10-year TAC Transition Period described in Section 4 of Schedule 3 of Appendix F, the revenues received from the CAISO for Wheeling service and IFM Congestion Credit pursuant to Section 4.3.1.2, plus (a) the revenues received from any LCRIG with respect to an LCRIF, unless FERC has approved an alternative mechanism to credit such revenues against the New Participating TO's TRR, and (b) the shortfall or surplus resulting from any cost differences between Transmission Losses and Ancillary Service requirements associated with Existing Rights and the CAISO's rules and protocols, minus any Low Voltage Access Charge amounts paid for the use of the Low Voltage Transmission Facilities of a Non-Load-Serving Participating TO pursuant to Section 26.1 and Appendix F, Schedule 3, Section 13. After the 10-year TAC Transition Period, the New Participating TO Transmission Revenue Credit shall be calculated the same as the Transmission Revenue Credit for the Original Participating TO.

TTC	Total Transfer Capability
UDC	Utility Distribution Company
UDCOA	Utility Distribution Company Operating Agreement
UDP	Uninstructed Deviation Penalty
UDP Aggregation	Two or more units scheduled by the same Scheduling Coordinator with the same Resource ID that are to be considered interchangeable for calculating the Uninstructed Deviation Penalty.
UFE	Unaccounted for Energy
UIE	Uninstructed Imbalance Energy
UIE Settlement Amount	The payment due a Scheduling Coordinator for positive Uninstructed Imbalance Energy or the charge assessed on a Scheduling Coordinator for negative Uninstructed Imbalance Energy, calculated pursuant to Section 11.5.2.
Unaccounted for Energy (UFE)	The difference in Energy, for each utility Service Area and Settlement Period, between the net Energy delivered into the utility Service Area, adjusted for utility Service Area Transmission Losses and the total Metered Demand within the utility Service Area adjusted for distribution losses using Distribution System loss factors approved by the Local Regulatory Authority. This difference is attributable to meter measurement errors, power flow modeling errors, energy theft, statistical Load profile errors, and distribution loss deviations.
Unavailable Capacity	Ancillary Services capacity that receives an AS Award and Self-Provided Ancillary Services capacity that was not dispatched by the CAISO but where all or a portion of the capacity was not available for Dispatch to provide Energy in Real-Time.

3.2 Obligations and Rights of the CAISO Metered Entity.

3.2.1 Submission of Meter Data through SQMDS and RMDAPS. The CAISO Metered Entity agrees to make available to the CAISO through SQMDS and RMDAPS its Meter Data in accordance with the CAISO Tariff. The CAISO's requirements regarding the frequency with which it requires Meter Data to be made available to it through SQMDS and RMDAPS by the CAISO Metered Entity are referred to in the CAISO Tariff.

3.2.2 Meter Information. The CAISO Metered Entity shall provide in the format prescribed by Schedule 1 to this Agreement the required information with respect to all of its meters used to provide Meter Data to the CAISO. The CAISO Metered Entity must immediately notify the CAISO of any changes to the information provided to the CAISO in accordance with this Section 3.2.2 and provide the CAISO with any information in relation to such change as reasonably requested by the CAISO. The CAISO Metered Entity shall have the right to modify Schedule 1, which modification shall not constitute an amendment to this Agreement. Such modification shall be effective upon receipt of notice by the CAISO.

3.2.3 Transformer and Line Loss Correction Factors. If the CAISO Metered Entity uses low voltage side metering or metering connected to the Distribution System, it shall use the CAISO approved Transformer and Line Loss Correction Factor referred to in the CAISO Tariff and in the applicable Business Practice Manual.

3.2.4 Rights to Access Metering Facilities. The CAISO Metered Entity shall use its best efforts to procure any rights necessary for the CAISO to access all Metering Facilities of the CAISO Metered Entity to fulfill its obligations under the CAISO Tariff and its obligations under this Agreement. If, after using its best efforts, the CAISO Metered Entity is unable to provide the CAISO with such access rights, the CAISO Metered Entity shall ensure that one of its employees is a CAISO Authorized Inspector and such employee undertakes, at the CAISO's request, the certification, testing, inspection and/or auditing of those Metering Facilities in accordance with the procedures established pursuant to the CAISO Tariff, including the requirement to complete and provide to the CAISO all necessary documentation. The CAISO acknowledges that it will not be prevented from fulfilling its obligations under the CAISO Tariff or this Agreement by reason of the fact that it is provided with escorted access to the Metering Facilities of the CAISO Metered Entity.

3.2.5 Security and Validation Procedures. The security measures and the validation, editing and estimation procedures that the CAISO will apply to Meter Data made available to the CAISO by the CAISO Metered Entity shall be as referred to in the CAISO Tariff.

3.3 Obligations and Rights of the CAISO.

3.3.1 Direct Polling of Revenue Quality Meter Data. The CAISO shall allow the Scheduling Coordinator representing the CAISO Metered Entity and all Authorized Users to directly poll CAISO certified meters for the Meter Data relating to the CAISO Metered Entity in accordance with the procedures referred to in the CAISO Tariff and the applicable Business Practice Manual.

3.3.2 CAISO as Third-Party Beneficiary. The CAISO shall be a third-party beneficiary to any future agreement between the CAISO Metered Entity and any other party relating to the Metering Facilities of the CAISO Metered Entity for the purpose of granting the CAISO access to any relevant information, records and facilities as needed by the CAISO to fulfill its obligations under the CAISO Tariff and its obligations under this Agreement.

- 3.3.3 Remote and Local Access to Metering Data.** The CAISO shall provide the CAISO Metered Entity any password or other requirements necessary for the CAISO Metered Entity to access its Meter Data remotely or locally at the meter.
- 3.4 Exemptions Granted by the CAISO.** Any exemptions provided for under the CAISO Tariff that are granted by the CAISO shall be set forth in Schedule 2 of this Agreement. Any amendment or addition to Schedule 2 shall not constitute an amendment to this Agreement.

ARTICLE IV

PENALTIES AND SANCTIONS

- 4.1 Penalties.** If a CAISO Metered Entity provides inaccurate or incorrect Meter Data or fraudulent Meter Data to the CAISO, the CAISO shall be entitled to impose penalties and sanctions, including but not limited to suspension of trading rights following 14 days written notice to the CAISO Metered Entity. Fraudulent Meter Data means any Meter Data provided to the CAISO by the CAISO Metered Entity that it knows to be false, incorrect or incomplete at the time it provided that Meter Data to the CAISO. All penalties and sanctions shall be set forth in Schedule 4 Part A to this Agreement or in the CAISO Tariff. No penalties or sanctions, including suspension of trading rights, may be imposed under this Agreement unless a Schedule or CAISO Tariff provision providing for such penalties or sanctions has first been filed with and made effective by FERC. Nothing in the Agreement, with the exception of the provisions relating to the CAISO ADR Procedures, shall be construed as waiving the rights of the CAISO Metered Entity to oppose or protest any penalty proposed by the CAISO to the FERC or the specific imposition by the CAISO of any FERC-approved penalty on the CAISO Metered Entity.
- 4.2 Corrective Measures.** If the CAISO Metered Entity fails to meet or maintain the standards for Metering Facilities or comply with the audit or test procedures as referred to in the CAISO Tariff, the CAISO shall be permitted to take corrective measures. The corrective measures and rights the CAISO may exercise upon any failure by any entity to meet those standards for Metering Facilities or to comply with the audit or test procedures shall be set forth in Schedule 4 Part B or in the CAISO Tariff.

ARTICLE V

ACCESS TO METERING DATA

- 5.1 Authorized Users.** In addition to the persons referred to in the CAISO Tariff, including the CAISO Metered Entity and the relevant Scheduling Coordinator, as being entitled to access Meter Data on SQMDS, the CAISO Metered Entity may set forth in Schedule 3 of this Agreement any additional Authorized Users that shall be entitled to access the CAISO Metered Entity's Settlement Quality Meter Data held by the CAISO. The CAISO Metered Entity shall include in Schedule 3 as Authorized Users the relevant UDCs and TOs. The CAISO shall provide the Authorized Users with any password or other information necessary to access the CAISO Metered Entity's Settlement Quality Metered Data held by the CAISO on SQMDS. Any amendment or addition to Schedule 3 shall not constitute an amendment to this Agreement.

CAISO TARIFF APPENDIX C
Locational Marginal Price

The CAISO shall calculate the price of Energy at Generation PNodes, Scheduling Points, and Aggregated Pricing Nodes, as provided in the CAISO Tariff. LMPs can be set by Bids to sell or purchase Energy. The CAISO establishes Trading Hub prices and LAPs as provided in the CAISO Tariff. The LMPs at PNodes, including Scheduling Points, and Aggregated Pricing Nodes include separate components for the marginal cost of Energy, Marginal Cost of Congestion, and Marginal Cost of Losses. As provided in Sections 6.5.3.2.2 and 6.5.5.2.4, Day-Ahead Market LMPs are calculated and posted on a Day-Ahead basis for each hour of the Day-Ahead Market for Energy and for each Dispatch Interval for the Real-Time LMPs.

A. LMP Composition

In each hour of the Day-Ahead Market for Energy, the CAISO calculates the LMP for each PNode, which is equal to the marginal cost of Energy available at the PNode in the hour, based on the Bids of sellers and buyers selected in the Day-Ahead Market for Energy as specified in the Day-Ahead Schedule. The CAISO designates a Reference Bus, r , for calculation of the System Marginal Energy Cost (SMEC $_r$). The CAISO uses a distributed Reference Bus to define an aggregate value of Energy for the CAISO Balancing Authority Area. The Locational Marginal Prices are not determined by resources that are not eligible to set the Locational Marginal Price, which includes resources that have constraints that prevent them from being marginal. For each bus other than the Reference Bus, the Transmission Provider determines separate components of the LMP for the marginal cost of Energy, Marginal Cost of Congestion, and Marginal Cost of Losses relative to the Reference Bus, consistent with the following equation:

$$LMP_i = SMEC_r + MCC_i + MCL_i$$

$$LMP_r = SMEC_r$$

where:

SMEC $_r$ is the LMP component representing the marginal cost of Energy (also referred to as λ) at the Reference Bus, r (System Marginal Energy Cost).

CAISO TARIFF APPENDIX F
Schedule 4
Participating Intermittent Resources Forecast Fee

A charge up to \$.10 per MWh shall be assessed on the metered Energy from Participating Intermittent Resources as a Forecast Fee. The amount of the charge shall be specified in the CAISO Tariff.

Participating Intermittent Resources Process Fee

A process fee charge shall be assessed, for each calendar quarter, to each Exporting Participating Intermittent Resource that exported Energy in the quarter. On an annualized basis, the aggregate quarterly charges shall total to \$10,000. The charge is not volumetric, and shall be calculated as follows:

$$(\$10,000/4)/N = \$\text{quarterly charge}$$

N = number of Participating Intermittent Resources exporting Energy in the quarter

Participating Intermittent Resources Export Fee

A Participating Intermittent Resources Export Fee shall be assessed to Exporting Participating Intermittent Resources each calendar month. The Participating Intermittent Resources Export Fee shall be calculated as the product of (1) the sum of all Settlement costs avoided by Participating Intermittent Resources for the preceding calendar month, or portion thereof, consisting of Charge Codes 6486 [Real Time Excess Cost For Instructed] and 1487 [Energy Exchange Program Neutrality], but excluding charges for Uninstructed Energy associated with Charge Code 6475, (2) by the ratio of the total MW/h generated by an Exporting Participating Intermittent Resource during the calendar month, or portion thereof (based on metered output), by the total MW/h generated by all Participating Intermittent Resources during the calendar month, or portion thereof (based on metered output), and (3) by the percentage of the Exporting Participating Intermittent Resource's capacity deemed exporting under Section 5.3 of the EIRP or PIR Export Percentage.

Participating Intermittent Resources Export Fee per Participating Intermittent Resource =

Program Costs x (MW/h individual Participating Intermittent Resource/MW/h all Participating Intermittent Resources) x PIR Export Percentage

1.3 Application

The applicability of this SGIP is set forth in Section 25 of the CAISO Tariff. As specified in more detail in Section 25 of the CAISO Tariff, these procedures are applicable to each new Generating Facility with a Generating Facility Capacity of 20 MW or less, or the expansion of an existing Generating Facility with a resultant Generating Facility Capacity of 20 MW or less, that seeks to interconnect to the CAISO Controlled Grid. Any proposed interconnection of a new Generating Facility to a Participating TO's Distribution System will be processed, as applicable, pursuant to the applicable Participating TO's Wholesale Distribution Access Tariff or CPUC Rule 21, or other Local Regulatory Authority requirements of the Participating TO. For any proposed interconnection of a new Generating Facility with a Generating Facility Capacity of 20 MW or less wherein the Interconnection Customer desires the CAISO to perform a Deliverability Assessment, the Interconnection Customer shall submit an Interconnection Request to the CAISO under the Large Generator Interconnection Procedures in lieu of these Small Generator Interconnection Procedures, as specified in Section 1.3.8 of this SGIP.

1.3.1 Applicability

- 1.3.1.1 A request to interconnect a certified Small Generating Facility (See Attachments 3 and 4 for description of certification criteria) no larger than 2 MW shall be evaluated under the SGIP Section 2 Fast Track Process. A request to interconnect a certified inverter-based Small Generating Facility no larger than 10 kW shall be evaluated under the Attachment 5 10 kW Inverter Process. A request to interconnect a Small Generating Facility larger than 2 MW but no larger than 20 MW or a Small Generating Facility that does not pass the Fast Track Process or the 10 kW Inverter Process shall be evaluated under the Study Process set forth in Section 3 of this SGIP.
- 1.3.1.2 Neither these procedures nor the requirements included hereunder apply to Small Generating Facilities interconnected or approved for interconnection prior to 60 Business Days after the effective date of these procedures.
- 1.3.1.3 Prior to submitting its Interconnection Request (Attachment 2), the Interconnection Customer may ask the CAISO's interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The CAISO shall respond within 15 Business Days.
- 1.3.1.4 Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Federal Energy Regulatory Commission expects all transmission providers, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.
- 1.3.1.5 References in these procedures to interconnection agreement are to the Small Generator Interconnection Agreement (SGIA).

Attachment B – Blackline Sheets
Miscellaneous Tariff Clarifications
4th Replacement CAISO Tariff (MRTU)

ER09-__-000

January 15, 2009

* * *

4.3.1.3 Western Path 15 shall be required to turn over to CAISO Operational Control only its rights and interests in the Path 15 Upgrade and shall not be required to turn over to CAISO Operational Control Central Valley Project transmission facilities, Pacific AC Intertie transmission facilities, California-Oregon Transmission Project facilities, or any other new transmission facilities or Entitlements not related to the Path 15 Upgrade. For purposes of the CAISO Tariff, Western Path 15 shall be treated with respect to revenue recovery as a Project Sponsor in accordance with Section 24.710.

* * *

4.4.7 Provision of Information for CRRs to Reflect Load Migration.

Each UDC shall provide to the CAISO information as provided in Section 36.8.5.21 that enables the CAISO to perform transfers of CRRs that reflect Load Migration in a timely manner as required in Section 36.8.5.

* * *

4.9.13.2 Load-Following or Non Load-Following Election.

The MSS Operator has the option to elect to operate a System Unit ~~of~~or Generating Units in the MSS to follow its Load, provided that: (a) the Scheduling Coordinator for the MSS Operator shall remain responsible for purchases of Energy in accordance with the CAISO Tariff if the MSS Operator does not operate its System Unit or Generating Units and bid or schedule imports into the MSS, to match the metered Demand in the MSS and exports from the MSS; and (b) if the deviation between Generation and imports into the MSS and metered Demand and exports from the MSS exceeds the MSS Deviation Band, then the Scheduling Coordinator for the MSS Operator shall pay the additional amounts specified in Section 11.7. **[REMAINDER OF SECTION OMITTED AS UNCHANGED]**

* * *

6.3.3 Contents of Dispatch Instructions.

Dispatch Instructions shall include, but are not limited to, the following information:

- (a) ~~exchange of operator names;~~
- (ba) specific resource being dispatched;

- (eb) specific MW value of the resource being dispatched;
- (ec) specific type of instruction (action required);
- (ed) time the resource is required to begin initiating the Dispatch Instruction;
- (ee) time the resource is required to achieve the Dispatch Instruction;
- (ef) time of notification of the Dispatch Instruction; and
- (eg) any other information which the CAISO considers relevant.

* * *

6.5.3.1.3 Between 5:00 a.m. and 10:00 a.m., the CAISO will provide feedback to Scheduling Coordinators about their validated ETC and TOR quantities, and calculated Default Energy Bids curves provided by Independent Entities, and in addition, the RMR Proxy Bids for Energy and the default Minimum Load and Start-Up Cost Bid curves for RMR Units, as provided by Independent Entities.

* * *

6.5.3.2.2 The results of the Day-Ahead Market will be published on OASIS by 1:00 p.m. and will include:

- (a) Total Day-Ahead Schedules (MWh) for by total Supply and Demand by TAC Area and Generator, Demand and Scheduling Point for the entire CAISO Balancing Authority Area;
- (b) Total Day-Ahead Schedules (MWh) of imports and exports by Transmission Interface;
- (bc) Total Day-Ahead AS Awards by AS Region and AS type;
- (ed) RUC Prices by bus-PNode and APNodes, RUC Forecast Demand and Day-Ahead Schedules, for each RUC Zone, plus CAISO total for each Operating Hour, hourly RUC Capacity from Generation, and hourly RUC Capacity from imports for each TAC Area and the entire CAISO Balancing Authority Area;
- (de) Day-Ahead LMP for Energy for each PNode and APNode, including the Energy, MCC and MCL components;

- (ef) Day-Ahead ASMP by ~~bus~~ by PNode AS Region and AS type;
- (fg) Day-Ahead mitigation indicator;
- (gh) CAISO Forecast of CAISO Demand for each TAC Area and the entire CAISO Balancing Authority Area;
- (hi) Shadow Prices; and
- (ij) Total Day-Ahead system Marginal ~~Cost~~ of Losses in MWh and Marginal Cost of Losses for each Trading Hour of the next Trading Day.

* * *

6.5.4.2.2 At thirty (30) minutes before the Trading Hour, on an hourly basis, the CAISO will publish on OASIS the following:

- (a) Total HASP Intertie Schedules for imports and exports by TAC Area and for the entire CAISO Balancing Authority Area;
- ~~(b) Total HASP Advisory Schedules (MWh) by Scheduling Point;~~
- ~~(c) HASP AS Awards by Scheduling Point;~~
- ~~(db) HASP Intertie LMPs for Scheduling Points by PNodes and APNodes;~~
- ~~(ec) HASP advisory LMPs by PNode and APNode;~~
- ~~(f) HASP Intertie ASMP for AS by bus PNode;~~
- ~~(g) HASP advisory ASMP for AS by bus PNode;~~
- (hd) HASP Shadow Prices; and
- (ie) Total HASP system Marginal Losses in MWh for the next Operating Hour.

* * *

6.5.5.2.2 Every fifteen (15) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

- (a) Total Real-Time AS Awards by AS Region and AS type; and
- (b) Real-Time ASMPs by ~~bus~~ AS Region and AS type.

6.5.5.2.3 **[NOT USED]** ~~Every ten (10) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:~~

~~(a) Settlement Interval LMPs.~~

* * *

7.7.2.3 **Responsibilities of Generating Units, and System Units and System Resources During System Emergencies.**

All Generating Units, and System Units ~~and System Resources~~ that are owned or controlled by a Participating Generator are (without limitation to the CAISO's other rights under this CAISO Tariff) subject to control by the CAISO during a System Emergency and in circumstances in which the CAISO considers that a System Emergency is imminent or threatened. The CAISO shall, subject to this Section 7, have the authority to instruct a Participating Generator to bring its Generating Unit on-line, off-line, or increase or curtail the output of the Generating Unit and to alter scheduled deliveries of Energy and Ancillary Services into or out of the CAISO Controlled Grid, if such an instruction is reasonably necessary to prevent an imminent or threatened System Emergency or to retain Operational Control over the CAISO Controlled Grid during an actual System Emergency. The CAISO shall have the authority to instruct an RMR Unit whose owner has selected Condition 2 of its RMR Contract to start-up and change its output if the CAISO has reasonably used all other available and effective resources to prevent a threatened System Emergency without declaring that a System Emergency exists. If the CAISO so instructs a Condition 2 RMR Unit, it shall compensate that unit in accordance with Section 11.5.6.3 and allocate the costs in accordance with Section 11.5.6.3.2. Each QF subject to an existing agreement with a Participating TO for the supply of Energy to the Participating TO and not subject to a QF PGA will make reasonable efforts to comply with the CAISO's instructions during a System Emergency without penalty for failure to do so.

* * *

7.7.11.4 **Load Shedding.**

7.7.11.4.1 **[NOT USED]** ~~A portion of the CAISO forecast of Balancing Authority Area Load for each Trading Day will be allocated to each UDC or MSS Service Area. The CAISO will aggregate each~~

~~Scheduling Coordinator's Day Ahead Schedules to Load in each UDC or MSS Service Area and will compare those aggregated Load Schedules to the CAISO Balancing Authority Area Load forecast of metered Demand for that UDC or MSS Service Area to determine if the Load in the UDC or MSS Service Area has a resource deficiency based on the Day Ahead Schedules.~~

7.7.11.4.2 If the CAISO forecasts in advance of the HASP that Load curtailment will be necessary due to a resource deficiency as determined pursuant to Section 40.7, the CAISO will identify any UDC or MSS Service Area that is resource deficient. The CAISO will provide notice to all Scheduling Coordinators if one or more UDC or MSS is deficient. If Load curtailment is required to manage a System Emergency associated with ~~insufficient HASP Schedules of resources~~ a resource deficiency determined pursuant to Section 40.7, the CAISO will determine the amount and location of Load to be curtailed and will allocate a portion of that required Load curtailment to each UDC or MSS Operator whose Service Area has been identified, ~~based on HASP Schedules~~, as being resource-deficient based on the ratio of its resource deficiency to the total Balancing Authority Area resource deficiency. Each UDC or MSS Operator shall be responsible for notifying its customers and Generators connected to its system of curtailments and service interruptions.

7.7.11.4.3 If a Load curtailment is required to manage System Emergencies, in any circumstances other than those described in Section 7.7.11.4.2, the CAISO will determine the amount and location of Load to be reduced and to the extent practicable, will allocate a portion to each UDC or MSS Operator based on the ratio of its Demand (at the time of the Balancing Authority Area annual peak for the previous year) to total Balancing Authority Area annual peak Demand for the previous year taking into account system considerations and the UDC's or MSS Operator's curtailment rights under their tariffs. Each UDC or MSS Operator shall be responsible for notifying its customers and Generators connected to its system of curtailments and service interruption.

* * *

8.2.3.3 Voltage Support.

The CAISO shall determine on an hourly basis for each day the quantity and location of Voltage Support required to maintain voltage levels and reactive margins within Applicable Reliability Criteria using a power flow study based on the quantity and location of scheduled Demand. The CAISO shall issue daily

voltage schedules (Dispatch Instructions) to Participating Generators, Participating TOs and UDCs, which are required to be maintained for CAISO Controlled Grid reliability. All other Generating Units shall comply with the power factor requirements set forth in contractual arrangements in effect on the CAISO Operations Date, or, if no such contractual arrangements exist and the Generating Unit exists within the system of a Participating TO, the power factor requirements applicable under the Participating TO's TO Tariff or other tariff on file with the FERC.

All Participating Generators shall maintain the CAISO specified voltage schedule at the transmission interconnection points to the extent possible while operating within the power factor range specified in their interconnection agreements or, for Regulatory Must-Take Generation, Regulatory Must-Run Generation and Reliability Must-Run Generation, consistent with existing obligations. For Generating Units that do not operate under one of these agreements, the minimum power factor range will be within a band of 0.90 lag (producing VARs) and 0.95 lead (absorbing VARs) power factors. Participating Generators with Generating Units existing at the CAISO Operations Date that are unable to meet this operating power factor requirement may apply to the CAISO for an exemption. Prior to granting such an exemption, the CAISO shall require the Participating TO or UDC to whose system the relevant Generating Units are interconnected to notify it of the existing contractual requirements for Voltage Support established prior to the CAISO Operations Date for such Generating Units. Such requirements may be contained in CPUC Electric Rule 21 or the Interconnection Agreement with the Participating TO or UDC. The CAISO shall not grant any exemption under this Section from such existing contractual requirements. The CAISO shall be entitled to instruct Participating Generators to operate their Generating Units at specified points within their power factor ranges. Participating Generators shall receive no compensation for operating within these specified ranges.

If the CAISO requires additional Voltage Support, it shall procure this either through Reliability Must-Run Contracts or, if no other more economic sources are available, by instructing a Generating Unit to move its MVar output outside its mandatory range. Only if the Generating Unit must reduce its MW output in order to comply with such an instruction will it be eligible to recover its opportunity cost compensated in accordance with Section ~~8-5.6-2~~11.10.1.4.

All Loads directly connected to the CAISO Controlled Grid shall maintain reactive flow at grid interface points within a specified power factor band of 0.97 lag to 0.99 lead. Loads shall not be compensated for the service of maintaining the power factor at required levels within the bandwidth. A UDC interconnecting with the CAISO Controlled Grid at any point other than a Scheduling Point shall be subject to the same power factor requirement.

The power factor for both the Generating Units and Loads shall be measured at the interconnection point with the CAISO Controlled Grid. The CAISO will develop and will be authorized to levy penalties against Participating Generators, UDCs or Loads whose Voltage Support does not comply with the CAISO's requirements. The CAISO will establish voltage control standards with UDCs and the operators of other Balancing Authority Areas and will enter into operational agreements providing for the coordination of actions in the event of a voltage problem occurring.

~~Wheeling Through and Wheeling Out transactions may also be subject to a reactive charge as developed by the CAISO. If the CAISO shall determine that a reactive charge should be payable at a future date, it shall, subject to FERC acceptance and approval, publish annually the Voltage Support obligations and applicable charges for Wheeling Through and Wheeling Out transactions at Scheduling Points. The obligations shall be predetermined by the CAISO based on the estimated amount of the Wheeling Through and Wheeling Out transactions each year.~~

* * *

8.3.5 The CAISO shall procure Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve on a daily, hourly and Real-Time basis in the IFM and RTM, respectively. The CAISO shall procure Ancillary Services on a longer-term basis pursuant to Section 42.1.3 if necessary to meet Reliability Criteria. ~~The CAISO Governing Board must approve all long-term contracts.~~ The CAISO shall contract for Voltage Support annually (or for such other period as the CAISO may determine is economically advantageous) and on a daily or hourly basis as required to maintain System Reliability. The CAISO shall contract annually (or for such other period as the CAISO may determine is economically advantageous) for Black Start Generation.

* * *

8.3.7 Bidding Requirements, Including Submission to Self-Provide an Ancillary Service.

Scheduling Coordinators may submit Bids or Submissions to Self-Provide an Ancillary Service consistent with the rules specified in Section 30 and any further requirements in this Section 8.3.7. Scheduling Coordinators may (i) submit Bids or Submissions to Self-Provide an Ancillary Service from resources located within the CAISO Balancing Authority Area or Dynamic System Resources certified to provide Ancillary Services, (ii) submit Submissions to Self-Provide an Ancillary Service from resources located outside the CAISO Balancing Authority Area if provided pursuant to ETCs, TORs, or Converted Rights, (iii) submit Bids for Ancillary Services from resources located outside the CAISO Balancing Authority Area, or (iv) specify Inter-SC Trades of Ancillary Services. Ancillary Services in the Day-Ahead Market and in the Real-Time Market are comprised of the following: Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve. Each Generating Unit (including Physical Scheduling Plants), System Unit, Participating Load, or System Resource for which a Scheduling Coordinator wishes to submit Ancillary Service Bids must meet the requirements set forth in this CAISO Tariff. The same resource capacity may be offered into more than one CAISO Ancillary Service auction at the same time. Ancillary Services Bids and Submissions to Self-Provide an Ancillary Service can be submitted up to seven (7) days in advance. Ramp Rates will be only used by the CAISO for procuring capacity associated with the specific Ancillary Services. The CAISO will issue Real-Time Dispatch Instructions in the Real-Time Market for the Energy associated with the awarded capacity based upon the applicable Operational Ramp Rate submitted with the single-Energy Bid Curve in accordance with Section 30.7.740. There is no ability to procure Ancillary Services for export. To the extent a Scheduling Coordinator has an on-demand obligation to serve loads outside the CAISO Balancing Authority Area, it can do so provided that (1) it is using export transmission capacity available in Real-Time, and (2) the resource capacity providing Energy to satisfy the on-demand obligation is not under an RMR Contract or Resource Adequacy Capacity obligation, and has not been paid a RUC Availability Payment for the Trading Hour.

* * *

8.3.8 Procurement of Voltage Support.

~~As of the CAISO Operations Date, the CAISO will contract for Voltage Support service with the owners of Reliability Must Run Units. Payments for public utilities under the FPA shall be capped at the FERC~~

~~authorized cost based rates unless and until FERC authorizes different pricing. The CAISO shall pay owners of Reliability Must-Run Units for long-term Voltage Support through their Scheduling Coordinators.~~

~~In addition, a~~Any Participating Generator who is producing Energy shall, upon the CAISO's specific request, provide reactive energy output outside the Participating Generator's Voltage Support obligation defined in Section 8.2.3.3.

The CAISO shall select Participating Generators's Generating Units which have been certified for Voltage Support to provide this additional Voltage Support. Subject to any locational requirements, the CAISO shall select the least costly Generating Units from a computerized merit order stack to back down to produce additional Voltage Support in each location where Voltage Support is needed.

~~The CAISO shall pay to the Scheduling Coordinator for that Participating Generator the opportunity cost of reducing Energy output to enable reactive energy production. This opportunity cost shall be:~~

~~Max {0, LMP - Generating Unit Bid price} x reduction in Energy output (MW).~~

~~If necessary, the CAISO shall develop a regulatory cost-based determination of marginal operating cost to be used in place of the Generating Unit Bid price.~~

8.3.9 Black Start Capability and Energy Output.

~~As of the CAISO Operations Date, the CAISO will contract for Black Start capability and Energy with owners of Reliability Must-Run Units and Black Start Generators. Public utilities under the FPA will be paid rates capped at the FERC authorized cost base rates unless and until FERC authorizes different pricing.~~

~~The CAISO shall pay owners of Reliability Must-Run Units for Black Start Energy output through their Scheduling Coordinators. The CAISO shall pay Black Start Generators for Black Start Energy output directly.~~

* * *

8.6.2 Right to Self-Provide.

Each Scheduling Coordinator may choose to self-provide all, or a portion, of its Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve obligations in the Day-Ahead Market, and, to the

extent needed to satisfy CAISO's additional requirement, the Real-Time Market, from resources eligible for self-provision. The right to self-provide Ancillary Services from capacity that is under a contractual obligation to provide Energy, including but not limited to capacity subject to an RMR Contract and local Resource Adequacy Resources, shall be conditional; self-provision of Ancillary Services from such capacity will only be permitted to the extent that capacity is not needed for Energy as a result of the MPM-RRD process described in this CAISO Tariff. To self-provide Ancillary Services a Scheduling Coordinator must provide the CAISO with a Submission to Self-Provide an Ancillary Service. Both Ancillary Service Bids and Submissions to Self-Provide an Ancillary Service can be provided to the CAISO for the same Ancillary Service and for the same hour in the same market. To the extent the Submission to Self-Provide an Ancillary Service is from a resource that is a Partial Resource Adequacy Resource, and Energy is needed, including for purposes under Section 31.3.1.3, from that resource the CAISO shall only disqualify the self-provision of Ancillary Services from the portion of the resource's capacity that has must-offer obligation, provided that the Scheduling Coordinator has not submitted an Energy Bid for the capacity that is not subject to a must-offer obligation. If there is an Energy Bid submitted for the capacity of a Partial Resource Adequacy Resource that is not subject to a must-offer obligation the CAISO may disqualify the Submission to Self-Provide an Ancillary Service for the portion of the resources capacity that is not under a must-offer obligation consistent with the principles of co-optimization under the CAISO Tariff.

Prior to evaluating Ancillary Service Bids, the CAISO will determine whether Submissions to Self-Provide Ancillary Services are feasible with regard to resource operating characteristics and regional constraints and are qualified to provide the Ancillary Services in the markets for which they were submitted.

If the total Submissions to Self-Provide Ancillary Services exceed the maximum regional requirement for the relevant Ancillary Service in an Ancillary Service Region, the submissions that would otherwise be accepted by the CAISO as feasible and qualified will be awarded on a pro-rata basis among the suppliers offering to self-provide the Ancillary Service up to the amount of the requirement. If a regional constraint imposes a limit on the total amount of Regulation Up, Spinning Reserve, and Non-Spinning Reserve, and the total self-provision of these Ancillary Services in that region exceeds that limit, Self-Provided AS are qualified pro rata from higher to lower quality service in three tiers: Regulation Up first, followed by

Spinning Reserve, and then by Non-Spinning Reserve. ~~Following this process, unless a higher quality Self-Provided Ancillary Service in a constrained region is fully qualified, the pro rata allocation in the subsequent lower quality Self-Provided Ancillary Service for that region will be nil.~~ Submissions to Self-Provide Ancillary Services in excess of the maximum regional requirement for the relevant Ancillary Service in an Ancillary Service Region will not be accepted and qualified by the CAISO as Self-Provided Ancillary Services.

The CAISO shall schedule Self-Provided Ancillary Services in the Day-Ahead Market and the RTM and Dispatch Self-Provided Ancillary Services in the Real-Time. To the extent that a Scheduling Coordinator self-provides Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve, the CAISO shall correspondingly reduce the quantity of the Ancillary Services it procures from Bids submitted in the Day-Ahead Market and the Real-Time Market. To the extent a Scheduling Coordinator's Self-Provided Ancillary Service for a particular Ancillary Service is greater than the Scheduling Coordinator's obligation for that particular Ancillary Service in a Settlement Interval, the Scheduling Coordinator will receive the user rate for the Self-Provided Ancillary Service for the amount of the Self-Provided Ancillary Service in excess of the Scheduling Coordinator's obligation.

Scheduling Coordinators may trade Ancillary Services so that any Scheduling Coordinator may reduce its Ancillary Services Obligation through purchase of Ancillary Services capacity from another Scheduling Coordinator, or self-provide in excess of its obligation to sell Ancillary Services to another Scheduling Coordinator.

* * *

8.10.8.1 Rescission of Payments for Undispatchable Ancillary Service Capacity.

The CAISO shall calculate the Real-Time ability of each Generating Unit, Participating Load, System Unit or System Resource to deliver Energy from Ancillary Services capacity or Self-Provided Ancillary Services capacity for each Settlement Interval based on its maximum operating capability, actual telemetered output, and Operational Ramp Rate as described in Section 30.10. System Resources that are awarded Ancillary Services capacity ~~or RUC Capacity~~ in the Day-Ahead Market are required to electronically tag (E-Tag as prescribed by the WECC) the Ancillary Services capacity ~~or RUC Capacity~~. If the amounts of Ancillary Services capacity ~~or RUC Capacity~~ in an electronic tag differ from the amounts

of Ancillary Services capacity or ~~RUC Capacity~~ for the System Resource, the Undispatchable Capacity will equal the amount of the difference, and will be settled in accordance with the provisions of Section 11.10.9.1.

* * *

10.2.8.4 ~~RMDAPS~~ SQMDS Security.

The CAISO will provide any needed information to entities that are permitted to access ~~RMDAPS~~SQMDS. The CAISO must maintain the security and integrity of Revenue Quality Meter Data brought into ~~RMDAPS~~SQMDS.

* * *

11.2.1.6 Allocation of IFM Marginal Losses Surplus Credit.

On each Settlement Statement, the CAISO shall apply the IFM Marginal Losses Surplus Credit to each Scheduling Coordinator for the period of each Settlement Statement. For each Settlement Period, the IFM Marginal Losses Surplus Credit shall be the product of the IFM Marginal Losses Surplus rate (\$/MWh) and the MWh of Measured Demand for the relevant Scheduling Coordinator net of that Scheduling Coordinator's (1) Measured Demand associated with a TOR Self-Schedule subject to the IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.2.1.7; and (2) Measured Demand associated with a TOR Self-Schedule subject to the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2. The IFM Marginal Losses Surplus rate shall be equal to the total IFM Marginal Losses Surplus (\$) divided by the sum of the total MWh of Measured Demand in the CAISO Balancing Authority Area for the relevant Settlement Period net of (1) any Measured Demand associated with a TOR Self-Schedule subject to the IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.2.1.7; and (2) any Measured Demand associated with a TOR Self-Schedule subject to the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2.

* * *

11.2.4.4.1 Monthly Clearing of the CRR Balancing Account – Full Funding of CRRs.

At the end of each month, all CRR Payment shortfalls for all CRR Holders shall be paid in full and all CRR Charge shortfalls shall be fully charged through the CRR Balancing Account clearing process. The net of these CRR Charges and CRR Payment shortfalls shall be added to the CRR Balancing Account for the applicable month. Any surplus or shortfall revenue amounts in the CRR Balancing Account will be distributed to Scheduling Coordinators in an amount equal to (a) the CRR Balancing Account surplus or shortfall amounts, times (b) the ratio of each Scheduling Coordinator's Measured Demand (net of the Scheduling Coordinator's Measured Demand associated with valid and balanced ETC, TOR or Converted Rights Self-Schedule quantities for which IFM Congestion Credits and/or HASP and RTM Congestion Credits were provided in the same relevant month) divided by (c) the total Measured Demand for all Scheduling Coordinators for the relevant month, (net of the total Measured Demand associated with valid and balanced ETC, TOR or Converted Rights Self-Schedule quantities for which IFM Congestion Credits and/or RTM Congestion Credits were provided in the same relevant month).

* * *

11.5.1.2 Total IIE Quantity.

The total IIE quantity (MWh) per Settlement Interval for each Scheduling Coordinator is the sum of Standard Ramping Energy, MSS Load Following Energy, Optimal Energy, HASP Scheduled Energy, Real-Time Minimum Load Energy, Regulation Energy, Ramping Energy Deviation, Derate Energy, Real-Time Self-Schedule Energy, Residual Imbalance Energy, and Exceptional Dispatch Energy, Real-Time Pumping Energy, and Operational Adjustments for the Day-Ahead and Real-Time.

* * *

11.5.4.2 Allocations of Non-Zero Amounts of the Sum of IIE, UIE, and UFE, and the Real-Time Ancillary Services Congestion Revenues.

The CAISO will first compute (1) the Real-Time Congestion Offset and allocate it to all Scheduling Coordinators, based on Measured Demand, excluding Demand associated with ETC or TOR Self-Schedules for which a HASP and RTM Congestion Credit was provided as specified in Section 11.5.7, and excluding Demand associated with ETC, Converted Right, or TOR Self-Schedules for which an IFM Congestion Credit was provided as specified in Section 11.2.1.5; and (2) the Real-Time Marginal Cost of Losses Offset and allocate it to all Scheduling Coordinators based on Measured Demand, excluding

Demand associated with TOR Self-Schedules for which a RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section 11.5.7.2, and excluding Demand associated with ETC, Converted Right or TOR Self-Schedules for which an IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section 11.2.1.7. For Scheduling Coordinators for MSS Operators regardless of whether the MSS Operator has elected gross or net Settlement, the CAISO will allocate the Real-Time Congestion Offset based on the MSS Aggregation Net ~~Total~~ Non-ETC/TOR Measured Demand. To the extent that the sum of the Settlement amounts for IIE, UIE, and UFE and the Real-Time Ancillary Services Congestion revenues, less Real-Time Congestion Offset, does not equal zero, the CAISO will assess charges or make payments for the resulting differences to all Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that are not Load following MSSs and have elected gross Settlement, based on a pro rata share of their Measured Demand for the relevant Settlement Interval. For Scheduling Coordinators for MSS Operators that have elected Load following or net Settlement, or both, the CAISO will assess charges or make payments for the resulting non-zero differences of the sum of the Settlement amounts for IIE, UIE, and UFE and the Real-Time Ancillary Services Congestion Revenues, less Real-Time Congestion Offset based on their MSS Aggregation Net Measured Demand.

* * *

11.5.6 Settlement Amounts for IIE from Exceptional Dispatch.

For each Settlement Interval, the IIE Settlement Amount from each type of Exceptional Dispatch described in Section 34.9 is calculated as the sum of the products of the relevant IIE quantity for the Dispatch Interval and the relevant Settlement price for the Dispatch Interval for each type of Exceptional Dispatch as further described in this Section 11.5.6. For MSS Operators the Settlement for IIE from Exceptional Dispatches is conducted in the same manner, regardless of any MSS elections (net/gross Settlement, Load following or opt-in/opt-out of RUC). ~~Except for Exceptional Dispatches to perform Ancillary Services testing, to perform pre-commercial operation testing for Generating Units, to perform PMax testing, or for Voltage Support or Black Start from a Generating Unit under a contract to provide service, Exceptional Dispatches issued pursuant to Section 34.9.2 shall be settled in the same manner as provided in Section 11.5.6.1.~~ Except for the Settlement price, Exceptional Dispatches to perform Ancillary

Services testing, to perform PMax testing, and to perform pre-commercial operation testing for Generating Units are otherwise settled in the same manner as provided in Section 11.5.6.1. Notwithstanding any other provisions of this Section 11.5.6, the Exceptional Dispatch Settlement price that is applicable in circumstances in which the CAISO applies Mitigation Measures to Exceptional Dispatch of resources pursuant to Section 39.10 shall be calculated as set forth in Section 11.5.6.7.

11.5.6.1 Settlement for IIE from Exceptional Dispatches used for System Emergency Conditions, for a Market Interruption, to Mitigate Overgeneration Conditions or to Prevent or Relieve Imminent System Emergencies.

The Exceptional Dispatch Settlement price for incremental IIE that is delivered as a result of an Exceptional Dispatch for System Emergency conditions, for a Market Interruption, to mitigate Overgeneration conditions, or to prevent or relieve an imminent System Emergency, including forced Start-Ups and Shut-Downs, is the higher of the (a) Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for incremental Energy for this type of Exceptional Dispatch are settled in two payments: (1) incremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the incremental Energy Bid Cost in excess of the applicable LMP at the relevant Location is settled pursuant to Section 11.5.6.1.1. The Exceptional Dispatch Settlement price for ~~decremental IIE not associated with an Energy Bid~~ that is delivered as a result of an Exceptional Dispatch Instruction for a Market Interruption, or to prevent or relieve a System Emergency is the minimum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price subject to Section 39.6.1.4, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources ~~is the minimum of the Resource-Specific Settlement Interval LMP, the Energy Bid price, or the negotiated price, if applicable and the Energy does not have an Energy Bid price.~~ All Energy costs for decremental IIE associated with this type of Exceptional Dispatch are included in the total IIE Settlement Amount described in Section 11.5.1.1.

11.5.6.2 Settlement of IIE from Exceptional Dispatches Caused by Modeling Limitations.

The Exceptional Dispatch Settlement price for IIE that is consumed or delivered as a result of an Exceptional Dispatch to mitigate or resolve Congestion as a result of a transmission-related modeling limitation in the FNM as described in Section 34.9.3 is the maximum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for incremental Energy for this type of Exceptional Dispatch are settled in two payments: (1) incremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the incremental Energy Bid costs in excess of the applicable LMP at the relevant Location are settled per Section 11.5.6.2.3. The Exceptional Dispatch Settlement price for decremental IIE for this type of Exceptional Dispatch is the minimum of (a) the Resource-Specific Settlement Interval LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. Costs for decremental IIE associated with this type of Exceptional Dispatch are settled in two payments: (1) decremental Energy is first settled at the Resource-Specific Settlement Interval LMP and included in the total IIE Settlement Amount described in Section 11.5.1.1; and (2) the decremental Energy Bid costs in excess of the applicable LMP at the relevant Location are settled per Section 11.5.6.2.3.

* * *

11.5.6.2.4 Exceptional Dispatches for Non-Transmission-Related Modeling Limitations.

The Exceptional Dispatch Settlement price for incremental IIE that is consumed or delivered as a result of an Exceptional Dispatch to mitigate or resolve Congestion that is not a result of a transmission-related modeling limitation in the FNM as described in Section 34.9.3 is the maximum of the (a) Resource-Specific Settlement Interval LMP, (b) Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. All costs for incremental Energy for this type of Exceptional Dispatch will be included in the total IIE Settlement Amount described

in Section 11.5.1.1. The Exceptional Dispatch Settlement price for decremental IIE for this type of Exceptional Dispatch is the minimum of the (a) Resource-Specific Settlement Interval LMP, (b) Energy Bid Price, (c) or the Default Energy Bid price if the resource has been mitigated through the MPM-RRD in the Real-Time Market and for the Energy that does not have an Energy Bid price, or (d) the negotiated price as applicable to System Resources. All costs for decremental IIE associated with this type of Exceptional Dispatch are included in the total IIE Settlement Amount described in Section 11.5.1.1.

* * *

11.5.6.5 Settlement of IIE from Black Start and Voltage Support.

All IIE Settlement Amounts associated with Black Start and Voltage Support ~~are~~ receive the Exceptional Dispatch Settlement price as provided in Section 11.5.6.1, but the costs are derived allocated pursuant to Section 11.10.8.

* * *

11.5.7.1 HASP and RTM Congestion Credit for ETCs and TORs.

The CAISO shall not apply charges or payments to Scheduling Coordinators related to the MCC associated with all Points of Receipt and Points of Delivery pairs associated with valid and balanced ETC Self-Schedules or TOR Self-Schedules. The balanced portion will be based on the difference between: (1) the minimum of the metered CAISO Demand, ETC or TOR Self-Schedule submitted in the HASP, or the Existing Contract maximum capacity as specified in the TRTC Instructions; and (2) the valid and balanced portion of the Day-Ahead Schedule. For each Scheduling Coordinator, the CAISO shall determine for each Settlement Interval the applicable HASP and RTM Congestion Credit for Imbalance Energy, which can be positive or negative, as the sum of the product of the relevant MWh quantity and the MCC at each Point of Receipt and Point of Delivery associated with the valid and balanced portions of that Scheduling Coordinator's ETC or TOR Self-Schedules. For all exports and imports settled in the HASP, the CAISO shall use the MWh quantity specified in the ~~HASP Inter-tie~~ CAISO's Interchange transaction scheduling system ~~S~~ schedule. For all Demand settled in the Real-Time Market the CAISO shall use the metered CAISO Demand associated with the applicable ETC or TOR. For all Supply settled in the Real-Time Market the CAISO shall use the quantity specified in the Dispatch Instructions.

* * *

11.8.1.2 Real-Time Self-Commitment Period.

A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource shall consist of all consecutive Dispatch Intervals not in an IFM Commitment Period or a RUC Commitment Period where the Bid Cost Recovery Eligible Resource has a Self-Schedule or, except for Self-Provided Ancillary Services for Non-Spinning Reserve by a Fast Start Unit, has a non-zero amount of Self-Provided Ancillary Services. A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource may not be less than the relevant MUT (rounded up to the next 15-minute Commitment Interval) when considered jointly with any adjacent IFM Self-Commitment Period. ~~Consequently~~For example, if a Bid Cost Recovery Eligible Resource self-commits at time h , the self-commitment will be extended to Commitment Interval $h + \text{MUT}$, unless an IFM or RUC Commitment Period exists starting after hour h , in which case the self-commitment will be extended to Commitment Interval $h + \min(\text{MUT}, t)$. A Real-Time Market Self-Commitment Period for a Bid Cost Recovery Eligible Resource may not be apart from an IFM or RUC Commitment Period by less than the relevant MDT (rounded up to the next 15-minute Commitment Interval). ~~Consequently~~For example, if a Bid Cost Recovery Eligible Resource self-commits at time $T1$ and has a RUC Schedule at time $T2 < T1$, the Real-Time Market Self-Commitment Period will be extended to the interim Commitment Intervals if $T1 - T2 < \text{MDT}$. The number of Real-Time Market Self-Commitment Periods for a Bid Cost Recovery Eligible Resource within a Trading Day, when considered jointly with any adjacent IFM Self-Commitment Period, may not exceed the relevant MDS (or $\text{MDS} + 1$ if the first Real-Time Market Self-Commitment Period is the continuation of a Real-Time Market Commitment Period from the previous Trading Day). ~~Consequently~~For example, if a Bid Cost Recovery Eligible Resource self-commits at time $T1$ and has a RUC Schedule at time $T2 > T1$, the Real-Time Market Self-Commitment Period will be extended to the interim Commitment Intervals if an additional Real-Time Market Start-Up at $T1$ would violate the MDS constraint.

* * *

11.8.2.1.3 IFM Pump Shut-Down Cost.

For Pumped-Storage Hydro Units and Participating Load only, the IFM Pump Shut-Down Costs for each Settlement Interval shall be equal to the relevant Pump Shut-Down Cost submitted to CAISO in the IFM

divided by the number of Settlement Intervals in a Trading Hour that is preceded by a previous commitment by the IFM to pump, in which actual shut down is to occur if the unit is committed by the IFM not to pump and actually does not operate in pumping mode in that Settlement Interval (as detected throughby Meter Data). The IFM Pump Shut-Down Cost for an IFM Shut-Down period shall be zero if: (1) it is followed by an IFM or RFM Self-Commitment Period in generation mode; (2) the Shut-Down is due to an Outage reported through SLIC; or (3) the Shut-Down is delayed by the RTM past the IFM Shut-Down period in question or cancelled by the RTM before the Shut-Down process has started.

11.8.2.1.4 IFM Pumping Bid Cost.

For Pumped-Storage Hydro Units and Participating Load only, the IFM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the IFM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative. The Pumping Cost is included in IFM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the IFM to pump or serve Load if it actually operates in pumping mode or serves Load in that Settlement Interval. The IFM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for actual Energy consumed in excess of the Day-Ahead Schedule for Demand. The IFM Pumping Cost for any Settlement Interval is zero if: (1) the Settlement Interval is in an IFM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; or (2) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under an RMR Contract prior to the Day-Ahead Market or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule for the applicable Settlement Interval.

* * *

11.8.3.1.2 RUC Minimum Load Cost.

The Minimum Load Cost for the applicable Settlement Interval shall be the Minimum Load Cost of the ~~Generating~~ Bid Cost Recovery Eligible Resource divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the RUC Minimum Load Cost in a CAISO RUC Commitment Period is eligible for Bid Cost Recovery. The RUC Minimum Load Cost for any Settlement Interval is zero if: (1) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under an RMR

Contract or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule in that Settlement Interval; (2) the Bid Cost Recovery Eligible Resource is not actually On in the applicable Settlement Interval; or (3) the applicable Settlement Interval is included in an IFM Commitment Period. For the purposes of determining RUC Minimum Load Cost, a Bid Cost Recovery Eligible Resource is assumed to be On if its metered Energy in a Settlement Interval is equal to or greater than the difference between its Minimum Load Energy and the Tolerance Band. Otherwise, it is determined to be Off.

* * *

11.8.4.1.3 RTM Pump Shut-Down Cost.

The RTM Pump Shut-Down Cost for each Settlement Interval is the relevant Pump Shut-Down Cost submitted by the Scheduling Coordinator only for Pumped-Storage Hydro Units and Participating Load, divided by the number of Settlement Intervals in which such resource was committed by the Real-Time Market in a Trading Hour to stop pumping and serving Load and with scheduled pumping operation and in which an actual Shut-Down occurs and the resource does not actually does not operate in pumping mode or serve Load in that Settlement Interval (as detected through Meter Data), divided by the number of Settlement Intervals in a Trading Hour. The RTM Pump Shut-Down Cost for a Real-Time Market Shut-Down event shall be zero if: (1) it is followed by a RTM Self-Commitment Period in generation mode or offline mode; or (2) the Shut-Down is due to an Outage reported through SLIC.

11.8.4.1.4 RTM Pumping Bid Cost.

For Pumped-Storage Hydro Units and Participating Load only, the RTM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the HASP or RTM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative since it represents the amount the entity is willing to pay to pump or serve Load. The Pumping Cost is included in RTM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the Real-Time Market to pump or serve Load, if it actually operates in pumping mode or serves Load in that Settlement Interval. The RTM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for any Energy consumed in excess of instructed Energy. The RTM Pumping Bid Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for

the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) the Bid Cost Recovery Eligible Resource is not actually in pumping mode in that Settlement Interval; (4) that Settlement Interval is included in an IFM or RUC Commitment Period; or (5) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.9.2 for the purpose of performing Ancillary Services testing or pre-commercial operation testing.

* * *

11.8.6.4 Allocation of Net IFM Bid Cost Uplift.

For each Trading Hour of the IFM the hourly Net IFM Bid Cost Uplift is determined as the sum over the Settlement Intervals in that Trading Hour of the product of any positive Net IFM Bid Cost Uplift remaining in the Settlement Interval after the sequential netting in Section 11.8.6.2 and the application of the uplift ratio as determined in 11.8.6.3. The hourly Net IFM Bid Cost Uplift is allocated in two tiers as follows:

- (i) In the first tier, the hourly Net IFM Bid Cost Uplift is allocated to Scheduling Coordinators in proportion to their non-negative IFM Load Uplift Obligation, but with an IFM Bid Cost Uplift rate not exceeding the ratio of the hourly Net IFM Bid Cost Uplift for the Trading Hour divided by the sum of all hourly Generation scheduled in the Day-Ahead Schedule and IFM upward AS Awards for all Scheduling Coordinators from CAISO-committed Bid Cost Recovery Eligible Resources in that Trading Hour. The IFM Load Uplift Obligation for each Scheduling Coordinator, including Scheduling Coordinators for Metered Subsystems regardless of their MSS optional elections (net/gross Settlement, Load following, RUC opt-in/out), is the difference between the total Demand scheduled in the Day-Ahead Schedule of that Scheduling Coordinator and the sum of scheduled Generation and scheduled imports from the Self-Schedules in the Day-Ahead Schedule of that Scheduling Coordinator, ~~plus imports scheduled by that Scheduling Coordinator in its Day-Ahead Schedule~~, adjusted by any applicable Inter-SC Trades of IFM Load Uplift Obligations.

- (ii) In the second tier, Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected both to not follow their Load and gross Settlement, will be charged for an amount equal to any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to the Scheduling Coordinator's Measured Demand. Scheduling Coordinators for MSS Operators that have elected to either follow their Load or net Settlement, or both, will be charged for an amount equal to any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to their MSS Aggregation Net Measured Demand.

* * *

11.8.6.6 Allocation of Net RTM Bid Cost Uplift.

The hourly Net RTM Bid Cost Uplift is computed for the Trading Hour as the product of the uplift ratio in 11.8.6.3 and the sum over all Settlement Intervals of the Trading Hour of any positive Net RTM Bid Cost Uplift after the sequential netting in Section 11.8.6.2. The hourly RTM Bid Cost Uplift is allocated to Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected (a) to not to follow their Load, and (b) gross Settlement, in proportion to their Measured Demand for the Trading Hour. For Scheduling Coordinators for MSS Operators that have elected (a) not to follow their Load, and (b) ~~netgross~~ Settlement, the hourly RTM Bid Cost Uplift is allocated in proportion to their MSS Aggregation Net Measured Demand. For Scheduling Coordinators of MSS Operators that have elected to follow their Load, the RTM Bid Cost Uplift shall be allocated in proportion to their MSS Net Negative Uninstructed Deviation. Accordingly, each Scheduling Coordinator shall be charged an amount equal to its Measured Demand times the RTM Bid Cost Uplift rate, where the RTM Bid Cost Uplift rate is computed as the Net RTM Bid Cost Uplift amount divided by the sum of Measured Demand across all Scheduling Coordinators for the Trading Hour.

* * *

11.10.1.4 Voltage Support.

The total payments for each Scheduling Coordinator for Voltage Support in any Settlement Period shall be the sum of the ~~short-term procurement payments, based on opportunity cost, as described in Section~~

~~8.3.8, opportunity costs of limiting Energy output to enable reactive energy production in response to a CAISO instruction. The opportunity cost shall be calculated based on the product of the Energy amount that would have cleared the market at the price of the Resource-Specific Settlement Interval LMP minus the higher of the Energy Bid price or the Default Energy Bid price.~~

~~If applicable, Scheduling Coordinators shall also receive any and the payments under any long-term contracts due for the Settlement Period. Exceptional Dispatches for incremental or decremental Energy needed for Voltage Support procured through Exceptional Dispatch pursuant to Section 34.9.2 will be paid and settled in accordance with Sections 11.5.6.1 and 11.5.6.2.5.2. RMR Units providing Voltage Support are compensated in accordance with the RMR Contract rather than this Section 11.10.1.4.~~

11.10.1.5 Black Start.

~~The total payments for each Scheduling Coordinator for Black Start shall consist of any payments under any long-term contracts due for the Settlement Period. If the Energy price and Start-Up Costs are not specified in the long-term contract, the Black Start Energy will be paid as an Exceptional Dispatch in accordance with Section 11.5.6.1 and the resource will be entitled to Bid Cost Recovery. RMR Units providing Black Start are compensated in accordance with the RMR Contract rather than this Section 11.10.1.5.~~

~~**Quantities.** The following quantities shall be used in the Settlement process for Black Start:~~

~~$EnQBS_{ijt}$ = Energy output from Black Start made by Generating Unit i from Scheduling Coordinator j (or Black Start Generator j, as the case may be) for Settlement Period t, pursuant to the CAISO's order to produce.~~

~~**Prices.** The prices used in the Settlement process for Black Start are those described in the contracts referred to in Section 8.3.9.~~

~~$Adjustment$ = penalty described in Section 8.10.7.~~

~~**Payments.** Scheduling Coordinators for owners of Reliability Must Run Units (or Black Start Generators, as the case may be) shall receive the following payments for Energy output from Black Start facilities:~~

$$~~BSEN_{ijt} = (EnQBS_{ijt} * EnBid_{ijt}) + BSSUP_{ijt} - Adjustment~~$$

where $BSSUP_{ij,t}$ is the start-up payment for a Black Start successfully made by Generating Unit i of Scheduling Coordinator j (or Black Start Generator j) in Trading Interval t calculated in accordance with the applicable Reliability Must-Run Contract (or the Interim Black Start Agreement as the case may be).

* * *

11.10.7 Voltage Support.

The short-term market Voltage Support user rate for any Settlement Period t for Zone x shall be calculated based on the sum of as follows:

$$VSSTRate_{xt} = \frac{\sum_{i,j} VSST_{xijt}}{\sum_j QChargeVS_{xjt}}$$

$VSST_{xijt}$ = Voltage Support payments made to Scheduling Coordinators in accordance with Section 11.10.1.4, j in respect of Generating Unit i in Zone x in the short-term market applicable to Settlement Period t .

$QChargeVS_{xjt}$ = charging quantity for Voltage Support for Scheduling Coordinator j for Settlement Period t in Zone x equal to the total metered divided by Measured Demand _{i} in Zone x (including exports to neighboring Control Areas and excluding metered Demand inside an MSS except as provided by Section 4.9.4.4) by Scheduling Coordinator j for Settlement Period t .

The monthly long-term Voltage Support contract user rate for Settlement Period t for Zone x shall be calculated as follows:

$$VSLTRate_{xm} = \frac{\sum_{i,j} VSLT_{xijm}}{\sum_{jm} QChargeVS_{xjt}}$$

where:

$VSLT_{xijm}$ = long-term Voltage Support contract payment to Scheduling Coordinator j for owner of Reliability Must-Run Unit i in Zone x for month m .

The ~~short term market~~ Voltage Support charges for any Settlement Period t payable by a Scheduling Coordinator is the Voltage Support user rate multiplied by the quantity of Measured Demand, excluding Demand within an MSS except as provided by Section 4.9.4.4, for which that Scheduling Coordinator is responsible in that Settlement Period. j will be calculated as follows:

$$\underline{VSSTCharge}_{jt} = \underline{VSSTRate}_t * \underline{QChargeVS}_{jt}$$

where $\underline{VSSTCharge}_{jt}$ is the amount payable by Scheduling Coordinator j for short term market Voltage Support for Settlement Period t .

$\underline{VSSTRate}_t$ is the short term market Voltage Support user rate for Settlement Period t . The monthly long term Voltage Support contract charge for month m payable by Scheduling Coordinator j will be calculated as follows:

$$\underline{VSLTCharge}_m = \underline{VSLTRate}_m * \sum_m \underline{QChargeVS}_{jt}$$

where $\underline{VSLTCharge}_m$ is the amount payable by Scheduling Coordinator j for long term Voltage Support for month m .

$\underline{VSLTRate}_m$ is the monthly long term Voltage Support contract user rate charged by the CAISO to Scheduling Coordinators for month m .

11.10.8 Black Start.

$\underline{QChargeBlackstart}_{jt}$ = charging quantity for Black Start for Scheduling Coordinator j for Settlement Period t equal to the total metered Demand (excluding exports to neighboring Balancing Authority Areas and metered Demand of a MSS) by Scheduling Coordinator j for Settlement Period t .

The Black Start Energy payment user rate for any Settlement Period t will be calculated based on the sum of Black Start Energy payments to Scheduling Coordinators paid in accordance with Section 11.10.1.5, including any Exceptional Dispatch Instructed Imbalance Energy payments for Black Start, in the applicable Settlement Period divided by Measured Demand, excluding exports to neighboring Balancing Authority Areas and excluding Demand within an MSS except as provided by Section 4.9.4.5, as follows:

$$BSRate_t = \frac{\sum_{i,j} BSE_{ijt}}{\sum_j QChargeBlackstart_{jt}}$$

where BSE_{ijt} is the CAISO payment to Scheduling Coordinator j for owner of Reliability Must-Run Unit (or to Black Start Generator j , as the case may be) for Generating Unit i providing Black Start Energy in Settlement Period t .

The Black Start Energy user charge for any Settlement Period t for a Scheduling Coordinator j will be the Black Start Energy payment user rate multiplied by the quantity of Measured Demand, excluding Demand within an MSS except as provided by Section 4.9.4.4, for which that Scheduling Coordinator is responsible in that Settlement Period, calculated as follows:

$$BSCharge_{jt} = BSRate_t * QChargeBlackStart_{jt}$$

* * *

11.24.3 Exemptions from the Interim Scheduling Charge.

The Interim Scheduling Charge shall not apply to the following circumstances:

- (a) For any given Trading Day for Scheduling Coordinators in each applicable LAP in which the CAISO's daily Day-Ahead peak CAISO Forecast of CAISO Demand is ninety-five percent (95%) or less than daily actual metered CAISO Demand in the respective northern and southern regions of the CAISO Balancing Authority Area as further described in the Business Practice Manuals.
- (b) For any given Trading Hour when a Scheduling Coordinator's ~~peak~~-metered CAISO Demand is less than or equal to 500 MW in a particular LAP, that Scheduling Coordinator shall not be subject to the Interim Scheduling Charge.
- (c) For metered CAISO Demand by Participating Loads.
- (d) For metered CAISO Demand that is MSS Load following Demand.
- (e) For any given Trading Hour when the Hourly Real-Time LAP Price is less than the Day-Ahead LAP Price for the same Trading Hour in the applicable LAP.

- (f) For metered CAISO Demand of Station Power Loads.

* * *

12.5 CAISO Enforcement Actions Regarding Under-Secured Market Participants.

If a Market Participant's Estimated Aggregate Liability, as calculated by the CAISO, at any time exceeds its Aggregate Credit Limit, the CAISO may take any or all of the following actions:

- (a) The CAISO may withhold a pending payment distribution.
- (b) The CAISO may limit trading, which may include rejection of Bids, including Self-Schedules, rejection or cancellation of Inter-SC Trades in their entirety (i.e., both sides of the Inter-SC Trade) at any time, and/or limiting other CAISO Market activity, including limiting eligibility to participate in a CRR Allocation or CRR Auction. In such case, the CAISO shall notify the Market Participant of its action and the Market Participant shall not be entitled to participate in the CAISO Markets or CRR Auctions or submit further Bids, including Self-Schedules, or otherwise participate in the CAISO Markets until the Market Participant posts an additional Financial Security Amount that is sufficient to ensure that the Market Participant's Aggregate Credit Limit is at least equal to its Estimated Aggregate Liability.
- (c) The CAISO may require the Market Participant to post an additional Financial Security Amount in lieu of an Unsecured Credit Limit for a period of time.
- (d) The CAISO may restrict, suspend, or terminate the Market Participant's CRR Entity Agreement or any other service agreement.
- (e) The CAISO may resell the CRR Holder's CRRs in whole or in part, including any Long Term CRRs, in a subsequent CRR Auction or bilateral transaction, as appropriate.
- (f) The CAISO will not implement the transfer of a CRR if the transferee or transferor has an Estimated Aggregate Liability in excess of its Aggregate Credit Limit.

In addition, the CAISO may restrict or suspend a Market Participant's right to submit further Bids, including Self-Schedules, or require the Market Participant to increase its Financial Security Amount if at any time such Market Participant's potential additional liability for Imbalance Energy and other CAISO charges is determined by the CAISO to be excessive by comparison with the likely cost of the amount of Energy reflected in Bids or Self-Schedules submitted by the Market Participant.

* * *

16.5 Treatment of Existing Contracts for Transmission Service.

The CAISO will accommodate Existing Rights, so that the holders of Existing Rights will receive the same priorities (in scheduling, curtailment, assignment and other aspects of transmission system usage) to which they are entitled under their Existing Contracts.

In addition, scheduling deadlines and operational procedures associated with Existing Rights will be honored by the CAISO, provided such information is explicitly included in the TRTC Instructions. The CAISO will accommodate and honor Existing Rights as follows:

- (1) For Existing Rights that permit Interchange Schedule changes over Scheduling Points with other Balancing Authority Areas, the CAISO will reserve transmission capacity equal to the Existing Rights transmission capacity and make a corresponding adjustment in its determination of ATC. For Existing Rights that permit Interchange Schedule changes after the Market Close of the Day-Ahead Market, the CAISO will reserve transmission capacity equal to the unscheduled ETC amount of transmission capacity for that Scheduling Point.
- (2) For Existing Rights within the CAISO Balancing Authority Area, the CAISO will not only set-aside capacity associated with the Existing Rights transmission capacity to the extent that the Scheduling Coordinator submits a valid ETC Self-Schedule in the Day-Ahead Market.
- (3) In the HASP, the CAISO will give valid ETC Self-Schedules priority over other non-ETC Day-Ahead Schedules and HASP Bids. In the event of a reduction in

capacity on the transmission path associated with the Existing Right, the CAISO will honor the Existing Rights priority in accordance with this Section 16.

- (4) When the Existing Contract permits, the CAISO will allow the holder of Existing Rights to make changes to the scheduled amounts of Supply after the submission of HASP ETC Self-Schedules in accordance with the TRTC Instructions established for such changes. The CAISO will, as necessary, redispatch non-ETC resources to accommodate valid ETC Self-Schedule changes in Real-Time.

* * *

16.6.2.1 Inconsistent with the TRTC Instructions.

Except for the reasons listed below in 16.6.2, if the CAISO finds that the ETC Self-Schedule is not consistent with the TRTC Instructions, the CAISO shall find that the ETC Self-Schedule is not valid. If the CAISO finds the ETC Self-Schedule to be invalid, the CAISO shall notify the Scheduling Coordinator and convert the ETC Self-Schedule to an ordinary Self-Schedule and treat the ETC Self-Schedule as an ordinary Self-Schedule as such for terms of scheduling priority and Settlements. Where multiple ETC, TOR or Converted Rights Self-Schedules are submitted in an ETC, TOR or Converted Rights chain, in order for all ETC, TOR, or Converted Rights Self-Schedules in the chain to continue to remain valid, all individual ETC, TOR, or Converted Rights Self-Schedules links in the chain must remain individually valid, including the simultaneous but separate use of an individual ETC, TOR or Converted Rights Self-Schedule, in order for the chain to remain valid.

* * *

17.3.2 Treatment of Invalid TOR Self-Schedules.

17.3.2.1 Inconsistent with the TRTC Instructions.

Except for the reasons listed below in 17.3.2, if the CAISO finds that the TOR Self-Schedule is not consistent with the TRTC Instructions, the CAISO shall find that the TOR Self-Schedule is not valid. If the CAISO finds the TOR Self-Schedule to be invalid, the CAISO shall notify the Scheduling Coordinator and convert the TOR Self-Schedule to an ordinary Self-Schedule and treat the TOR Self-Schedule as an

ordinary Self-Schedule as such for terms of scheduling priority and Settlements. Where multiple ETC, TOR or Converted Rights Self-Schedules are submitted in an ETC, TOR or Converted Rights chain, in order for all ETC, TOR, or Converted Rights Self-Schedules in the chain to continue to remain valid, all individual ETC, TOR, or Converted Rights Self-Schedules links in the chain must remain individually valid, including the simultaneous but separate use of an individual ETC, TOR or Converted Rights Self-Schedule, in order for the chain to remain valid.

* * *

22.1.6 Payments.

Any payments agreed to between Market Participants and the CAISO as a result of an audit, or directed by FERC, or disclosed by the CAISO in reviews of its own books and records shall include Interest computed at the rate calculated in accordance with the methodology specified for interest on refunds in FERC's regulations at 18 C.F.R. § 35.19a(a)(2)(iii) (as amended from time to time) from the due date to the date such adjustments are due.

* * *

24.10.4 Once a New Participating TO has executed the Transmission Control Agreement and it has become effective, the cost for New High Voltage Facilities for all Participating TOs shall be included in the CAISO Grid-wide component of the High Voltage Access Charge in accordance with Schedule 3 of Appendix F, unless and with respect to Western Path 15 only, cost recovery is provided in Section 24.710.3. The Participating TO who is supporting the cost of the New High Voltage Facility shall include such costs in its High Voltage Transmission Revenue Requirement, regardless of which TAC Area the facility is geographically located.

* * *

26.1.4.3 Disbursement of Wheeling Revenues.

The CAISO shall collect and pay to Participating TOs and other entities as provided in Section 24.710.3 all Wheeling revenues at the same time as other CAISO charges and payments are settled. For Wheeling revenues associated with CRRs allocated to Load Serving Entities outside the CAISO Balancing Authority Area, the CAISO shall pay to the Participating TOs and other entities as provided in

Section 24.710.3 any excess prepayment amounts within thirty (30) days of the end of the term of the CRR Allocation. The CAISO shall provide to the applicable Participating TO and other entities as provided in Section 24.710.3 a statement of the aggregate amount of Energy delivered to each Scheduling Coordinator using such Participating TO's Scheduling Point to allow for calculation of Wheeling revenue and auditing of disbursements. Wheeling revenues shall be disbursed by the CAISO based on the following:

26.1.4.3.1 Scheduling Point with All Participating TOs in the Same TAC Area.

With respect to revenues received for the payment of High Voltage Wheeling Access Charges for Wheeling to a Scheduling Point at which all of the facilities and Entitlements, less all Encumbrances, are owned by Participating TOs in the same TAC Area, Wheeling revenues shall be disbursed to each such Participating TO based on the ratio of each Participating TO's High Voltage Transmission Revenue Requirement to the sum of all such Participating TO's High Voltage Transmission Revenue Requirements. If the Scheduling Point is located at a Low Voltage Transmission Facility, revenues received with respect to Low Voltage Wheeling Access Charges for Wheeling to that Scheduling Point shall be disbursed to the Participating TOs that own facilities and Entitlements making up the Scheduling Point in proportion to their Low Voltage Transmission Revenue Requirements. Additionally, if a Participating TO has a transmission upgrade or addition that was funded by a Project Sponsor, the Wheeling revenue allocated to such Participating TO shall be disbursed as provided in Section 24.710.3.

* * *

26.3 Addition of New Facilities After CAISO Implementation.

The costs of transmission facilities placed in service after the CAISO Operations Date shall be recovered consistent with the cost recovery determinations made pursuant to Appendix F, Schedule 3 and Section 24.710.3.

* * *

27.1.1.1 System Marginal Energy Cost.

The System Marginal Energy Cost (SMEC) component of the LMP reflects the marginal cost of providing Energy from a designated reference Location. For this designated reference Location the CAISO will

utilize a distributed Reference Bus whose constituent PNodes are weighted in ~~pre-specified~~ proportions referred to as Reference Bus distribution factors. The SMEC shall be the same throughout the system.

* * *

27.2.2.1 IFM LAP Prices.

The IFM LAP Price for a given Trading Hour is the weighted average of the individual IFM LMPs at the PNodes within the LAP, with the weights equal to the nodal proportions of Demand associated with that LAP that is scheduled by the IFM. ~~The weights used in calculating the Default LAP prices will equal the total Demand scheduled by the IFM in each Default LAP except for the excluding Demand specified in Sections 27.2.1 and 30.5.3.2.~~

* * *

27.5.1 Description of FNM for CAISO Markets.

The FNM is a representation of the CAISO Balancing Authority Area that enables the CAISO to conduct power flow analyses to identify transmission Constraints for the optimization of the CAISO Markets. External Balancing Authority Areas and external transmission systems are modeled to the extent necessary to support the commercial requirements of the CAISO Markets. External connections are retained between Intertie branches within Transmission Interfaces. Certain external loops are modeled, which allows the CAISO to increase the accuracy of the Congestion Management process. Resources are modeled at the appropriate network Nodes. The pricing Location (PNode) of a Generating Unit generally coincides with the Node where the relevant revenue quality meter is connected or corrected, to reflect the point at which the Generating Units are connected to the CAISO Controlled Grid. The Dispatch, Schedule and LMP of a Generating Unit refers to a PNode, but the Energy injection is modeled in the FNM for network analysis purposes at the corresponding Generating Unit(s) (at the physical interconnection point), taking into account any losses in the transmission network leading to the point where Energy is delivered to Demand. For the CAISO Markets Processes, the FNM incorporates Transmission Losses and models and enforces all network Constraints within the CAISO Balancing Authority Area, which are reflected in the Day-Ahead Schedules, AS Awards and RUC Awards, HASP

Intertie Schedules, Dispatch Instructions and the LMPs resulting from each CAISO Markets Process. For portions of the FNM that are external to the CAISO Balancing Authority Area, the CAISO may model the resistive component for accurate modeling of Transmission Losses, but accounts for losses in the external portions of the FNM separately from Transmission Losses within the CAISO Balancing Authority Area, and does not allow such losses to determine the Marginal Cost of Losses in the LMPs that apply to the CAISO Markets. For portions of the FNM that are external to the CAISO Balancing Authority Area, the CAISO only enforces network Constraints that reflect limitations of the transmission facilities and Entitlements turned over to the Operational Control of the CAISO by a Participating TO, or that affect Congestion Management within the CAISO Balancing Authority Area or on Interties. For the HASP, STUC, RTUC and the RTD processes, the Real-Time power flow parameters developed from the State Estimator are applied to the FNM.

* * *

27.7 Constrained Output Generators.

27.7.1 ~~Start-Up and Minimum Load Costs and Energy Bids~~ Election of Constrained Output Generators Status.

A Scheduling Coordinator on behalf of a Generating Unit eligible for COG status must make an election to have the resource treated as a COG before each calendar year by registering the resource's PMin in the Master File as equal to its PMax less 0.01 MW (PMin = PMax – 0.01 MW) within the timing requirements specified for Master File changes described in the applicable Business Practice Manual. Generating Units with COG status ~~COGs~~ will be eligible to set LMPs in the IFM and RTM based on their Calculated Energy Bids, as set out in this Section 27.7.1. Before each calendar year, the COG must elect one of the methods described in Section 27.7.1.1 for specifying its Start-Up Costs and Minimum Load Costs, and must elect one of the methods described in Sections 27.7.1.2 and 27.7.1.3 for determining its Energy Bids.

27.7.1.1 ~~Start-Up and Minimum Load Cost Options.~~

A COG may elect to recover Start-Up Costs and Minimum Load Costs through a cost-based option based on heat rate and fuel costs. Fuel costs are adjustable by the CAISO on a daily basis for gas fired resources, or are registered non-adjustable costs for other resources. Alternatively, a COG may elect to

register in the Master File a six-month value of its own choosing that does not need to be cost-based and will not be adjusted for fuel cost changes.

27.7.1.2 ~~Energy Bids Calculated from Start-Up and Minimum Load Costs.~~

As with all Generating Units, a Scheduling Coordinator on behalf of a COG must elect either the Proxy Cost option or the Registered Cost option, as provided in Section 30.4, for determining its Start-Up Costs and Minimum Load Costs. A COG's Calculated Energy Bid will be calculated based on this election.

Whenever a Scheduling Coordinator for a COG submits an Energy Bid into the IFM or RTM, the CAISO will override that Bid and substitute the Calculated Energy Bid if the submitted Bid is different from the Calculated Energy Bid. Under both options for specifying Start-Up Costs and Minimum Load Costs described in Section 27.7.1.1, a COG's Energy Bid will be determined by dividing its Minimum Load Cost by the MW quantity of its PMin. Based on the assumption that its PMin equals its PMax, it will be eligible to set the LMP in the IFM and the RTD based on this Energy Bid.

27.7.21.3 ~~Eligibility to Submit Market-Based Energy Bids by Election to Waiveing COG Status.~~

A Scheduling Coordinator on behalf of a Generating Unit eligible for COG status may elect to waive COG status. If such Generating Unit has a non-zero operating range (PMax greater than PMin), For the purposes of specifying an Energy Bid that is not based on its Minimum Load Cost, a COG may elect to be modeled with different PMin and PMax values if the physical characteristics of the resource support such differences. Under this election the COG's PMin must be greater than or equal to its PMax minus the maximum of three (3) MW or five percent (5%) of its PMax. Under this option, if the resource is capable of being dispatched at an operating point other than zero (0) or its PMax, the resource does not meet the definition of COG and the resource is treated in the CAISO Markets Processes like any other resource. Such a resource may submit a market Energy Bid for the MW difference between its PMin and PMax, and if scheduled or issued a CAISO Schedule or Dispatch Instruction in this range it would be subject to Local Market Power Mitigation, eligible to set the LMP and would receive any appropriate BCR it is eligible to participate in the CAISO Markets like any other resource.

27.7.32 ~~Constrained Output Generators in the IFM.~~

In the IFM, ~~resources electing COGs status that elect the option described in Section 27.7.1.2 are~~ modeled as though they are not constrained and can operate flexibly between zero (0) and their PMax, ~~which equals their PMin. Such a~~ COG is eligible to set IFM LMPs based on its Calculated Energy Bid in any Settlement Period in which a portion of its output is needed as a flexible resource to serve Demand. ~~Such a~~ COG is not eligible for recovery of Minimum Load Costs or BCR in the IFM due to the conversion of its Minimum Load Cost to an Energy Bid and its treatment by the IFM as a flexible resource. ~~Such a~~ COG is eligible for Start-Up Cost recovery based on its Commitment Period as determined in the IFM, RUC, HASP, STUC or RTUC. ~~COGs that elect the option described in Section 27.7.1.3 are treated in the IFM like other resources having Energy Bids for a flexible Dispatch range above their Minimum Load.~~

27.7.43 Constrained Output Generators in RUC.

In RUC, any COG ~~that elects the option described in Section 27.7.1.2 and is offered in the IFM but not scheduled~~ that has capacity that did not fully clear in the IFM is treated as constrained, so that the entire capacity of the COG is scheduled in committed by RUC and not a portion thereof. ~~Because PMin and PMax are equal for such a COG, and Any such RUC Awards commitment would apply to scheduled capacity in RUC in excess of the higher of: (a) the relevant Day-Ahead Schedule; or (b) the relevant Minimum Load. In the event of a RUC commitment, such a~~ the COG is not eligible to receive a RUC Award. ~~COGs that elect the option described in Section 27.7.1.3 are treated in the RUC like other resources having Energy Bids for a flexible Dispatch range above their Minimum Load and may be eligible to receive a RUC Award in accordance with Section 31.5.~~

27.7.54 Constrained Output Generators in the Real-Time Market.

A COG that can be started up and complete its Minimum Run Time within a five-hour period can be committed by the STUC. A COG that can be started up within the Time Horizon of a RTUC run, ~~which varies from 60 to 105 minutes,~~ can be committed by the RTUC. ~~If the resource elects the method described in Section 27.7.1.2 for determining its Energy Bid, no Energy Bid Curve can be submitted for the resource. In this case, in t~~The RTD the CAISO will dispatch a COG up to its PMax or down to zero (0) to ensure a feasible Real-Time Dispatch. The COG is eligible to set the RTM LMP in any Dispatch Interval in which a portion of its output is needed to serve Demand, not taking into consideration its

Minimum Run Time constraint. For the purpose of making this determination and setting the RTM LMP, the CAISO treats a COG as if it were flexible with an infinite Ramp Rate between zero (0) and its PMax, and uses the COG's Calculated Energy Bid ~~as determined in Section 27.7.1.2~~. In any Dispatch Interval where none of the output of a COG is needed as a flexible resource to serve Demand, the CAISO shall not dispatch the unit. In circumstances in which the output of the COG is not needed as a flexible resource to serve Demand, but the unit nonetheless is online as a result of a previous commitment or Dispatch Instruction by the CAISO, the COG is eligible for Minimum Load Cost compensation. ~~If the resource elects the method described in Section 27.7.1.3 for determining its Energy Bid, the RTM will treat it like any other resource that is flexible over a non-zero operating range.~~

* * *

28.1.2 Availability of Inter-SC Trades of Energy.

The CAISO allows Inter-SC Trades of Energy at individual PNodes of Generating Units and unique Aggregated Pricing Nodes of Physical Scheduling Plants within the CAISO Balancing Authority Area and at Aggregated Pricing Nodes that are either defined Trading Hubs or Default LAPs. The CAISO does not allow Inter-SC Trades of Energy at Scheduling Points. The CAISO allows submission of Inter-SC Trades of Energy in the DAM and the HASP. Inter-SC Trades of Energy submitted for the DAM are settled at the hourly DAM LMP at the applicable Aggregated Pricing Nodes or PNodes ~~for Generating Units~~. Inter-SC Trades of Energy submitted in the HASP are settled hourly based on the simple average of the RTM Dispatch Interval LMPs at the applicable Aggregated Pricing Nodes or PNodes ~~of Generating Units in those hours~~.

28.1.3 Submission of Inter-SC Trades of Energy.

A Scheduling Coordinator may submit Inter-SC Trades of Energy that it intends to have settled based on DAM LMPs at any time during the Day-Ahead Inter-SC Trade Period and may submit Inter-SC Trades of Energy for a particular hour that it intends to have settled based on the simple average of the RTM Dispatch Interval LMPs during that hour at any time during the HASP Inter-SC Trade Period.

* * *

28.1.5 General Validation Rules for Inter-SC Trades.

For all Inter-SC Trades of Energy the CAISO shall verify that the Scheduling Coordinators for the Inter-SC Trade of Energy mutually agree on the quantity, location, time period, and CAISO Market (for pricing purposes, i.e., LMPs (DAM LMP or RTM Dispatch Interval LMP)) for settling the Inter-SC Trade of Energy. Any individual Inter-SC Trade of Energy that is deemed invalid by the CAISO due to inconsistencies between the trading Scheduling Coordinators on these terms will be rejected. The CAISO will notify trading Scheduling Coordinators within a reasonable time if their Inter-SC Trades of Energy fail these general validation rules as described in the Business Practice Manuals.

28.1.6 Validation Procedures for Physical Trades.

All Inter-SC Trades at PNodes and all Inter-SC Trades of Physical Scheduling Plants at their unique Aggregated Pricing Nodes will be subject to validation procedures as specified in this Section. Physical Trades can occur at any individual Generating Unit's PNode or a Physical Scheduling Plant's Aggregated Pricing Node provided the Physical Trade satisfies the CAISO's Physical Trades validation procedures described herein. The Scheduling Coordinators must demonstrate that the trade is supported (directly or through an Inter-SC Trade of Energy with another Scheduling Coordinator) by a Day-Ahead Schedule or HASP Advisory Schedule for a Generating Unit or Physical Scheduling Plant at the same location for the Inter-SC Trade of Energy at a level greater than or equal to the amount of the Inter-SC Trade of Energy. The CAISO's validation procedures for Physical Trades include three components: (1) Physical Trade submittal screening, (2) Physical Trade pre-market validation, and (3) Physical Trade post-market confirmation.

28.1.6.1 Physical Trade Submittal Screening.

The CAISO's Physical Trade validation procedures begin upon initial submission of a Physical Trade to the CAISO. The first stage of that process, Physical Trade submittal screening, validates that the submitted Physical Trade does not exceed the PMax of the identified Generating Unit or Physical Scheduling Plant. The CAISO will reject Physical Trades that exceed the PMax and notify the responsible Scheduling Coordinators.

28.1.6.2 Physical Trade Pre-Market Validation.

The purpose of the pre-market validation is to determine whether the total MWh quantity of all submitted Physical Trades at a PNode of an individual Generating Unit or the Aggregated Pricing Node of a Physical Scheduling Plant exceeds the ~~Generating Unit's~~ resource's Energy Bid MWh. Pre-market validation is performed on all Physical Trades that pass the submittal screening set forth in Section 28.1.6.1. Scheduling Coordinators are notified within a reasonable time of their Physical Trades status as the CAISO conducts the pre-market validation to indicate, at a minimum, whether the Physical Trade is currently "conditionally valid", or "conditionally invalid", or "conditionally modified." These Physical Trade notices are preliminary and subject to change until the final pre-market validation at the close of the ~~HASP-relevant~~ Inter-SC Trade Period. A Physical Trade with a "conditionally valid" or "conditionally modified" status may be rendered "conditionally invalid" due to the actions of the Scheduling Coordinators to that Physical Trade or by other trading activities that are linked to the Generating Unit identified for the relevant Physical Trade whenever the quantities specified in the relevant Inter-SC Trades cannot be supported by the underlying ~~Generating Unit's~~ Bid. Scheduling Coordinators can use these status notices to make modifications to complete or correct invalid Physical Trades. The CAISO also performs cyclic a ~~final~~ pre-market validation prior to at the close of the ~~HASP-relevant~~ Inter-SC Trade Period. Physical Trades that are individually valid are concatenated (daisy chained) with other supporting Physical Trades at the same PNode or Aggregated Pricing Node of the Generating Unit or Physical Scheduling Plant. Once that concatenation is complete, the CAISO will determine whether the concatenated Physical Trades are physically supported by either another Inter-SC Trade of Energy at that same location or the Bid submitted in the relevant CAISO Market on behalf of the resource ~~for the Generating Unit identified~~ for that Physical Trade, individually and in the aggregate. If a Physical Trade is not adequately physically supported, the quantities in the Physical Trades of that Scheduling Coordinator and its downstream trading counter-parties are reduced on a pro-rata basis until those Physical Trades are valid. In performing physical pre-market validation of Inter-SC Trades of Energy in HASP, the CAISO also considers final Inter-SC Trades of Energy for the DAM in determining whether the HASP Physical Trades are physically supported individually or in the aggregate. Specifically, the CAISO determines whether the ~~Generating Unit~~ resource's submitted Bid in HASP is greater than or equal to the sum of: (1) final Day-Ahead Inter-SC Trades of Energy at that location, ~~and~~ (2) the additional Inter-SC Trades of Energy for the

HASP at that location and (3) the sum of all upward Day-Ahead Ancillary Services Awards at that location. If the amounts are greater than the resource's ~~Generating Unit's~~ submitted Bids in HASP, the CAISO will adjust down on a prorated basis the HASP Physical Trades. Final Day-Ahead Physical Trades are not adjusted in the HASP pre-market validation. The CAISO does not perform any Settlement on Physical Trade quantities (MWh) that are curtailed during Physical Trade pre-market validation.

28.1.6.3 Physical Trade Post-Market Confirmation.

The CAISO conducts post-market confirmation of Physical Trades that pass pre-market validation in Section 28.1.6.2 after the Market Clearing and the market results are posted to ensure that the Generating Unit or Physical Scheduling Plant has a Schedule that can support all of the Physical Trades. During the post-market confirmation process, the MWh quantity of Physical Trades that passed the CAISO's pre-market validation process may be reduced if the ~~Generating Unit~~ resource supporting the Physical Trades has a HASP Advisory Schedule that is, on average, below the quantity of Physical Trades at that Location. The MWh quantities of Physical Trades that are reduced during the post-market confirmation process are settled at the Existing Zone Generation Trading Hub price for the Existing Zone associated with the ~~Generating Unit~~ resource identified in the Inter-SC Trade of Energy. The portion of Physical Trades that remains intact will be settled at the relevant LMP for the identified PNode for the Generating Unit or Aggregated Pricing Node for the Physical Scheduling Plant.

* * *

30.5.2.3 Supply Bids for Participating Loads, Including Pumped-Storage Hydro Units and Aggregated Participating Loads.

In addition to the common elements listed in Section 30.5.2.1, Scheduling Coordinators submitting Supply Bids for Participating Loads, which includes Pumping Load or Pumped-Storage Hydro Units, may include the following components: Pumping Level Load (MW), Minimum Load Bid (Generation mode only of a Pumped-Storage Hydro Unit), Load Distribution Factor, Ramp Rate, Energy Limit (~~Generation mode only of a Pumped-Storage Hydro Unit~~), Pumping Cost, and Pump Shut-Down Costs. If no values for Pumping Cost or Pump Shut-Down Costs are submitted, the CAISO will generate these Bid components based on values in the Master File. Scheduling Coordinators may only submit Supply Bids for Aggregated Participating Loads by using a Generating Unit or Physical Scheduling Plant Resource ID for the Demand

reduction capacity represented by the Aggregated Participating Load as set forth in a Business Practice Manual. The CAISO will use Generation Distribution Factors provided by the Scheduling Coordinator for the Aggregated Participating Load.

* * *

30.5.2.6 Ancillary Services Bids.

There are four distinct Ancillary Services: Regulation Up, Regulation Down, Spinning Reserve and Non-Spinning Reserve. Participating Generators are eligible to provide all Ancillary Services. Dynamic System Resources are eligible to provide Operating Reserves and Regulation. Non-Dynamic System Resources are eligible to provide Operating Reserves only. No System Resource, including Dynamic Resource-Specific System Resources and Non-Dynamic Resource-Specific System Resources, can be used for self-provision of Ancillary Services. All System Resources, including Dynamic Resource-Specific System Resources and Non-Dynamic Resource-Specific System Resources, will be charged the Shadow Price as prescribed in Section 11.10. Participating Loads are eligible to provide Non-Spinning Reserve only. A Scheduling Coordinator may submit Ancillary Services Bids for Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve for the same capacity by providing a separate price in \$/MW per hour as desired for each Ancillary Service. The Bid for each Ancillary Services is a single Bid segment. Only resources certified by the CAISO as capable of providing Ancillary Services are eligible to provide Ancillary Services. In addition to the common elements listed in Section 30.5.2.1, all Ancillary Services Bid components of a Supply Bid must contain the following: (1) the type of Ancillary Service for which a Bid is being submitted; (2) Ramp Rate (Operating Reserve Ramp Rate and ~~Regulation~~ Ramp Rate, if applicable); (3) Distribution Curve for Physical Scheduling Plant or System Unit; and (4) Maximum Operating Limit (MOLmax) and Minimum Operating Limit (MOLmin). An Ancillary Services Bid submitted to the Day-Ahead Market when submitted to the Day-Ahead Market may be, but is not required to be, accompanied by an Energy Bid that covers the capacity offered for the Ancillary Service. Submissions to Self-Provide an Ancillary Services submitted to the Day-Ahead Market when submitted to the Day-Ahead Market may be, but are not required to be, accompanied by an Energy Bid that covers the capacity to be self-provided; provided, however, that such an Energy Bid shall be submitted prior to the close of the Real-Time Market for the day immediately following the Day-Ahead Market in which the Ancillary Service

Bid was submitted if the Submission to Self-Provide an Ancillary Service is qualified as specified in Section 8.6. Submissions to Self-Provide an Ancillary Services submitted in the Day-Ahead Market must be accompanied by a Self-Schedule. When submitting Ancillary Service Bids in the Real-Time, Scheduling Coordinators for resources that either have been awarded or self-provide Spinning Reserve or Non-Spinning Reserve capacity in the Day-Ahead Market must submit an Energy Bid for at least the awarded or self-provided Spinning Reserve or Non-Spinning Reserve capacity, otherwise the CAISO will apply the Bid validation rules described in Section ~~30.7.6.130-9~~. As provided in Section 30.5.2.6.4, a Submission to Self-Provide an Ancillary Service shall contain all of the requirements of a Bid for Ancillary Services with the exception of Ancillary Service Bid price information. In addition, Scheduling Coordinators must comply with the Ancillary Services requirements of Section 8.

30.5.2.6.1 Regulation Up or Regulation Down Bid Information.

In the case of Regulation Up or Regulation Down, the Ancillary Services Bid must also contain: (a) the upward and downward range of generating capacity over which the resource is willing to provide Regulation within a range from a minimum of ten (10) minutes to a maximum of thirty (30) minutes; and (b) the Bid price of the capacity reservation, stated separately for Regulation Up and Regulation Down (\$/MW). In the case of Regulation Up or Regulation Down from Dynamic System Resources, the Ancillary Services Bid must also contain: (a) the Scheduling Point (the name), (b) Interchange ID code of the selling entity, (c) external Balancing Authority Area ID, (d) Schedule ID (NERC ID number), and (e) the Contract Reference Number, if applicable. Ancillary Services Bids submitted to the Real-Time Market for Regulation need not be accompanied by an Energy Bid that covers the Ancillary Services capacity being offered into the Real-Time Market. A Regulation Down Bid will be erased unless there is an Energy Bid or Self-Schedule at a level that would permit the resource to provide Regulation Down to its lower Regulation Limit.

* * *

30.5.2.6.4 Additional Rules For Self-Provided Ancillary Services.

Scheduling Coordinators electing to self-provide Ancillary Services shall supply the information referred to in this Section 30.5 in relation to each Ancillary Service to be self-provided, excluding the capacity price information, but including the name of the trading Scheduling Coordinator in the case of Inter-Scheduling

Coordinator Ancillary Service Trades. The portion of the ~~single~~ Energy Bid that corresponds to the high end of the resource's operating range, shall be allocated to any awarded or Self-Provided Ancillary Services in the following order from higher to lower capacity: (a) Regulation Up; (b) Spinning Reserve; and (c) Non-Spinning Reserve. For resources providing Regulation Up, the upper regulating limit shall be used if it is lower than the highest operating limit. The remaining portion of the Energy Bid (i.e. that portion not associated with capacity committed to provide Ancillary Services) shall constitute a Bid to provide Energy.

* * *

30.5.4 Wheeling Through Transactions.

A Wheeling Through transaction consists of an Export Bid and an Import Bid ~~that includes: matching Self-Schedules or Economic Bids (i.e. the Export Bid and Import Bid pair must have matching MW quantities for each Trading Hour) and with~~ the same Wheeling reference (a unique identifier for each Wheeling Through transaction). If the Wheeling reference does not match at the time the relevant market closes, the Wheeling Through transaction will be erased; this includes any Energy Bid or Self-Schedule for the resource for that Trading Hour. Wheeling Through transactions with matching Wheeling references will be kept balanced in the IFM and in the HASP and RTM; that is, to the extent an Export Bid or Import Bid or Self-Schedule specify different quantities, only that matching quantity will clear the CAISO Markets. ~~treated as separate Export Bids and Import Bids, as appropriate. If the MW quantities of the Wheel Through transaction do not match at the time the relevant market closes, the Wheel Through transaction will be considered the minimum of the import and export MW quantities submitted.~~

* * *

30.7.6.1 Validation of Ancillary Services Bids.

Throughout the validation process described in Section 30.7, the CAISO will verify that each Ancillary Services Bid conforms to the content, format and syntax specified for the relevant Ancillary Service. If the Ancillary Services Bid does not so conform, the CAISO will send a notification to the Scheduling Coordinator notifying the Scheduling Coordinator of the errors in the Bids as described in Section 30.7. When the Bids are submitted, a technical validation will be performed to verify that the bid quantity of

Regulation, Spinning Reserve, or Non-Spinning Reserve does not exceed the certified Ancillary Services capacity for Regulation, or Operating Reserves on the Generating Units, System Units, Participating Loads and external imports/exports bid. The Scheduling Coordinator will be notified within a reasonable time of any validation errors. For each error detected, an error message will be generated by the CAISO in the Scheduling Coordinator's notification screen, which will specify the nature of the error. The Scheduling Coordinator can then look at the notification messages to review the detailed list of errors, make changes, and resubmit if it is still within the CAISO's timing requirements. The Scheduling Coordinator is also notified of successful validation. If a resource is awarded or has qualified Self-Provided Ancillary Services in the Day-Ahead Market, if no Energy Bid is submitted to cover the awarded or Self-Provided Ancillary Services by the Market Close of HASP and the RTM, the CAISO will generate or extend an Energy Bid as necessary to cover the awarded or Self-Provided Ancillary Services capacity using the registered values in the Master File and relevant fuel prices as described in the Business Practice Manuals for use in the HASP and IFM. If an AS Bid or Submission to Self-Provide an AS is submitted in the Real-Time for Spinning Reserve or Non-Spinning Reserve without an accompanying Energy Bid at all, the AS Bid or Submission to Self-Provide an Ancillary Service will be erased. If an AS Bid or Submission to Self-Provide an AS is submitted in the Real-Time Market for Spinning Reserve and Non-Spinning Reserve with only a partial Energy Bid for the AS capacity, the CAISO will generate an Energy Bid for the uncovered portions. For Generating Units with certified Regulation capacity, if there no Bid for Regulation in the Real-Time Market, but there is a Day-Ahead award for Regulation Up or Regulation Down or a submission to self-provide Regulation Up or Regulation Down, respectively, the CAISO will generate a Regulation Up or Regulation Down Bid at the default Ancillary Service Bid price of \$0 up to the certified Regulation capacity for the Generating Unit minus any Regulation awarded or self-provided in the Day-Ahead. If there is a Bid for Regulation Up or Regulation Down in the Real-Time Market, the CAISO will increase the respective Bid up to the certified Regulation capacity for the Generating Unit minus any Regulation awarded or self-provided in the Day-Ahead. If a Self-Schedule amount is greater than the Regulation Limit for Regulation Up, the Regulation Up Bid will be erased.

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30.7.7 Format and Validation of Operational Ramp Rates.

The submitted Operational Ramp Rate expressed in megawatts per minute (MW/min) as a function of the operating level, expressed in megawatts (MW), must be a staircase function with up to four segments.

There is no monotonicity requirement for the Operational Ramp Rate. The submitted Operational Ramp Rate shall be validated as follows:

- (a) The range of the submitted Operational Ramp Rate must cover the entire capacity of the resource, from the minimum to the maximum operating capacity, as registered in the Master File for the relevant resource.
- (b) The operating level entries must match exactly (in number, sequence, and value) the corresponding minimum and maximum Operational Ramp Rate breakpoints, as registered in the Master File for the relevant resource.
- (c) If a Scheduling Coordinator does not submit an Operational Ramp Rate for a generating unit for a day, the CAISO shall use the maximum Ramp Rate for each operating range set forth in the Master File as the Ramp Rate for that unit for that same operating range for the Trading Day.
- (d) The last Ramp Rate entry shall be equal to the previous Ramp Rate entry and represent the maximum operating capacity of the resource as registered in the Master File. The resulting Operational Ramp Rate segments must lie between the minimum and maximum Operational Ramp Rates, as registered in the Master File.
- (e) The submitted Operational Ramp Rate must be the same for each hour of the Trading Day, i.e., the Operational Ramp Rate submitted for a given Trading Hour must be the same with the one(s) submitted earlier for previous Trading Hours in the same Trading Day.
- (f) Outages that affect the submitted Operational Ramp Rate must be due to physical constraints, reported in SLIC and are subject to CAISO approval. All approved changes to the submitted Operational Ramp Rate will be used in

determination of Dispatch Instructions for the shorter period of the balance of the Trading Day or duration of reported Outage.

- (g) ~~If an Operational Ramp Rate is derated~~ in SLIC may be declared for any operational segment established in the Master File, ~~the Ramp Rate will only be to four segments~~. Ramping capability through Forbidden Operating Regions are not affected by derates entered in SLIC.
- (h) The amount of change in Ramp Rates from one operating range to a subsequent operating range must not exceed a 10 to 1 ratio, and any Ramp Rate change in excess will be adjusted to achieve the 10 to 1 ratio. This adjustment will also include the implicit ramp rate in the Forbidden Operating Region.
- (i) For all CAISO Dispatch Instructions of Reliability Must-Run Units the Operational Ramp Rate will be the Ramp Rate declared in the Reliability Must Run Contract Schedule A.

* * *

31.2.1 The Reliability and Market Power Mitigation Runs.

The first run of the MPM-RRD procedures is the Competitive Constraints Run (CCR), in which only limits on transmission lines pre-designated as competitive are enforced. The only RMR Units considered in the CCR are Condition 1 RMR Units that have provided market Bids for the DAM and Condition 2 RMR Units when obligated to submit a Bid pursuant to an RMR Contract. The second run is the All Constraints Run (ACR), during which all transmission Constraints are enforced. All RMR Units, Condition 1 and Condition 2, are considered in the ACR. The resources committed in the ACR form the pool of resources that is available for commitment in the IFM.

* * *

31.2.2.2 Non-RMR Units.

If the dispatch level produced through the ACR is greater than the dispatch level produced through CCR, then the resource is subject to Local Market Power Mitigation, in which case the entire portion of the unit's Energy Bid Curve that is above the CCR dispatch level will be mitigated to the lower of the Default Energy

Bid as specified in Section 39, or the DAM Bid, but no lower than the unit's highest Bid price that cleared the CCR. When the ACR dispatch level is higher than the CCR level, the market Bid at and below the CCR dispatch level will be retained in the IFM. If the dispatch level produced through the ACR is not greater than the dispatch level produced through the CCR, the unit's original, unmitigated DAM Bid will be retained in its entirety.

* * *

31.3.1.4 Eligibility to Set the Day-Ahead LMP.

All Generating Units, Participating Loads, non-Participating Loads, System Resources, System Units, or Constrained Output Generators subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates, Forbidden Operating Regions, or other temporal constraints are eligible to set the LMP, provided that (a) the Schedule for the Generating Unit or Resource-Specific System Resource is between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Schedule for the Participating Load, non-Participating Load, non-Resource-Specific System Resource, or System Unit is between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Schedule is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, (c) the resource is constrained by a boundary of a Forbidden Operating Region or is Ramping through a Forbidden Operating Region, or (d) the resource's full Ramping capability is constraining its inter-hour change in Schedule, the resource cannot be marginal and thus is not eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A Constrained Output Generator will be eligible to set the hourly LMP if any portion of its Energy is necessary to serve Demand.

* * *

31.5.1.1 Capacity Eligible for RUC Participation.

RUC participation is voluntary for capacity that has not been designated as Resource Adequacy Capacity. Scheduling Coordinators may make such capacity available for participation in RUC by submitting a RUC Availability Bid, provided the Scheduling Coordinator has also submitted an Energy Bid

for such capacity into the IFM. Capacity from Non-Dynamic System Resources that has not been designated Resource Adequacy Capacity is not eligible to participate in RUC. Capacity from resources including System Resources that has been designated as qualified Resource Adequacy Capacity must participate in RUC. RUC participation is required for Resource Adequacy Capacity to the extent that Resource Adequacy Capacity is not committed following the IFM. System Resources eligible to participate in RUC will be considered on an hourly basis; that is, RUC will not observe any multi-hour block constraints. RUC will observe ~~and~~ the Energy Limits that may have been submitted in conjunction with Energy Bids to the IFM. RMR Unit capacity will be considered in RUC in accordance with Section 31.5.1.3. MSS resources may participate in RUC in accordance with Section 31.5.2.3. COG resources are accounted for in RUC, but may not submit or be paid RUC Availability Payments. The ELS Resources committed through the ELC Process conducted two days before the day the RUC process is conducted for the next Trading Day as described in Section 31.7 are binding.

* * *

31.5.1.4 Eligibility to Set the RUC Price.

All resources that are eligible for RUC participation as described in Section 31.5.1.1 with RUC Bids that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the RUC Price, provided that (a) the RUC Schedule for the Generating Unit or Resource-Specific System Resource is between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Schedule for the eligible resource other than a Generating Unit or Resource-Specific System Resource is between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Schedule is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch or (c) the resource's full Ramping capability is constraining its inter-hour change in Schedule, the resource cannot be marginal and thus is not eligible to set the RUC Price. Resources identified as MSS Load following resources are not eligible to set the RUC Price.

* * *

31.5.5 Selection and Commitment of RUC Capacity.

Capacity that is not already scheduled in the IFM may be selected as RUC Capacity through the RUC process of the DAM. The RUC optimization will select RUC Capacity and produce nodal RUC Prices by minimizing total Bid cost based on RUC Availability Bids and Start-Up and Minimum Load Bids. RUC will not consider Start-Up and Minimum Load Bids for resources already committed in the IFM. The RUC Capacity of a resource is the incremental amount of capacity selected in RUC above the resource's Day-Ahead Schedule. The resource's Day-Ahead Schedule plus its RUC Capacity comprise the resource's RUC Schedule. The CAISO will only issue RUC Start-Up Instructions to resources committed in RUC that must receive a Start-Up Instruction ~~start~~ in the Day-Ahead in order to be available to meet Real-Time Demand. RUC Schedules will be provided to Scheduling Coordinators even if a RUC Start-Up Instruction is not issued at that time. RUC shall not reverse commitments issued through the IFM. If the RUC process cannot find a feasible solution given the resources committed in the IFM, the RUC process will adjust Constraints as described in Section 31.5.4 to arrive at a feasible solution that accommodates all the resources committed in the IFM, and any necessary de-commitment of IFM committed units shall be effectuated through an Exceptional Dispatch.

* * *

31.5.7.1 Rescission of Payments for Undispatchable RUC Capacity.

The CAISO shall calculate the Real-Time ability of each Generating Unit, Participating Load, System Unit or System Resource to deliver Energy from or capacity committed in RUC for each Settlement Interval based on its maximum operating capability, actual telemetered output, and Operational Ramp Rate as described in Section 30.10. ~~System Resources that receive an award for RUC Capacity in the Day-Ahead Market are required to electronically tag (E-Tag as prescribed by the WECC) RUC Capacity. If the amounts of RUC Capacity in an electronic tag differ from the amounts of RUC Capacity for the System Resource, the Undispatchable Capacity will equal the amount of the difference, and will be settled in accordance with the provisions of Section 11.2.2.2.1.~~ If the Undispatchable Capacity is capacity committed in RUC and is from a Generating Unit, System Unit or System Resource that is a Resource Adequacy Resource, there is no payment obligation to the CAISO for the Undispatchable Capacity. The CAISO will report the instance of non-compliance by the Resource Adequacy Resource to the appropriate Local Regulatory Authority.

* * *

33.1 Submission of Bids for the HASP and RTM.

Scheduling Coordinators may submit Bids, including Self-Schedules, for Supply that will be used for the HASP and the RTM processes starting from the time Day-Ahead Schedules have been posted until seventy-five (75) minutes prior to each applicable Trading Hour in the Real-Time. This includes Self-Schedules by Participating Load that is modeled using the Pumped-Storage Hydro Unit. Scheduling Coordinators may not submit Bids, including Self-Schedules, for CAISO Demand in the HASP and RTM. Scheduling Coordinators may submit Bids, including Self-Schedules, for exports at Scheduling Points in the HASP and RTM. ~~The HASP and RTM processes do not accept Demand Bids for CAISO Demand, or Self-Schedules for exports other than those utilizing ETC or TOR rights. Export Bids that are not Self-Schedules may be submitted in HASP.~~ The rules for submitted Bids specified in Section 30 apply to Bids submitted to the HASP and RTM. After the Market Close of the HASP and the RTM the CAISO performs a validation process consistent with the provisions set forth in Section 30.7 and the following additional rules. The CAISO will generate a Self-Schedule to cover any RUC Award or Day-Ahead Schedule in the absence of any Self-Schedule or Economic Bid components, or to fill in any gaps between any Self-Schedule Bid and any Economic Bid components to cover a RUC Award or Day-Ahead Schedule. Bids submitted to the HASP and the RTM to supply Energy and Ancillary Services will be considered in the various HASP and RTM processes, including the MPM-RRD process, the HASP optimization, the STUC, the RTUC and the RTD.

* * *

33.3 Treatment of Self-Schedules in HASP.

~~Scheduling Coordinators may submit Self-Schedules for Supply of Energy to the HASP. This includes Self-Schedules by Participating Load that is submitting Bids as a negative Generating Unit. Scheduling Coordinators may not submit Self-Schedules for CAISO Demand in HASP. Scheduling Coordinators may submit Self-Schedules for exports at Scheduling Points.~~ The HASP optimization clears Bids, including Self-Schedules, while preserving all priorities in this process consistent with Section ~~34.10~~34.4. The HASP optimization does not adjust submitted Self-Schedules unless it is not possible to balance Supply and the CAISO Forecast of CAISO Demand plus Export Bids and manage Congestion using the available

Economic Bids, in which case the HASP performs non-economic adjustments to Self-Schedules. The MWh quantities of Self-Schedules of Supply that clear in the HASP constitute a feasible Dispatch for the RTM at the time HASP is run, but the HASP results do not constitute a final Schedule for Generating Units because these resources may be adjusted non-economically in the RTD if necessary to manage Congestion and clear Supply and Demand. Self-Schedules submitted for Generation Units that clear in the HASP will be issued HASP Advisory Schedules. Scheduling Coordinators representing Participating Intermittent Resources whose output is being used to satisfy a resource adequacy requirement must submit Self-Schedules in HASP in accordance with the forecast provided by the independent forecast service provider. The submission of a change to an ETC Self-Schedule beyond the deadline specified in Section 16.9.1, that is permitted pursuant to the terms of the applicable ETC, shall not be deemed to be an unbalanced ETC Self-Schedule for the purposes of Settlement, consistent with the ETC and TOR Self-Schedule Settlement treatment described in Section 11.5.7.

* * *

33.8.1 Eligibility to Set the HASP Intertie LMP.

All Generating Units, Participating Loads, System Resources, System Units, or COGs subject to the provisions in Section 27.7 with Bids, including Generated Bids, that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the HASP Intertie LMP, provided that (a) the Generating Unit or Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Participating Load, non-Resource-Specific System Resource, or System Unit is Dispatched between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Dispatch is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, or (c) the resource's full Ramping capability is constraining its Dispatch for additional Energy in a target interval, the resource cannot be marginal and thus is not eligible to set the HASP Intertie LMP. Resources identified as MSS Load following resources are not eligible to set the HASP Intertie LMP. A Constrained Output Generator that has the ability to be committed or shut off within the Time Horizon of HASP will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of

Regulation resources to a Dispatch Operating Point by SCED will be eligible to set the HASP Intertie LMP.

* * *

34. REAL-TIME MARKET.

The RTM is the market conducted by the CAISO during any given Operating Day in which Scheduling Coordinators may provide Real-Time Imbalance Energy and Ancillary Services. The Real-Time Market consists of the Real-Time Unit Commitment (RTUC), the Short-Term Unit Commitment (STUC) and the Real-Time Dispatch (RTD) processes. The Short-Term Unit Commitment (STUC) runs once per hour near at the top of the hour and utilizes the SCUC optimization to commit Medium Start, Short Start and Fast Start Units to meet the CAISO Demand Forecast. The CAISO shall dispatch all resources, including Participating Load pursuant to submitted Bids or pursuant to the provisions below on Exceptional Dispatch. In Real-Time, resources are required to follow Real-Time Dispatch Instructions. The Time Horizon of the STUC ~~is approximately 255 minutes, starting with the third~~ fourth fifteen-minute interval of the ~~current~~ next Trading Hour and extending ing for the next four Trading Hours. The RTUC runs every fifteen (15) minutes and utilizes the SCUC optimization to commit Fast Start and some Short Start resources and to procure any needed AS on a fifteen-minute basis. Any given run of the RTUC will have a Time Horizon of approximately sixty (60) to 105 minutes (four to seven fifteen-minute intervals) depending on when during the hour the run occurs. Not all resources committed in a given STUC or 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. The RTD uses a Security Constrained Economic Dispatch (SCED) algorithm every five minutes throughout the Trading Hour to determine optimal Dispatch Instructions to balance Supply and Demand ~~and maintain required Ancillary Services quantities for the next binding target interval.~~ Updates to the FNM used in the RTM optimization include current estimates of real-time unscheduled flow at the Interties. The RTD optimization utilizes up to a sixty-five-minute Time Horizon (thirteen (13) five-minute intervals), but the CAISO issues Dispatch Instructions only for the next target five-minute Interval. The RTUC, STUC and

RTD processes of the RTM use the same FNM used in the DAM and the HASP, subject to any necessary updates of the FNM pursuant to changes in grid conditions after the DAM has run.

* * *

34.2 Real-Time Unit Commitment.

The Real-Time Unit Commitment (RTUC) process uses SCUC and is run every fifteen (15) minutes to: (1) make commitment decisions for Fast Start and Short Start resources having Start-Up Times within the Time Horizon of the RTUC process, and (2) 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. 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 four times an hour, at the following times for the following Time Horizons: (1) at approximately 7.5 minutes prior to the next Trading Hour, in conjunction with 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 37.5 minutes into the current hour for T to T+60 minutes where T is the beginning of the next Trade Hour. The HASP, described in Section 33, is a special RTUC run that is performed at approximately 7.5 minutes before each hour and has the additional responsibility of: (1) pre-dispatching Energy and awarding Ancillary Services for hourly dispatched System Resources for the Trading Hour that begins 67.5 minutes later, and (2) performing the necessary MPM-RRD for that Trading Hour.

* * *

34.3 Real-Time Dispatch.

The RTD can operate in three modes: RTED, RTCD and RTMD. ~~The RTD (RTED and RTCD mode)~~ uses a Security Constrained Economic Dispatch (SCED) algorithm every five (5) minutes throughout the Trading Hour to determine optimal Dispatch Instructions to balance Supply and Demand. The CAISO will use the Real-Time Economic Dispatch (RTED) will be used under most circumstances and will to optimally dispatch resources based on their Energy Bids. The RTED can be used to Dispatch, excluding

Contingency Only Operating Reserves, pursuant to Section 34.8, ~~except~~ when needed to avoid an imminent System Emergency. The Real-Time Contingency Dispatch (RTCD) ~~can~~ will be invoked in place of the RTED when a transmission or generation contingency occurs and will include all Contingency Only Operating Reserves in the optimization. The Real Time Manual Dispatch (RTMD) will be invoked as a fall-back mechanism only when the RTED or RTCD fails to provide a feasible Dispatch. These three modes of the RTD are described in Sections 34.3.1 to 34.3.3.

* * *

34.5 General Dispatch Principles.

The CAISO shall conduct all Dispatch activities consistent with the following principles:

- (1) The CAISO shall issue AGC instructions electronically as often as every four seconds from its Energy Management System (EMS) to resources providing Regulation and on Automatic Generation Control to meet NERC and WECC performance requirements;
- (2) In each run of the RTED or RTCD the objective will be to meet the projected Energy requirements over the Time Horizon of that run, subject to transmission and resource operational Constraints, taking into account the short term CAISO Forecast of CAISO Demand adjusted as necessary by the CAISO Operator to reflect scheduled changes to Interchange and non-dispatchable resources in subsequent Dispatch Intervals;
- (3) Dispatch Instructions will be based on Energy Bids for those resources that are capable of intra-hour adjustments and will be determined through the use of SCED except when the CAISO must utilize the RTMD;
- (4) When dispatching Energy from awarded Ancillary Service capacity the CAISO will not differentiate between Ancillary Services procured by the CAISO and Submissions to Self-Provide an Ancillary Service;
- (5) The Dispatch Instructions of a resource for a subsequent Dispatch Interval shall take as a point of reference the actual output obtained from either the State

Estimator solution or the last valid telemetry measurement and the resource's operational ramping capability;

- (6) In determining the Dispatch Instructions for a target Dispatch Interval while at the same time achieving the objective to minimize Dispatch costs to meet the forecasted conditions of the entire Time Horizon, the Dispatch for the target Dispatch Interval will be affected by: (a) Dispatch Instructions in prior intervals, (b) actual output of the resource, (c) forecasted conditions in subsequent intervals within the Time Horizon of the optimization, and (d) operational Constraints of the resource, such that a resource may be dispatched in a direction for the immediate target Dispatch Interval that is different than the direction of change in Energy needs from the current Dispatch Interval to the next immediate Dispatch Interval;
- (7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads, over the Time Horizon for the RTM based on submitted Bids, Start-Up Costs and Minimum Load Costs, Pumping Cost and Pump Shut-Down Costs, as appropriate for the resource, consistent with operating characteristics of the resources that the SCED is able to enforce. In making Start-Up or Shut-Down decisions in the RTM, the CAISO may factor in limitations on number of run hours or Start-Ups of a resource to avoid exhausting its maximum number of run hours or Start-Ups during periods other than peak loading conditions;
- (8) The CAISO shall only start up resources that can start within the Time Horizon used by the RTM optimization methodology;
- (9) The RTM optimization may result in resources being shut down consistent with their Bids and operating characteristics provided that: (1) the resource does not need to be on-line to provide Energy, (2) the resource is able to start up within the RTM optimization Time Horizon, (3) the Generating Unit is not providing Regulation or Spinning Reserve, and (4) Generating Units online providing Non-

Spinning Reserve may be shut down if they can be brought up within ten (10) minutes as such resources are needed to be online to provide Non-Spinning Reserves; and

- (10) ~~For~~ resources that are both providing Regulation and have submitted Energy Bids for the RTM, Dispatch Instructions will be based on the ~~Regulation Ramp Rate of the resource rather than the~~ Operational Ramp Rate if the Dispatch Operating Point remains within the Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation.

* * *

34.8 Dispatch of Energy From Ancillary Services.

The CAISO may issue Dispatch Instructions to Participating Generators, Participating Loads, System Units and System Resources contracted to provide Ancillary Services (either procured through the CAISO Markets, Self-Provided by Scheduling Coordinators, or dispatched in accordance with the RMR Contract) for the Supply of Energy. During normal operating conditions, the CAISO shall Dispatch those Participating Generators, Participating Loads, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for those reserves designated as Contingency Only, in conjunction with the normal Dispatch of Energy. Contingency Only reserves are Operating Reserve capacity that have been designated, either by the Scheduling Coordinator or the CAISO, as available to supply Energy in the Real-Time only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. The CAISO may designate any reserve not previously identified as Contingency Only by Scheduling Coordinator as Contingency Only reserves, as necessary to maintain Applicable Reliability Criteria. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the CAISO may dispatch Contingency Only reserves. If Contingency Only reserves are dispatched through the RTCD, which as described in Section 34.3.2, only Dispatches in the event of a Contingency. Such Dispatch and pricing will be based on the original Energy Bids. If Contingency Only reserves are dispatched in response to a System Emergency that has occurred because the CAISO has run out of Economic Bids when no Contingency event has occurred,

the RTED will Dispatch such Contingency Only reserves using maximum Bid prices as provided in Section 39.6.1 as the Energy Bids for such reserves and will set prices accordingly. If a Participating Generator, Participating Load, System Unit or System Resource that is supplying Operating Reserve is dispatched to provide Energy, the CAISO shall replace the Operating Reserve as necessary to maintain Applicable Reliability Criteria. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy Applicable Reliability Criteria, the CAISO shall restore the Operating Reserves to the extent necessary to meet Applicable Reliability Criteria through either the procurement of additional Operating Reserve in the RTM or the Dispatch of other Energy Bids in SCED to allow the resources that were providing Energy from the Operating Reserve to return to their Dispatch Operating Point. The Energy Bid Curve is not used by the AGC system when Dispatching Energy from Regulation. For Regulation Up capacity, the upper portion of the resource capacity from its Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve. For a resource providing Regulation Up or Operating Reserves the remaining Energy Bid Curve shall be allocated to any RTM AS Awards in the following order from higher to lower capacity where applicable: (a) Spinning Reserve; and (b) Non-Spinning Reserve. For resources providing Regulation Up, the applicable upper Regulation Limit shall be used as the basis of allocation if it is lower than the upper portion of the Energy Bid Curve. The remaining portion of the Energy Bid Curve, if there is any, shall constitute a Bid for RTM Energy. For Regulation Down capacity, the lower portion of the resource capacity from its applicable Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve.

34.9 Exceptional Dispatch.

The CAISO may issue Exceptional Dispatches for the circumstances described in this Section 34.9, which may require the issuance of forced Shut-Downs or forced Start-Ups and shall be consistent with Good Utility Practice. Dispatch Instructions issued pursuant to Exceptional Dispatches shall be entered manually by the CAISO Operator into the Day-Ahead or RTM optimization software so that they will be accounted for and included in the communication of Day-Ahead Schedules and Dispatch Instructions to Scheduling Coordinators. Exceptional Dispatches are not derived through the use of the IFM or RTM optimization software and are not used to establish the LMP at the applicable PNode. The CAISO will record the circumstances that have led to the Exceptional Dispatch. Except as provided in this Section

34.9, the CAISO shall consider the effectiveness of the resource along with Start-Up Costs and Minimum Load Costs when issuing Exceptional Dispatches to commit a resource to operate at Minimum Load. When the CAISO issues Exceptional Dispatches for Energy, the CAISO shall also consider Energy Bids, if available and as appropriate. The goal of the CAISO will be to issue Exceptional Dispatches on a least-cost basis. Imbalance Energy delivered or consumed pursuant to the various types of Exceptional Dispatch is settled according to the provisions in Section 11.5.6.

34.9.1 System Reliability Exceptional Dispatches.

The CAISO may issue a manual Exceptional Dispatch for Generation Units, System Units, Participating Loads, Dynamic System Resources, and Condition 2 RMR Units pursuant to Section 41.9, in addition to or instead of resources with a Day-Ahead Schedule dispatched by RTM optimization software during a System Emergency, or to prevent an imminent System Emergency or a situation that threatens System Reliability and cannot be addressed by the RTM optimization and system modeling. To the extent possible, the CAISO shall utilize available and effective Bids from resources before dispatching resources without Bids. To deal with any threats to System Reliability, the CAISO may also issue a manual Exceptional Dispatch in the Real-Time for Non-Dynamic System Resources that have not been or would not be selected by the RTM for Dispatch, but for which the relevant Scheduling Coordinator has submitted a Bid into the HASP.

34.9.2 Other Exceptional Dispatch.

The CAISO may also issue manual Exceptional Dispatches for resources in addition to or instead of resources with a Day-Ahead Schedule or dispatched by the RTM optimization software to: (1) perform Ancillary Services testing; (2) perform pre-commercial operation testing for Generating Units; (3) perform PMax testing; (4) mitigate for Overgeneration; (5) provide for Black Start; (6) provide for Voltage Support; (7) accommodate TOR or ETC Self-Schedule changes after the Market Close of the HASP; (8) reverse a commitment instruction issued through the IFM that is no longer optimal as determined through RUC; or (9) in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption; or (10) reverse the operating mode of a Pumped-Storage Hydro Unit. ~~If the CAISO dispatches a Generating Unit for Voltage Support or Black Start, and the Generating Unit is under an RMR Contract, Voltage Support contract or Black Start contract, the Generating Unit will be compensated~~

~~under its contract and not as an Exceptional Dispatch under the CAISO Tariff.~~ The CAISO will not consider Start-Up Costs, Minimum Load Costs, or Energy Bids in connection with the issuance of Exceptional Dispatches to perform Ancillary Services testing, to perform PMax testing, or to perform pre-commercial operation testing for Generating Units.

34.9.3 Transmission-Related Modeling Limitations.

The CAISO may also manually Dispatch resources in addition to or instead of resources with a Day-Ahead Schedule or dispatched by the RTM optimization software, during or prior to the Real-Time as appropriate, to address transmission-related modeling limitations in the Full Network Model.

Transmission-related modeling limitations for the purposes of Exceptional Dispatch, including for settlement of such Exceptional Dispatch as described in Section 11.5.6, shall consist of any FNM modeling limitations that arise from transmission maintenance, lack of Voltage Support at proper levels as well as incomplete or incorrect information about the transmission network, for which the Participating TOs have primary responsibility. The CAISO shall also manually Dispatch resources under this Section 34.9.3 in response to system conditions including threatened or imminent reliability conditions for which the timing of the Real-Time Market optimization and system modeling are either too slow or incapable of bringing the CAISO Controlled Grid back to reliable operations in an appropriate time-frame based on the timing and physical characteristics of available resources to the CAISO.

* * *

34.12 Metered Subsystems.

Scheduling Coordinators that represent MSSs may submit Bids for Supply of Energy to the RTM, irrespective of whether the MSS is a Load following MSS. All Bids submitted for MSS generating resources for the RTM and all Dispatch Instructions shall be generating resource-specific. MSS non-Load following resources are responsible for following Dispatch Instructions. Load following MSS Operators shall provide the CAISO with an estimate of the number of MWs the applicable generating resource(s) will be generating over the next two hours in five-minute interval resolution. The Dispatch Instructions for Load following resources are incorporated with Generation estimates provided by MSS Operators. Such MSS Load following resources can deviate from the Dispatch Instructions in Real-Time to facilitate the following of Load without being subject to the Uninstructed Deviation Penalty as further

described in Section 11.23 of the CAISO Tariff. The State Estimator will estimate all MSS Load in Real-Time and the CAISO will incorporate the information provided by the Load following MSS Operator for utilization in clearing the RTM and its Dispatch Instructions.

* * *

34.15.1 Resource Constraints.

The SCED shall enforce the following resource physical Constraints:

- (a) Minimum and maximum operating resource limits. Outages and limitations due to transmission clearances shall be reflected in these limits. The more restrictive operating or regulating limit shall be used for resources providing Regulation so that the SCED shall not Dispatch them outside their Regulating Range.
- (b) Forbidden Operating Regions. When ramping in the Forbidden Operating Region, the implicit ramp rate as determined from the resource's transit time will be used when Dispatching in the Forbidden Operating Region even if the Forbidden Operating Region constraint is not enforced through the SCED process.
- (c) Operational Ramp Rates and Start-Up Times. The submitted Operational Ramp Rate for resources ~~that are not providing Regulation, and the submitted Regulation Ramp Rate for resources that are providing Regulation~~ shall be used as the basis for all Dispatch Instructions, provided that the Dispatch Operating Point for resources that are providing Regulation remains within their applicable Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation. The Ramp Rate for Non-Dynamic System Resources cleared in the HASP will not be observed. Rather, the ramp of the Non-Dynamic System Resource will respect inter-Balancing Authority Area Ramping conventions established by WECC. Ramp Rates for Dynamic System Resources will be observed like Participating Generators in the RTD. Each Energy Bid shall be Dispatched only up to the

amount of Imbalance Energy that can be provided within the Dispatch Interval based on the applicable Operational Ramp Rate ~~or Regulation Ramp Rate~~. The Dispatch Instruction shall consider the relevant Start-Up Time as, if the resource is off-line, the relevant Operational Ramp Rate function, and any other resource constraints or prior commitments such as Schedule changes across hours and previous Dispatch Instructions. The Start-Up Time shall be determined from the Start-Up Time function and when the resource was last shut down. The Start-Up Time shall not apply if the corresponding resource is on-line or expected to start. ~~The CAISO Markets optimization considers fast and slow Ramping resources. Fast Ramping resources can ramp from PMin to PMax based on their Operational Ramp Rate in twenty (20) minutes or less. Slow Ramping resources take more than twenty (20) minutes to ramp from PMin to PMax based on their Operational Ramp Rate. The CAISO determines whether it is appropriate to procure Ancillary Services or Energy from fast Ramping and slow Ramping resources based on the RTUC optimization.~~

- (d) Maximum ~~N~~ Number of D ~~daily~~ Start-Ups. The SCED shall not cause a resource to exceed its daily maximum number of Start-Ups.
- (e) Minimum ~~Up~~ Run Time and Down ~~t~~ Time. The SCED shall not start up off-line resources before their Minimum Down Time expires and shall not shut down on-line resources before their ~~m~~ Minimum Run up t ~~Time~~ expires.
- (f) Operating (Spinning and Non-Spinning) Reserve. The SCED shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.16.3.
- (g) Non-Dynamic System Resources. If Dispatched, each Non-Dynamic System Resource flagged for hourly pre-dispatch in the next Trading Hour shall be Dispatched to operate at a constant level over the entire Trading Hour. The HASP shall perform the hourly pre-dispatch for each Trading Hour once prior to the Operating Hour. The hourly pre-dispatch shall not subsequently be revised

by the SCED and the resulting HASP Intertie Schedules are financially binding and are settled pursuant to Section 11.4.

- (h) Daily Energy use limitation to the extent that Energy limitation is expressed in a resource's Bid. If the Energy Limits are violated for purposes of Exceptional Dispatches for System Reliability, the Bid will be settled as provided in Section 11.5.6.1.

34.15.2 Calculation of Dispatch Operating Points Pursuant to Start-Up and Shut-Down Instructions.

The RTED process shall calculate Dispatch Operating Points as follows:

- (a) After RTUC issues a Start-Up Instruction, RTED moves the Dispatch Operating Point of a resource immediately from zero (0) MW to the PMin, as defined in the Master File or as modified via SLIC, of a Generating Unit at the start of the Dispatch Interval pertaining to the Start-Up Instruction. The Dispatch Operating Point shall then be determined using the resource's applicable Operational Ramp Rate as further described in Sections 34.15.4, 34.15.5, and 34.15.6.
- (b) After RTUC issues a Shut-Down Instruction, RTED shall first ramp the Dispatch Operating Point down to the PMin, as defined in the Master File or as modified via SLIC, of a Generating Unit at the end of the Dispatch Interval pertaining to the Shut-Down Instruction, using the resource's applicable Operational Ramp Rate. The Dispatch Operating Point shall then be set immediately to zero (0) MW.

34.15.3 [NOT USED]

* * *

34.16.3.1 Regulation.

- (a) Regulation provided from Generating Units or System Resources must meet the standards specified in this CAISO Tariff and Part A of Appendix K;

- (b) The CAISO will Dispatch Regulation ~~in merit order of Bid prices as determined by~~ through the EMS, ~~which~~– Dispatch of Regulation by EMS does not set the RTM LMP;–
- (c) ~~i~~n the event of an unscheduled increase in system Demand or a shortfall in Generation output and Regulation margin drops, the CAISO will use Dispatch Energy in the RTM or Dispatch Operating Reserve, to restore Regulation margin; and
- (d) ~~w~~hen scheduled Operating Reserve is used for restoration of Regulation reserve, the CAISO shall arrange for the replacement of that Operating Reserve.

34.16.3.2 Operating Reserve.

- (a) Spinning Reserve:
 - (i) Spinning Reserve provided from Generating Units and System Resources ~~Interconnection schedules~~ must meet the standards specified in Part B of Appendix K;
 - (ii) ~~t~~he CAISO will Dispatch Spinning Reserve as may be required to meet the Applicable Reliability Criteria;
 - (iii) ~~t~~he CAISO may Dispatch Spinning Reserve as balancing Energy to return Regulation Generating Units to their Set Points and restore full Regulation margin; and
 - (iv) ~~t~~he CAISO will Dispatch Spinning Reserve ~~in merit order of Energy Bid prices as determined by the SCED,~~ subject to Sections 34.3 and 34.8;
- (b) Non-Spinning Reserve:
 - (i) Non-Spinning Reserve provided from Generating Units, Demands, and ~~external imports of~~ System Resources must meet the standards specified in Part C of Appendix K;
 - (ii) ~~t~~he CAISO may Dispatch Non-Spinning Reserve in place of Spinning Reserve to meet Applicable Reliability Criteria;

- (iii) ~~¶~~The CAISO will Dispatch Non-Spinning Reserve in merit order of Energy Bid prices as determined by the SCED, subject to Sections 34.3 and 34.8; and
- (iv) ~~¶~~The CAISO may Dispatch Non-Spinning Reserve to replace Spinning Reserve if there is a shortfall in Spinning Reserve because of a deficiency of balancing Energy;

34.16.3.3 Replacement of Operating Reserve.

- (a) ~~if pre-arranged~~ Operating Reserve is used for Energy to meet balancing Energy requirements, the CAISO may replace such Operating Reserve by through Dispatch of additional balancing Energy available from Energy Bids submitted in the HASP for the RTM or through procurement of additional reserves based on an economic optimization of a resource's RTM Ancillary Service Bid and its Energy Bid.;
- (b) ~~any additional Operating Reserve needs may also be met the same way; and~~
- (c) ~~where the CAISO elects to rely upon Energy Bids, the CAISO shall select the resources with the lowest incremental Energy Bid price as established by SCED.~~

* * *

34.156.4 Inter-hour Dispatch of Resources With Real-Time Energy Bids.

Dispatch Instructions associated with the ramp between the Real-Time Market HASP Bid in one hour and to the Real-Time Market HASP Bid in the immediately succeeding Operating Hour Trading Hour shall be determined optimally by the SCED if the CAISO has Bids for either or both relevant Operating Hours. For any Operating Hour(s) for which Bids have been submitted Dispatch Instructions will be optimized such that the Dispatch Operating Point is within the Bid range(s). For any Operating Hour without submitted Bids, Dispatch Instructions will be optimized such that the Dispatch Operating Point conforms to the Schedule within the Operating Hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with Section 11.5.1. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be

settled in accordance with Section 11.5.1. Energy delivered or consumed as a result of CAISO Dispatch of a resource's Energy Bid in one Operating Hour to a Dispatch Operating Point such that the resource cannot return to its successive Operating Hour Schedule or to an infra-marginal operating point by the beginning of the next Operating Hour is Residual Imbalance Energy and shall be settled as Instructed Imbalance Energy as provided for in Section 11.5.1 and also may be eligible for recovery of its applicable Energy Bid Costs in accordance with Section 11.8. Similarly, Energy delivered or consumed as a result of CAISO Dispatch of a resource's Energy Bid in a future Operating Hour to a Dispatch Operating Point different from its current Operating Point prior to the end of the current Operating Hour is also considered Residual Imbalance Energy and shall be settled as Instructed Imbalance Energy as provided for in Section 11.5.1 and also may be eligible for recovery of its applicable Energy Bid Costs in accordance with Section 11.8. When Ramping Energy Deviation and Residual Imbalance Energy coexist within a given Dispatch Interval, the Ramping Energy Deviation shall be the portion of Instructed Imbalance Energy that is produced or consumed within the Schedule-change band defined by the accepted HASP Bids of the two consecutive Settlement Periods; the Residual Imbalance Energy shall be the portion of Instructed Imbalance Energy that is produced or consumed outside the Schedule-change band.

34.156.5 Inter-hour Dispatch of Resources Without Real-Time Energy Bids.

Dispatch Instructions shall be issued for each Dispatch Interval as needed to prescribe the ramp between a resource's accepted Self-Schedule HASP Bid in one Trading Hour ~~and to its accepted Self-Schedule HASP Bid in the immediately succeeding Trading Operating Hour.~~ Such Dispatch Instructions shall be based on the lesser of: (1) the applicable Operational Ramp Rate as provided for in Section 30.7.740 and (2) the Ramp Rate associated with the Standard Ramp. The Dispatch Instructions for Ramping of Generating Units without Real-Time Energy Bids in both Operating Hours shall ramp the resource between hourly Schedules symmetrically to the extent possible subject to the Regulation Ramping limitations across hourly boundaries in twenty (20) to sixty (60) minutes assuming eCongestion can be resolved utilizing Economic Bids. The minimum twenty (20)-minute ramp is required for smooth hourly Schedule changes and is consistent with Intertie scheduling agreements between Balancing Authority Areas. ~~Resources with slower Ramp Rates would have longer ramps, and at the extreme, would ramp from the middle of an hour to the middle of the next hour.~~ Energy resulting from the Standard Ramp shall

be deemed Standard Ramping Energy and will be settled in accordance with Section 11.5.1. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with Section 11.5.1.

34.156.6 Intra-Hour Exceptional Dispatches.

For the special case where an Exceptional Dispatch begins in the new hour and the rules above would result in the violation of the resource's inter-temporal constraint(s), the following rules are applied and the Energy is settled as Exceptional Dispatch Energy as described in Section 11.5.6.

- (a) If the ramp time is greater than one hour or greater than what can be achieved when RTM receives the Constraint, RTM starts the ramp at the earliest possible time and continues Ramping the resource in the new Trading Hour.
- (b) If the ramp time results in starting the ramp less than ten (10) minutes before the start of the hour, RTM instead starts the ramp at ten (10) minutes before the start of the hour and ramps the resource at a uniform rate so that it meets the Constraint by the start time of the Exceptional Dispatch.
- (c) If the new hour's Day-Ahead Schedule is beyond the Exceptional Dispatch Constraint, RTM resumes the basic Ramping rules after the Exceptional Dispatch Constraint is met, but limits the Ramp Rate as necessary to ensure that the resource does not complete its ramp before ten (10) minutes after the hour.

* * *

34.17.2 Dispatch Information To Be Supplied by Scheduling Coordinator.

Each Scheduling Coordinator shall be responsible for the submission of Bids and Dispatch of Generation and Demand in accordance with its Day-Ahead Schedule. Each Scheduling Coordinator shall keep the CAISO apprised of any change or potential change in the current status of all Generating Units, and Interconnection Intertie Schedules and Inter-SC Trades. This will include any changes in Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of a Generating Unit. Each Scheduling Coordinator shall immediately pass to the CAISO any information which it receives from a Generator which the Generator provides to the Scheduling Coordinator pursuant

to Section 36.11.1. Each Scheduling Coordinator shall immediately pass to the CAISO any information it receives from a MSS Operator which the MSS Operator provides to the Scheduling Coordinator regarding any change or potential change in the current status of all Generating Units, System Units, and Interconnection-Intertie Schedules and Inter-Scheduling Coordinator Energy Trades. This information includes any changes in MSS System Units and Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of the System Unit or Generating Unit.

* * *

34.19.2.2 Computation.

For each Dispatch Interval, the CAISO will compute updated Imbalance Energy needs ~~Supply and Demand curves,~~ and will Dispatch using the Generating Units, System Units, Dynamic System Resources and Participating Load ~~Dispatched~~ according to the CAISO's SCED during that time period to meet Imbalance Energy requirements. The RTM transactions will be settled at the Dispatch Interval LMPs in accordance with Section 11.5.

34.19.2.3 Eligibility to Set the Real-Time LMP.

All Generating Units, Participating Loads, Dynamic System Resources, System Units, or COGs subject to the provisions in Section 27.7, with Bids, including Default Energy Generated Bids, that are unconstrained due to Ramp Rates or other temporal ~~C~~constraints are eligible to set the LMP, provided that (a) thea Generating Unit, or a Dynamic Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) a Participating Load, a Dynamic System Resource that is not a Resource-Specific System Resource, or a System Unit is Dispatched between zero (0) MW and the highest MW value within its submitted Economic Bid range or Generated Bid. If a resource is Dispatched ~~below~~ beyond its Minimum Operating Limit or above the highest MW value in its Economic Bid range or Generated Bid, or the CAISO enforces a resource-specific ~~C~~constraint on the resource due to an RMR or Exceptional Dispatch, the resource will not be eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A resource constrained at an upper or lower operating limit or dispatched for a quantity of Energy such that its full Ramping capability is constraining the ability of the resource to be dispatched for additional Energy in target interval, cannot be marginal (i.e., it is constrained by the Ramping capability) and thus is not

eligible to set the Dispatch Interval LMP. Non-Dynamic System Resources are not eligible to set the Dispatch Interval LMP. Dynamic System Resources are eligible to set the Dispatch Interval LMP. A Constrained Output Generator that has the ability to be committed or shut off within the ~~two-hour~~ Time Horizon of the RTM will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of Regulation resources by EMS in response to AGC will not set the RTM LMP. Dispatches of Regulation resources to a Dispatch Operating Point by RTM SCED will be eligible to set the RTM LMP.

* * *

35.3 Finality of Prices Subject to the Price Correction Process.

All prices shall be considered provisional until the CAISO has completed the price correction process regarding them. All prices for each Trading Day shall be considered final for purposes of this Section 35 once the price correction process for that Trading Day has ended, except that the CAISO may adjust, recalculate~~re-run~~, or otherwise correct such prices after the conclusion of the price correction process to the extent authorized by the provisions of the CAISO Tariff other than this Section 35.

* * *

35.5 Price Correction Methodology.

The CAISO shall correct prices to conform with the relevant provisions of the CAISO Tariff to the extent such correction is practicable. To the extent such correction is not practicable, the CAISO shall correct prices so that they are as close as reasonably possible to the prices that should have resulted under the relevant provisions of the CAISO Tariff, using the most accurate data available, and in a manner that is consistent with the prevalent system conditions existing at that time. The CAISO shall correct prices using the first applicable and practicable correction method of the following:

- (a) The CAISO shall selectively recalculate incorrect financially binding prices when the invalid prices are isolated and can be corrected such that no other financially binding prices are affected by the correction.
- (b) If the correction method in Section 35.5(a) is not applicable and practicable, the CAISO shall recalculate prices for the ~~conduct a market re-run for an invalidated~~

market interval when all market inputs applicable to the market interval to be ~~recalculated re-run~~ are either (i) preserved from the original market run, for data that was not the cause of the invalidated price, (ii) corrected, in the case of invalid initial data in the initial Market Clearing, or (iii) recreated or replicated data using the best available alternate data sources, in the case of missing data in the initial Market Clearing.

- (c) If the correction methods in Sections 35.5(a) and 35.5(b) are not applicable and practicable, the CAISO shall use, in place of prices for the binding interval of an invalidated market solution, replicated prices from binding or advisory intervals from the validated market solution in which the market conditions were most similar to the market conditions in the invalidated market solution, for the affected interval. In no case will an invalidated Day-Ahead Market solution be replaced with a valid Day-Ahead Market solution from a previous Trading Day. The method set forth in this Section 35.5(c) shall apply in the Day-Ahead Market only when some but not all hourly market intervals within a valid market run are deemed to be invalid and ~~prices are not recalculated the market is not re-run~~ pursuant to the method set forth in Section 35.5(b), above.

The CAISO shall include details concerning the CAISO's price correction methodology in the applicable Business Practice Manual.

* * *

40.4.3 General Qualifications for Supplying Net Qualifying Capacity.

Resource Adequacy Resources included in a Resource Adequacy Plan submitted by a Scheduling Coordinator on behalf of a Load Serving Entity serving Load in the CAISO Balancing Authority Area must:

- (1) Be available for testing by the CAISO to validate Qualifying Capacity, which can be no less than a resource's PMin even if the resource's contractual Resource Adequacy Capacity is less than its PMin, and determine Net Qualifying Capacity for the next Resource Adequacy Compliance Year;

- (2) Provide any information requested by the CAISO to apply the performance criteria to be adopted by the CAISO pursuant to Section 40.4.5;
- (3) Submit Bids into the CAISO Markets as required by this CAISO Tariff;
- (4) Be in compliance, as of the date that the CAISO performs any testing or otherwise determines Net Qualifying Capacity for the next Resource Adequacy Compliance Year, with the criteria for Qualifying Capacity established by the CPUC, relevant Local Regulatory Authority, or federal agency and provided to the CAISO; ~~and~~
- (5) Be subject to Sanctions for non-performance as specified in the CAISO Tariff; and-
- (6) For a resource with contractual Resource Adequacy Capacity less than PMin, make the PMin available to the CAISO for commitment or dispatch at PMin, subject to Section 11.8 provisions for Bid Cost Recovery, so that the resource's Resource Adequacy Capacity can be utilized as required by this CAISO Tariff.

* * *

40.6.8 Use of ~~Default Energy Generated~~ Bids.

Prior to completion of the Day-Ahead Market, the CAISO will determine if dispatchable Resource Adequacy Capacity from Resource Adequacy Resources has not been reflected in a Bid and will insert a ~~Default Energy Generated~~ Bid for any dispatchable Resource Adequacy Capacity that is not reflected in a Bid into the CAISO Day-Ahead Market and for which the CAISO has not received notification of an Outage. In addition, the CAISO will determine if all dispatchable Resource Adequacy Capacity from Short Start Units, not otherwise selected in the IFM or RUC, is reflected in a Bid into the HASP and will insert a ~~Default Energy Generated~~ Bid for any remaining dispatchable Resource Adequacy Capacity for which the CAISO has not received notification of an Outage.

* * *

40.7.2 Penalties for Non-Compliance.

The failure of a Resource Adequacy Resource or Resource Adequacy Capacity to be available to the CAISO in accordance with the requirements of this Section 40 and the failure to operate a Resource Adequacy Resource by placing it online or in a manner consistent with a submitted Bid or Generated Default Energy Bid shall be subject to the Sanctions set forth in Section 37.2. However, any failure of the Resource Adequacy Resource to satisfy any obligations prescribed under this Section 40 during a Resource Adequacy Compliance Year for which Resource Adequacy Capacity has been committed to a Load Serving Entity shall not limit in any way, except as otherwise established under Section 40.4.5 or requirements of the CPUC, Local Regulatory Authority, or federal agency, as applicable, the ability of the Load Serving Entity to whom the Resource Adequacy Capacity has been committed to use such Resource Adequacy Capacity for purposes of satisfying the resource adequacy requirements of the CPUC, Local Regulatory Authority, or federal agency, as applicable. In addition, a Reserve Sharing LSE shall not be subject to any sanctions, penalties, or other compensatory obligations under this Section 40 on account of a Resource Adequacy Resource's satisfaction or failure to satisfy its obligations under this Section 40.

* * *

43.4 Obligations of a Resource Designated under the ICPM.

43.4.1 Availability Obligations.

Capacity from resources designated under the ICPM shall be subject to all of the availability, dispatch, testing, reporting, verification and any other applicable requirements imposed under Section 40.6 on Resource Adequacy Resources identified in Resource Adequacy Plans. In accordance with those requirements, ICPM Capacity designated under the ICPM shall meet the Day-Ahead availability requirements specified in Section 40.6.1 and the Real-Time availability requirements of Section 40.6.2. Also in accordance with those requirements, Generating Units designated under the ICPM that meet the definition of Short Start Units shall have the obligation to meet the additional availability requirements of Section 40.6.3, and Generating Units designated under the ICPM that meet the definition of Long Start Units will have the rights and obligations specified in Section 40.6.7.1.

If the CAISO has not received an Economic Bid or a Self-Schedule for ICPM Capacity, the CAISO shall utilize a Default Energy Generated Bid in accordance with the procedures specified in Section 40.6.8.

In addition to Energy Bids, resources designated under the ICPM shall submit Ancillary Service Bids for their ICPM Capacity to the extent that the resource is certified to provide the Ancillary Service.

* * *

CAISO Tariff Appendix A

Master Definitions Supplement

* * *

CAISO Alternative Dispute Resolution Committee (CAISO ADR Committee)

The Committee appointed by the ~~CAISO ADR Committee~~ Governing Board pursuant to Article IV, Section 3 of the CAISO bylaws to perform functions assigned to the CAISO ADR Committee in the CAISO ADR process ~~Procedures~~ in Section 13.

* * *

CAISO Markets

Any of the markets administered by the CAISO under the CAISO Tariff, including, without limitation, the DAM, HASP, RTM, ~~Transmission~~, and Congestion Revenue Rights.

* * *

Calculated Energy Bid

The Energy Bid utilized in the IFM and RTM on behalf of a COG calculated by dividing its Minimum Load Cost by the MW quantity of its PMax.

* * *

Constrained Output Generator (COG)

A Generating Unit with an operating range (PMax - PMin) that is no greater than the higher of three (3) MW or five percent (5%) of its PMax that elects, on an annual basis, to utilize a Calculated Energy Bid in the IFM and RTM as described in Section 27.7 ~~that, due to operational characteristics, can only be dispatched in one of two states: either turned completely Off, or turned On and run at a fixed capacity level.~~

* * *

Dynamic Scheduling Agreement for Scheduling

An agreement between the CAISO and a Scheduling Coordinator

Coordinators

regarding the terms by which a Scheduling Coordinator may submit Dynamic Schedules, a pro forma version of which is set forth in Appendix B.5.

* * *

Economic Bid

A Bid that includes quantity (MWh or MW) and price (\$) for specified Trading Hours.

* * *

Eligible Intermittent Resource

A Generating Unit that is powered ~~solely~~ by one of the following sources, except for a de minimis amount of Energy from other sources: 1) wind, 2) solar energy, or 3) hydroelectric potential derived from small conduit water distribution facilities that do not have storage capability.

* * *

Energy Limit

The Bid component that indicates the maximum and minimum daily Energy limits for the Generating Unit. Energy Limit applies to net pumping Demand and Generation over the Operating Day for a Pumped-Storage Hydro Unit.

* * *

Expected Energy

The total Energy that is expected to be generated or consumed by a resource, based on the Dispatch of that resource, as calculated by the Real-Time Market (RTM), and as finally modified by any applicable Dispatch Operating Point corrections. Expected Energy includes the Energy scheduled in the IFM, and it is calculated the applicable Trading Day. Expected Energy is calculated for Generating Units, System Resources, Resource-Specific System Resources, and Participating Loads. The calculation is based on the Day-Ahead Schedule and the Dispatch Operating Point trajectory for the three-hour period around the target Trading Hour (including the previous and following hours), the applicable Real-Time LMP for each Dispatch Interval of the target Trading Hour, and any Exceptional Dispatch Instructions. Energy from

Non-Dynamic System Resources is converted into HASP Intertie Schedules. Expected Energy is used as the basis for Settlements.

* * *

Final Settlement Statement

~~The restatement or recalculation of the Preliminary Settlement Statement by the CAISO following the issue of that Preliminary Settlement Statement.~~

Full Network Model (FNM)

A computer-based model that includes all CAISO Balancing Authority Area transmission network (Load and Generating Unit) busses, transmission Constraints, and Intertie busses between the CAISO Balancing Authority Area and interconnected Balancing Authority Areas. The FNM models the transmission facilities internal to the CAISO Balancing Authority Area as elements of a looped network and models the CAISO Balancing Authority Area Interties with interconnected Balancing Authority Areas ~~in a radial fashion~~ as specified in Section 27.5.

* * *

Gross Load

For the purposes of calculating the transmission Access Charge, Gross Load is all Energy (adjusted for distribution losses) delivered for the supply of End-Use Customer Loads directly connected to the transmission facilities or directly connected to the Distribution System of a Utility Distribution Company or MSS Operator located in a PTO Service Territory. Gross Load shall exclude (1) Load with respect to which the Wheeling Access Charge is payable, (2) Load that is exempt from the Access Charge pursuant to Section 4.1, of Appendix I, and (3) the portion of the Load of an individual retail customer of a Utility Distribution Company, Small Utility Distribution Company or MSS Operator that is served by a Generating Unit that: (a) is located on the customer's site or provides service to the customer's site through arrangements as authorized by Section 218 of the California Public Utilities Code; (b) is a qualifying small power production facility or qualifying cogeneration facility, as those terms are defined in the FERC's

regulations implementing Section 201 of the Public Utility Regulatory Policies Act of 1978; and (c) secures Standby Service from a Participating TO under terms approved by a Local Regulatory Authority or FERC, as applicable, or can be curtailed concurrently with an Outage of the Generating Unit serving the Load. Gross Load forecasts consistent with filed Transmission Revenue Requirements will be provided by each Participating TO to the CAISO.

* * *

HASP Intertie LMP

The average of four (4) 15-minute interval LMPs at Intertie Scheduling Points over a Trading Hour.

* * *

IFM Marginal Losses Surplus

For each Settlement Period of the IFM ~~the CAISO~~, the IFM Marginal Losses Surplus is the difference between: (1) the Net Hourly Energy Charge; and (2) the total IFM Congestion Charges which do not include IFM Congestion Charges ~~Credits~~ collected by the CAISO as specified in Section 11.2.1.5.

* * *

Incremental Change

The change in dollar value of a specific Charge Code from the Initial Settlement Statement T+33BD to the Initial Settlement Statement, Reissue or Recalculation Settlement Statement including any new Charge Codes or Trading Day charges appearing for the first time on the Initial Settlement Statement, Reissue or Recalculation Settlement Statement.

* * *

Information System (OASIS)

~~CAISO maintains on the CAISO Website that allows all transmission customers to view the data simultaneously.~~

* * *

Interchange Schedule

A final agreed-upon schedule of Energy to be transferred between the CAISO ~~Control~~ Balancing Authority Area and another Balancing

Authority Area.

* * *

Interconnected Balancing Authority Area Operating Agreement (IBAAOA)

An agreement entered into between the CAISO and a Balancing Authority of a Balancing Authority Area interconnected to the CAISO Balancing Authority Area to govern operation of their interconnected electric systems, ~~a pro forma version of which has been accepted by FERC as a CAISO rate schedule in 87 FERC ¶ 61,231 (1999).~~

Interconnected Control Area Operating Agreement (ICAOA)

An agreement entered into between the CAISO and a Operator Balancing Authority of a Control Balancing Authority Area interconnected to the CAISO Balancing Authority Area to govern operation of their interconnected electric systems, a pro forma version of which has been accepted by FERC as a CAISO rate schedule in 87 FERC ¶ 61,231 (1999).

* * *

Interest

Interest shall be calculated in accordance with the methodology specified for interest on refunds in the regulations of FERC at 18 C.F.R. §35.19a (a)(2)(iii) (1996). Interest on delinquent amounts shall be calculated from the due date of the bill to the date of payment, except as provided in Section 11.29.13.1. When payments are made by mail, bills shall be considered as having been paid on the date of receipt.

* * *

Interim Black Start Agreement

An agreement entered into between the CAISO and a Participating Generator (other than a Reliability Must-Run Agreement Contract) for the provision by the Participating Generator of Black Start capability and Black Start Energy on an interim basis until the introduction by the CAISO of its Black Start auction (or until terminated earlier by either party in accordance with its terms).

* * *

Inter-SC Trade Period

Either the Day-Ahead Inter-SC Trade Period or the HASP Inter-SC Trade Period.

* * *

Line Loss Correction Factor

The line loss correction factor as set forth in the ~~T~~technical ~~S~~specifications contained in the applicable Business Practice Manual.

* * *

Market Intervention

An action taken by the CAISO to override or augment the operation of a CAISO Market.

* * *

Net Hourly Energy Charge

Total ~~C~~charges to all Demand minus total ~~P~~payments to all Supply both based on the product of MWh amounts specified in all Day-Ahead Schedules and the relevant LMPs at the applicable PNodes or Aggregated Pricing Node.

* * *

Operating Reserve Ramp Rate

A single number included in Ancillary Service Bids and Submissions to Self-Provide Ancillary Services for Spinning Reserve and Non-Spinning Reserve that represents the Ramp Rate of a resource used in the procurement of Operating Reserve capacity.

* * *

Participating Intermittent Resource Fees

Fees set forth in Section 11.12.32-4.5.4.

* * *

Physical Trade

An Inter-SC Trade of Energy at an individual Generating Unit's PNode or at the unique Aggregated Pricing Node of a Physical Scheduling Plant of Generating Units that is submitted to the CAISO for Settlement through the CAISO Market and is subject to physical validation.

* * *

Pumping Level

Level of MW that the Pumping Load resources would consume as

submitted in their Bid.

* * *

Ramp Rate

The Bid component that indicates the ~~o~~Operational Ramp Rate, Regulation Ramp Rate, and Operating Reserve Ramp Rate for a Generating Unit, and the Load drop rate and Load pick-up rate for Participating Loads, for which the Scheduling Coordinator is submitting Energy Bids or Ancillary Services Bids.

* * *

Real-Time Congestion Offset

A component of the neutrality adjustments as provided in Section 11.5.4.2 to account for the non-assessment of the Marginal Cost of Congestion to Measured Demand for ETCs and TOR Self-Schedules in the Real-Time as provided in Section 11.5.7.

* * *

Real-Time Marginal Cost of Losses Offset

A component of the neutrality adjustments as provided in Section 11.5.4.2 to account for the non-assessment of Marginal Cost of Losses ~~C~~charges to Measured Demand for TOR Self-Schedules eligible for the ~~Real-Time~~ RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules as provided in Section 11.5.7.2.

* * *

Real-Time Pumping Energy

IIE from a Participating Load Pumped-Storage Hydro Unit or Pumping Load, exclusive of Standard Ramping Energy and Ramping Energy Deviation, consumed below the Day-Ahead Schedule when dispatched in pumping mode, or produced from pumping operation due to pumping level reduction in Real-Time, including pump shut-down. Real-Time Pumping Energy does not overlap with any other Expected Energy type. Real-Time Pumping Energy is settled as described in Section 11.5.1, and it is included in BCR as described in Section 11.8.4.1.~~42~~.

* * *

Regulation Ramp Rate

A single number included in Ancillary Service Bids and Submissions to Self-Provide Ancillary Services for Regulation that represents the Ramp Rate of a resource used in the procurement of Regulation capacity.

* * *

Reliability Must-Run Unit (RMR Unit)

A Generating Unit of a Participating Generator which is the subject of a Reliability Must-Run Contract.

* * *

Reliability Requirement Determination (RRD)

The reliability process conducted by the CAISO during the DAM, prior to the IFM, and in the HASP, prior to the RTUC, to determine whether unit(s) subject to a contract with the CAISO to provide local reliability services, which includes a Reliability Must-Run Contract and any successor instrument, ~~determined~~ are necessary to meet local reliability needs for the CAISO Balancing Authority Area.

* * *

Residual Imbalance Energy

Extra-marginal IIE produced or consumed at the start or end of a Trading Hour outside the hourly schedule-change band and not attributed to Exceptional Dispatch. Residual Imbalance Energy is due to a Dispatch Instruction in the previous Trading Hour or a Dispatch Instruction in the next Trading Hour. Residual Imbalance Energy may overlap only with Day-Ahead Scheduled Energy. Residual Imbalance Energy does not apply to Non-Dynamic System Resources (including Resource-Specific System Resources). Residual Imbalance Energy is settled as bid, based on the Real-Time Energy Bid of the reference hour, as described in Section 11.5.54₁, and it is not included in BCR as described in Section 11.8.4. The reference hour is the previous Trading Hour, if Residual Imbalance Energy occurs at the start of a Trading Hour, or the next Trading Hour, if Residual Imbalance Energy occurs at the end of a Trading Hour.

* * *

Resource ID

Identification characters assigned by the CAISO to Generating Units, Loads, Participating Loads, System Units, System Resources, and Physical Scheduling Plants.~~A resource that is required to offer Resource Adequacy Capacity. The criteria for determining the types of resources that are eligible to provide Qualifying Capacity may be established by the CPUC or other applicable Local Regulatory Authority and provided to the CAISO.~~

* * *

RMR Proxy Bid

For Condition 1 RMR Units, for Energy, an amount calculated based on the hourly variable costs as defined in Schedule C of the applicable RMR Contract in the form of a monotonically increasing function consistent with the bidding rules in Section 30.,~~which is used in the MPM-RRD process described in Section 31.2.~~ For Condition 2 RMR 2 Units, for Energy, the Energy Bid defined in Schedule M of the RMR Contract. ~~For Condition 1 and 2 RMR Units, which is used in the MPM-RRD process described in Section 31.2.~~ for Start-Up costs, the amount set forth in Schedule D of the applicable RMR Contract; and for Minimum Load costs, an amount calculated based on unit specific performance parameters as set for the applicable RMR Contract and the gas price calculated in accordance with Schedule C of the applicable RMR Contract.

* * *

RTM Pumping Bid Cost

Real-Time Market Pumping Bid Cost

Scheduling Point

A location at which the CAISO Controlled Grid or a transmission facility owned by a Transmission Ownership Right holder is connected, by a group of transmission paths for which a physical, non-simultaneous transmission capacity rating has been established for Congestion Management, to transmission facilities that are outside the CAISO's Operational Control.

* * *

Settlement Quality Meter Data Systems (SQMDS)

A collective name for the set of CAISO systems used to accept, analyze and report on Settlement Quality Meter Data.

Settlement Statement Re-run

The re-calculation of a Settlement Statement in accordance with the provisions of the CAISO Tariff.

* * *

SQMDS

Settlement Quality Meter Data Systems

* * *

System Emergency

Conditions beyond the normal control of the CAISO that affect the ability of the CAISO Balancing Authority Area to function normally, including any abnormal system condition which requires immediate manual or automatic action to prevent loss of Load, equipment damage, or tripping of system elements which might result in cascading Outages or to restore system operation to meet ~~the minimum operating reliability~~ Applicable Reliability eCriteria.

* * *

TAC Area

Transmission Access Charge Area

* * *

Transmission Access Charge Area (TAC Area)

A portion of the CAISO Controlled Grid with respect to which Participating TOs' High Voltage Transmission Revenue Requirements are recovered through a High Voltage Access Charge. TAC Areas are listed in Section 3 of Schedule 3 of Appendix F.3-

* * *

Transmission Revenue Credit

For an Original Participating TO, the proceeds received from the CAISO for Wheeling service, ~~CRR Auction revenue and Congestion Charges~~, plus (a) the revenues received from any LCRIG with respect to an LCRIF, unless FERC has approved an alternative mechanism to credit such revenues against the Original Participating TO's TRR, and (b) the shortfall or surplus resulting from any cost differences between Transmission Losses and Ancillary Service requirements associated with Existing Rights and the CAISO's rules and protocols, minus any Low Voltage Access Charge amounts paid for the use of the Low Voltage Transmission Facilities of a Non-Load-Serving Participating TO pursuant to Section 26.1 and Appendix F, Schedule 3, Section 13. For a New Participating TO during the 10-year TAC Transition Period described in Section 4 of Schedule 3 of Appendix F, the revenues received from the CAISO for Wheeling service and IFM Congestion Credit pursuant to Section 4.3.1.2, plus (a) the revenues received from any LCRIG with respect to an LCRIF, unless FERC has approved an alternative mechanism to credit such revenues against the New Participating TO's TRR, and (b) the shortfall or surplus resulting from any cost differences between Transmission Losses and Ancillary Service requirements associated with Existing Rights and the CAISO's rules and protocols, minus any Low Voltage Access Charge amounts paid for the use of the Low Voltage Transmission Facilities of a Non-Load-Serving Participating TO pursuant to Section 26.1 and Appendix F, Schedule 3, Section 13. After the 10-year TAC Transition Period, the New Participating TO Transmission Revenue Credit shall be calculated the same as the Transmission Revenue Credit for the Original Participating TO.

* * *

Unavailable Capacity

Ancillary Services capacity that receives an AS Award and Self-Provided Ancillary Services capacity that was not dispatched by the CAISO but where all or a portion of the capacity was not available for Dispatch to provide Energy in Real-Time.

* * *

CAISO TARIFF APPENDIX B.6

Meter Service Agreement for CAISO Metered Entities

* * *

3.2.1 Submission of Meter Data through SQMDS and RMDAPS. The CAISO Metered Entity agrees to make available to the CAISO through SQMDS and RMDAPS its Meter Data in accordance with the CAISO Tariff. The CAISO's requirements regarding the frequency with which it requires Meter Data to be made available to it through SQMDS and RMDAPS by the CAISO Metered Entity are referred to in the CAISO Tariff.

* * *

3.3.1 Direct Polling of ~~RMDAPS~~ Revenue Quality Meter Data. The CAISO shall allow the Scheduling Coordinator representing the CAISO Metered Entity and all Authorized Users to directly poll ~~RMDAPS~~ CAISO certified meters for the Meter Data relating to the CAISO Metered Entity in accordance with the procedures referred to in the CAISO Tariff and the applicable Business Practice Manual.

* * *

ARTICLE V

ACCESS TO METERING DATA

5.1 Authorized Users. In addition to the persons referred to in the CAISO Tariff, including the CAISO Metered Entity and the relevant Scheduling Coordinator, as being entitled to access Meter Data on ~~RMDAPS~~SQMDS, the CAISO Metered Entity may set forth in Schedule 3 of this Agreement any additional Authorized Users that shall be entitled to access the CAISO Metered Entity's Settlement Quality Meter Data held by the CAISO. The CAISO Metered Entity shall include in Schedule 3 as Authorized Users the relevant UDCs and TOs. The CAISO shall provide the Authorized Users with any password or other information necessary to access the CAISO Metered Entity's Settlement Quality Metered Data held by the CAISO on ~~RMDAPS~~SQMDS. Any amendment or addition to Schedule 3 shall not constitute an amendment to this Agreement.

* * *

CAISO TARIFF APPENDIX C

Locational Marginal Price

A. LMP Composition

In each hour of the Day-Ahead Market for Energy, the CAISO calculates the LMP for each PNode, which is equal to the marginal cost of Energy available at the PNode in the hour, based on the Bids of sellers and buyers selected in the Day-Ahead Market for Energy as specified in the Day-Ahead Schedule. The CAISO designates a Reference Bus, r , for calculation of the System Marginal Energy Cost (SMECr). The CAISO uses a distributed Reference Bus to define an aggregate value of Energy for the CAISO Balancing Authority Area. The Locational Marginal Prices are not determined by resources that are not eligible to set the Locational Marginal Price, which includes resources that have constraints that prevent

them from being marginal. For each bus other than the Reference Bus, the Transmission Provider determines separate components of the LMP for the marginal cost of Energy, Marginal Cost of Congestion, and Marginal Cost of Losses relative to the Reference Bus, consistent with the following equation:

$$LMP_i = SMEC_r + MCC_i + MCL_i$$

$$LMP_r = SMEC_r$$

where:

- $SMEC_r$ is the LMP component representing the marginal cost of Energy (also referred to as λ) at the Reference Bus, r (System Marginal Energy Cost).
- MCC_i is the LMP component representing the Marginal Cost of Congestion (also referred to as ρ) at bus i relative to the Reference Bus.
- MCL_i is the LMP component representing the Marginal Cost of Losses (also referred to as γ) at bus i relative to the Reference Bus.

* * *

CAISO TARIFF APPENDIX F Schedule 4

Participating Intermittent Resources Forecast Fee

A charge up to \$.10 per MWh shall be assessed on the metered Energy from Participating Intermittent Resources as a Forecast Fee. The amount of the charge shall be specified in the CAISO Tariff.

Participating Intermittent Resources Process Fee

A process fee charge shall be assessed, for each calendar quarter, to each Exporting Participating Intermittent Resource that exported Energy in the quarter. On an annualized basis, the aggregate quarterly charges shall total to \$10,000. The charge is not volumetric, and shall be calculated as follows:

$$(\$10,000/4)/N = \$\text{quarterly charge}$$

N = number of Participating Intermittent Resources exporting Energy in the quarter

Participating Intermittent Resources Export Fee

A Participating Intermittent Resources Export Fee shall be assessed to Exporting Participating Intermittent Resources each calendar ~~quarter~~ month. The Participating Intermittent Resources Export Fee shall be calculated as the product of (1) the sum of all Settlement costs avoided by Participating Intermittent Resources for the preceding calendar ~~quarter~~ month, or portion thereof, consisting of Charge Codes ~~Types 1597 6486 [Real Time Excess Cost For Instructed] [FERC Must offer Obligation Capacity~~

~~Payment System Allocation], and 1487 [Energy Exchange Program Neutrality], 1697 [Tier 1 MLCC Allocation for System Needs], 1797 [Tier 1 MLCC Allocation of Resource Adequacy for System Needs], 1897 [Tier 1 MLCC Allocation of RCST for System Needs], and 4487 [Allocation of Excess Cost for Instructed Energy], but excluding charges for Uninstructed Energy associated with Charge Code 6475 Type 4407 and Transmission Loss Obligation associated with Charge Type 4450, (2) by the ratio of the total MW/h generated by an Exporting Participating Intermittent Resource during the calendar-quarter month, or portion thereof (based on metered output), by the total MW/h generated by all Participating Intermittent Resources during the calendar-quarter month, or portion thereof (based on metered output), and (3) by the percentage of the Exporting Participating Intermittent Resource's capacity deemed exporting under Section 5.3 of the EIRP or PIR Export Percentage.~~

Participating Intermittent Resources Export Fee per Participating Intermittent Resource =

Program Costs x (MW/h individual Participating Intermittent Resource/MW/h all Participating Intermittent Resources) x PIR Export Percentage

* * *

**CAISO TARIFF APPENDIX S
SMALL GENERATOR
INTERCONNECTION PROCEDURES (SGIP)**

* * *

1.3 Application

The applicability of this SGIP is set forth in Section ~~25.7~~ of the CAISO Tariff. As specified in more detail in Section ~~25.7~~ of the CAISO Tariff, these procedures are applicable to each new Generating Facility with a Generating Facility Capacity of 20 MW or less, or the expansion of an existing Generating Facility with a resultant Generating Facility Capacity of 20 MW or less, that seeks to interconnect to the CAISO Controlled Grid. Any proposed interconnection of a new Generating Facility to a Participating TO's Distribution System will be processed, as applicable, pursuant to the applicable Participating TO's Wholesale Distribution Access Tariff or CPUC Rule 21, or other Local Regulatory Authority requirements of the Participating TO. For any proposed interconnection of a new Generating Facility with a Generating Facility Capacity of 20 MW or less wherein the Interconnection Customer desires the CAISO to perform a Deliverability Assessment, the Interconnection Customer shall submit an Interconnection Request to the CAISO under the Large Generator Interconnection Procedures in lieu of these Small Generator Interconnection Procedures, as specified in Section ~~2.8-1.3.8~~ of this SGIP.

* * *

Attachment C – Table of MRTU Tariff Clarifications

Miscellaneous Tariff Clarifications

4th Replacement CAISO Tariff (MRTU)

ER09-____-000

January 15, 2009

ATTACHMENT C

TABLE OF MRTU TARIFF CLARIFICATIONS¹

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
4.3.1.3	N/A	Correct erroneous tariff cross-reference.
4.4.7	N/A	Correct erroneous tariff cross-reference.
4.9.13.2	N/A	Correct typographical error.
6.3.3	What is meant by "(a) exchange of operator names;" in Section 6.3.3? Should that phrase be removed?	Delete tariff requirement to exchange operator names in Section 6.3.3, as exchange of such information is not necessary under MRTU.
6.5.3.1.3	N/A	Revise Section 6.5.3.1.3 to reflect that Scheduling Coordinators for RMR Units will receive information concerning RMR Proxy Bids for Energy in addition to Start Up and Minimum Load.
6.5.3.2.2	N/A	Modify tariff to accurately reflect the information that the CAISO is going to post publicly under MRTU. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
6.5.4.2.2	N/A	Modify tariff to accurately reflect the information that the CAISO is going to post publicly under MRTU. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff

¹ Capitalized terms not otherwise defined in this table have the meanings set forth in Appendix A to the MRTU Tariff, and except where otherwise specified herein, references to section numbers are references to sections of the MRTU Tariff.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		Clarifications Amendment.
6.5.5.2.2	N/A	Modify tariff to accurately reflect the information that the CAISO is going to post publicly under MRTU. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
6.5.5.2.3	N/A	Modify tariff to accurately reflect the information that the CAISO is going to post publicly under MRTU. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
7.7.2.3	N/A	Delete the phrase "System Resources" because System Resources are not subject to the control of the CAISO like the resources of Participating Generators in a System Emergency.
Deletion of former Section 7.7.11.4.1	N/A	The CAISO's further review of MRTU functionality revealed that there is no reasonable method to determine resource deficiency based on HASP Intertie Schedules. Therefore, the CAISO determined that use of annual or monthly showings of resource insufficiency through the Resource Adequacy provisions is a reasonable proxy and does not substantially alter the load shedding requirement. Modify tariff to reflect this determination. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
7.7.11.4.2	N/A	<p>The CAISO's further review of MRTU functionality revealed that there is no reasonable method to determine resource deficiency based on HASP Intertie Schedules. Therefore, the CAISO determined that use of annual or monthly showings of resource insufficiency through the Resource Adequacy provisions is a reasonable proxy and does not substantially alter the load shedding requirement. Modify tariff to reflect this determination. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
7.7.11.4.3	N/A	<p>In modifying the other provisions of Section 7.7.11.4, the CAISO noted that the provisions of Section 7.7.11.4.3 are inconsistent with Section 7.7.11.4.2 in omitting an express reference to MSS Operators as subject to its provisions. The section has been modified to add an express reference to MSS Operators to correct this omission and inconsistency.</p>
8.2.3.3	N/A	<p>Tariff provisions relating to settlements (payments and cost allocation) for Voltage Support and Black Start are revised for MRTU. This section changes the tariff reference to Section 11.10.1.4, where the opportunity cost provision is set forth. In addition, the CAISO proposes to delete anachronistic language. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
8.3.5	N/A	<p>Section 8.3.4 of the current CAISO Tariff provides that long-term contracts for Replacement Reserve require CAISO Governing Board approval. The MRTU Tariff version of that section – Section 8.3.5 – erroneously adapts the provision by deleting "Replacement Reserve" from a particular sentence. While it is correct to remove references to Replacement Reserve as there is no such product under MRTU, the entire sentence in Section 8.3.5 should have been removed rather than merely the reference to Replacement Reserve. Revise tariff revision to correct this error. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
8.3.7	N/A	<p>Correct erroneous tariff cross-reference and use of the word "single" before "Energy Bid Curve".</p>
8.3.8	N/A	<p>Tariff provisions relating to settlements (payments and cost allocation) for Voltage Support and Black Start are revised for MRTU. The CAISO moves the settlement language from Section 8.3.8 to Section 11.10.1.4 and deletes anachronistic language. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
Deletion of Section 8.3.9	N/A	<p>Tariff provisions relating to settlements (payments and cost allocation) for Voltage Support and Black Start are revised for MRTU. This section is proposed to be deleted as unnecessary and</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
8.6.2		anachronistic. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
8.6.2	In order to make the current tariff language easier to understand, the CAISO should consider clarifying the statement in Section 8.6.2 that begins with "Following this process . . ."	Delete sentence in Section 8.6.2 in its entirety.
8.10.8.1	N/A	The CAISO has determined that NERC tagging of RUC Capacity is not possible, which renders the tariff provisions that required NERC tagging of RUC Capacity infeasible. Revise the tariff to eliminate this requirement and the associated rescission of payments. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
10.2.8.4	N/A	The CAISO has determined that it would be more accurate for the tariff section to reference the Settlement Quality Meter Data System ("SQMDS") rather than the Revenue Metering Data Acquisition and Processing System ("RMDAPS"). SQMDS is a subset of RMDAPS.
11.2.1.6	N/A	Based on further review and implementation of charge codes, the CAISO determined that Sections 11.2.1.6, 11.2.4.4.1, and 11.5.4.2 need to be revised to specify that the congestion credits that are netted out must include both the IFM and RTM congestion credits; in the IFM, the congestion credits are for ETCs, Converted Rights, and TORs, and in the

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
11.2.4.4.1	N/A	<p>RTM, they are for ETCs and TORs. Revise tariff to make these changes. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p> <p>Based on further review and implementation of charge codes, the CAISO determined that Sections 11.2.1.6, 11.2.4.4.1, and 11.5.4.2 need to be revised to specify that the congestion credits that are netted out must include both the IFM and RTM congestion credits; in the IFM, the congestion credits are for ETCs, Converted Rights, and TORs, and in the RTM, they are for ETCs and TORs. Revise tariff to make these changes. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
11.5.1.2	<p>There should be agreement of Instructed Imbalance Energy ("IIE") components in Sections 11.5.1 and 11.5.1.2. Missing a reference to HASP Energy in Section 11.5.1.2.</p>	<p>Modify Section 11.5.1.2 to add missing reference. The reference to HASP Energy had been inadvertently left out of this section when the CAISO previously filed the additional detail from the BPMs that specify how Expected Energy is calculated. Note that Section 11.5.1.1 already specifies that the HASP Energy is in the IIE settlement amounts (dollars) and consistent with that approach inclusion HASP Scheduled Energy in 11.5.1.2 includes in it the IIE quantity (MWh).</p>
11.5.4.2	N/A	<p>Based on further review and implementation of Charge Codes, the CAISO determined that Sections 11.2.1.6, 11.2.4.4.1, and 11.5.4.2 need to be revised to specify that the congestion credits that are netted</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	N/A	<p>out must include both the IFM and RTM congestion credits; in the IFM, the congestion credits are for ETCs, Converted Rights, and TORs, and in the RTM, they are for ETCs and TORs. Revise tariff to make these changes. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p> <p>Further review of Charge Codes reveals that Section 11.5.4.2 must specify that congestion charges associated with Ancillary Services at the interties in the Real-Time Market must also be netted out in order to achieve neutrality. Revise tariff to make this change. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
11.5.6	N/A	<p>Delete sentence that was both duplicative with respect to the sentence immediately following and which contained incorrect references to Voltage Support and Black Start should be deleted. Succeeding explains how Exceptional Dispatches for Ancillary Services, PMax, and pre-commercial operation are settled. Other changes in this filing address how Voltage Support and Black Start should be allocated. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
11.5.6.1	N/A	<p>Further review of tariff language and implementation documentation reveals that Section 11.5.6.1</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		erroneously excludes use of the Default Energy Bid in the case of decremental Exceptional Dispatch. Also make clarifying changes to Sections 11.5.6.1, 11.5.6.2, and 11.5.6.2.4 to specify that the referenced mitigation is in the Real-Time Market. These tariff clarifications are unrelated to the tariff amendments pending in the Exceptional Dispatch Bid Mitigation and Supplemental Revenues compensation tariff amendment pending in Docket No. ER08-1178.
11.5.6.2	N/A	Make clarifying changes to Sections 11.5.6.1, 11.5.6.2, and 11.5.6.2.4 to specify that the referenced mitigation is in the Real-Time Market. These tariff clarifications are unrelated to the tariff amendments pending in the Exceptional Dispatch Bid Mitigation and Supplemental Revenues compensation tariff amendment pending in Docket No. ER08-1178.
11.5.6.2.4	N/A	Make clarifying changes to Sections 11.5.6.1, 11.5.6.2, and 11.5.6.2.4 to specify that the referenced mitigation is in the Real-Time Market. These tariff clarifications are unrelated to the tariff amendments pending in the Exceptional Dispatch Bid Mitigation and Supplemental Revenues compensation tariff amendment pending in Docket No. ER08-1178.
11.5.6.5	N/A	Revise tariff section to reflect that Energy from Black Start will be compensated like other Exceptional Dispatch Energy but that the costs will be allocated

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
11.5.7.1	N/A	<p>like pursuant to Section 11.10.8 along with other Black Start costs. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p> <p>Further review of Section 11.5.7.1 and charge code implementation reveals that the tariff could be further clarified that the HASP/RTM congestion credit will be applied to the balanced portions of the difference between the amounts deemed valid and balanced in the HASP/RTM and the "balanced" portions of the Day-Ahead Schedule. Clarify tariff to make this change.</p> <p>In its implementation of the perfect hedge as specified in Sections 11.5.7.1 and 11.5.7.2, the CAISO determined that it could not implement the use of HASP Intertie Schedules and has found the use of Control Area interchange schedule checkout amounts more feasible.</p>
11.8.1.2	<p>Question of tariff's description of Bid Cost Recovery Self-Commitment determination of Minimum Down Time.</p> <p>Question of tariff's description of Bid Cost Recovery Self-Commitment determination for Maximum Daily Starts.</p> <p>Typographical error in Section 11.8.1.2 (Real-</p>	<p>Revise tariff language to indicate that the explanatory statements in Section 11.8.1.2 regarding how the rules work are examples as opposed to the only applications of the rule.</p> <p>Revise tariff language to indicate that the explanatory statements in Section 11.8.1.2 regarding how the rules work are examples as opposed to the only applications of the rule.</p> <p>Correct typographical error.</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	Time Self-Commitment Period) – should "RUC Commitment Period exists" be "RUC Commitment Period exists"?	
11.8.2.1.3	The description in the tariff of IFM and RTM Pump Shut-Down Cost eligibility may not be detailed enough.	Enhance detail in Section 11.8.2.1.3 regarding IFM and RTM Pump Shut-Down Cost eligibility.
11.8.2.1.4	The tariff's Day-Ahead and Real-Time Pump Cost eligibility is missing RMR contract exception language. Two Market Quality Settlement Commitment Type Requirements for Pump Shutdown Cost cannot be mapped (are orphaned) to Tariff.	Enhance detail in the tariff regarding IFM and RTM Pump Cost and RMR Contract exception language. Add this detail to the tariff.
11.8.3.1.2	N/A	Correct use of defined term by deleting the word "Generating" from in front of the term Bid Cost Recovery Eligible Resource. Add this detail to the tariff.
11.8.4.1.3	Two Market Quality Settlement Commitment Type Requirements for Pump Shutdown Cost cannot be mapped (are orphaned) to Tariff.	Add detail regarding Real-Time Market Pumping Bid Cost.
11.8.4.1.4	The description in the tariff regarding Real-Time Market Pumping Bid Cost eligibility may not be detailed enough.	Further CAISO review revealed that language in Section 11.8.6.4(i) lacked proper representation of equation as implemented in charge codes, requiring changes to clarify that, in determining the IFM uplift obligation for each Scheduling Coordinator, the self-scheduled imports are netted out along with self-
11.8.6.4	N/A	

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
11.8.6.6	N/A	<p>scheduled generation from scheduled demand. Revise Section 11.8.6.4 to make this change.</p> <p>Further review of the tariff language revealed that, in the CAISO's July 21, 2008 MRTU compliance filing, an error was made in implementing the Commission's June 20, 2008 MRTU order. In response to a request raised by intervenors to clarify the third sentence of Section 11.8.6.6, the CAISO should have further clarified that the targeted sentence was the second sentence and not the third sentence. In changing the third sentence to conform to the requested change, the CAISO erroneously changed the substance of the provision. The CAISO now correctly provides the requested clarification and further modifies the second sentence to conform to the compliance requirement in the June 20, 2008 MRTU order.</p>
11.10.1.4	N/A	<p>Tariff provisions relating to payment for Voltage Support are revised for MRTU. The CAISO moves the settlement language from Section 8.3.8 on opportunity cost calculation to Section 11 and adapts it for MRTU. The CAISO also proposes to modify this section to clarify that incremental and decremental Energy needed for Voltage Support is paid and settled like other Exceptional Dispatch Energy. Finally, this section is revised to clarify that Voltage Support procured from RMR contracts is settled under the RMR Contract. See also the discussion of these tariff changes in Section II of the</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
11.10.1.5	N/A	transmittal letter for this MRTU Tariff Clarifications Amendment.
11.10.7	N/A	Tariff provisions relating to payments for Black Start are revised for MRTU. This section is revised to clarify that Black Start resources are paid capability payments pursuant to long term contract and that unless the energy price and start up costs are specified in the contract, Black Start resources will be paid the Exception Dispatch Energy price for Black Start Energy and be eligible for Bid Cost recovery under the tariff. Finally, this section is revised to clarify that Black Start procured from RMR contracts is settled under the RMR Contract. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
11.10.8	N/A	Tariff provisions relating to allocation of Voltage Support costs paid pursuant to Section 11.10.1.4. This tariff revision complies with Paragraph 61 of the Commission's December 4, 2008 order in Docket No. ER08-367 and ER06-615. This revision preserves the cost allocation under the currently effective tariff to the extent possible. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
11.10.8	N/A	Tariff provisions relating to allocation of Black Start costs paid pursuant to Section 11.10.1.5. This tariff revision complies with Paragraph 61 of the

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		Commission's December 4, 2008 order in Docket Nos. ER08-367 and ER06-615. This revision preserves the cost allocation under the currently effective tariff to the extent possible. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
11.24.3	N/A	Further review of the tariff and implementation requirements revealed that Section 11.24.3(b) erroneously states that the CAISO will use hourly "peak" value in determining the applicability of the Interim Scheduling Charge. Correct this error in the tariff language.
12.5	N/A	Section 12.5 allows the CAISO to limit trading and reject schedules but does not specifically state that the CAISO may reject Inter-SC Trades in their entirety. Clarify this point in Section 12.5(b).
16.5	Capacity is not set aside internally (within the CAISO Control Area). It is only set aside on interties.	Clarify Section 16.5(2) to indicate that the CAISO will only set capacity aside at the interties and not internally.
16.6.2.1	There is the potential for two parties participating in the same ETC/TOR chain to exceed their combined Entitlement. This will result in SIBR eliminating the ETC/TOR protection for all parties' schedules in that chain.	Modify Sections 16.6.2.1 and 17.3.2.1 to specify that, if one or more SCs submit ETC, TOR, or Converted Rights Self-Schedules that are part of the chain, the ETC, TOR, and Converted Rights Schedules have to be individually valid in order for the chain to remain valid.
17.3.2.1	There is the potential for two parties participating in the same ETC/TOR chain to exceed their	Modify Sections 16.6.2.1 and 17.3.2.1 to specify that, if one or more SCs submit ETC, TOR, or

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	combined entitlement. This will result in SIBR eliminating the ETC/TOR protection for all parties' schedules in that chain.	Converted Rights Self-Schedules that are part of the chain, the ETC, TOR and Converted Rights Schedules have to be individually valid in order for the chain to remain valid.
22.1.6	N/A	Correct erroneous reference to FERC regulations section.
24.10.4	N/A	Correct erroneous tariff cross-reference.
26.1.4.3	N/A	Correct erroneous tariff cross-references.
26.1.4.3.1	N/A	Correct erroneous tariff cross-reference.
26.3	N/A	Correct erroneous tariff cross-reference.
27.1.1.1	Business Subject Matter Expert suggested improved System Marginal Energy Cost language for Section 27.1.1.1.	Delete the discussion of the pre-specified distributed Reference Bus in Section 27.1.1.1 because the software does not operate that way.
27.2.2.1	The CAISO should consider changing the tariff to more accurately state that the LAP Price is the weighted average of the LDF rather than the weights equal to the Nodal demand.	Revise Section 27.2.2.1 to make this clarification.
27.5.1	The New Participating TO entity and topology should be defined in the tariff.	The tariff already contains the statement regarding the New Participating TO modeling approach that certain external loops are modeled, which allows the CAISO to increase the accuracy of the Congestion Management process, to reflect the New Participating TO modeling approach and topology in Section 27.5.1. The CAISO now also adds additional language to reflect the calculation of

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
27.7	Incorrect statement in Section 27.7.1.3. Should state that "PMin must be less than or equal to . . ."	LMPs and treatment of Losses for New Participating TOs. The CAISO also adds the detail regarding the New Participating TO modeling approach that specifies that for portions of the FNM that are external to the CAISO Balancing Authority Area, the CAISO only enforces network Constraints that reflect limitations of the transmission facilities and Entitlements turned over to the Operational Control of the CAISO by a Participating TO, or that affect Congestion Management within the CAISO Balancing Authority Area or on Interties, which enhances the detail on modeling the New Participating TO s. This adds the detail on New Participating TO specifications and topology as recommended by SAIC.
28	N/A	Modify the definition of COG and Section 27.7 generally to correctly reflect the treatment of COGs under MRTU consistent with stakeholder COG policy. Section 27.7 is further clarified to indicate how annual COG election is made. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment. Clarify Section 28 generally to improve accuracy of provisions, and clarify that Physical Trades can occur at aggregated pricing nodes of Physical Scheduling Plants subject to physical validation and clarify that incremental Inter-SC Trades submitted in HASP are validated against the HASP Advisory

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
30.5.2.3	<p>The inputs to the optimization for Pump Storage Hydro Units and Participating Load are a single "Pumping Level" and a single "Pumping Cost". Section 30.5.2.3 describes bid parameters required, but does not describe how they would be used/optimized.</p> <p>Tariff statement is not accurate – in section 30.5.2.3, the Energy Limit should apply to a Pump's output (Generating or Pumping).</p> <p>Incorrect reference to Section 30.9. Should the reference be to Section 30.7.6.1?</p>	<p>Schedule and other minor tariff clarifications. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p> <p>Revise Section 30.5.2.3 and add definition of new term Pumping Level for clarity.</p> <p>Revise Section 30.5.2.3 and revise definition of Energy Limit to address issue identified by SAIC.</p> <p>Modify Section 30.5.2.6 to make this correction. Also modify the section to use the new defined term "Regulation Ramp Rate" where applicable.</p>
30.5.2.6.1	<p>Regulation Down Bid erased if no Energy Bid or Self-Schedule disagrees with Section 30.5.2.6.1.</p>	<p>Modify Section 30.5.2.6.1 to reflect that Regulation Down Bids will be erased unless there is an Energy Bid or Self-Schedule at a level that would permit the resource to provide Regulation Down to its lower Regulation Limit. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p> <p>Correct erroneous use of the word "single" before "Energy Bid".</p>
30.5.4	<p>Language in Section 30.5.4 is not accurate. Wheel must have matching Wheeling Reference</p>	<p>Modify Section 30.5.4 to conform with update to Market Instruments BPM to indicate that SIBR</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	<p>but is not required to have matching MWs; reduce Wheel Transaction to lowest matched MW – cannot find SIBR rule.</p>	<p>simply requires that the Export Bid and Import Bid use the same wheeling reference and deleting the matching MW requirement. Also modify Section 30.5.4 to indicate that only the matching quantity would clear the relevant CAISO Market. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
30.7.6.1	<p>Regulation Bid deleted if Self-Schedule is greater than or equal to Regulation Limits.</p>	<p>Modify Section 30.7.6.1 to clarify that, if a Self-Schedule amount is greater than the Regulation Limit for Regulation Up, the Regulation Bid will be erased. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
30.7.7	<p>Suggest rewording with respect to SLIC derates of the Operating Ramp Rate.</p>	<p>Clarify Section 30.7.7(g) to address issue identified by SAIC by indicating that Operational Derates in SLCI may be declared for any segment specified in the Master File.</p>
31.2.1	<p>If contracted (compelled to bid), a Condition 2 RMR can provide a market bid. When a Condition 2 RMR provides a market bid, it is considered in the CCR Run.</p>	<p>Modify Section 31.2.1 to make the change SAIC has identified to indicate that when a Condition 2 RMR unit provides a bid pursuant to the contract is considered in the CCR Run.</p>
31.2.2.2	<p>The MPM requirement language describes the "locking" of CCR schedule levels for the ACR run. Does the tariff adequately describe this concept (for RMR and non-RMR units)?</p>	<p>To ensure that the existing tariff language is clear, modify Section 31.2.2 to reflect "locking" of non-RMR resources through CCR similar to the locking of RMR resources.</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
31.3.1.4	Should the tariff include a discussion of eligibility to set LMP with respect to IFM, RUC or HASP? There is an LMP eligibility discussion for Real-Time in Section 34.19.2.3.	Add new Sections 31.3.1.4, 31.5.1.4, and 33.8.1, and clarify Section 34.19.2.3, to address the issue noted by SAIC. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
31.5.1.1	Energy Limit is discussed in Section 34.15.1 (Real-Time Market section). The tariff should clarify that the IFM also observes Energy Limits and that RUC will not observe Energy Limits.	Revise Section 31.5.1.1 to indicate that Energy Limits are observed in both the IFM and RUC. Contrary to SAIC's comment, the software does observe the Energy Limits in all markets.
31.5.1.4	Should the tariff include a discussion of eligibility to set LMP with respect to IFM, RUC, or HASP? There is an LMP eligibility discussion for Real-Time in Section 34.19.2.3.	Add new Sections 31.3.1.4, 31.5.1.4, and 33.8.1, and clarify Section 34.19.2.3, to address the issue noted by SAIC. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
31.5.5	N/A	Further review of the tariff revealed that Section 31.5.5 could be clarified by specifying that the resources that will receive a start-up instruction in the RUC will be those resources that need to be started in the Day-Ahead time period in order to be available in the commitment period in the Real-Time. Revise the tariff to make this change.
31.5.7.1	N/A	The CAISO has determined that NERC tagging of RUC Capacity is not possible, which renders the provisions that required NERC tagging of RUC Capacity infeasible. Revise the tariff to eliminate this requirement and the associated rescission of payments. See also the discussion of these tariff

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
33.1	Self-Schedule exports are permitted in HASP and RTM; Tariff incorrectly states they are not.	changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment. Revise Section 33.1 in response to observation that SIBR allows export bids in HASP with or without ETC/TOR, and revise Section 33.3 to consolidate the bidding rules in HASP and make the presentation more clear.
33.3	Self-Schedule exports are permitted in HASP and RTM; Tariff incorrectly states they are not. Tariff discussion of scheduling priorities with regard to HASP refers to the Day-Ahead discussion of scheduling priorities. Referring to Day-Ahead language is fine, except the HASP discussion should make one small distinction.	Revise Section 33.1 in response to observation that SIBR allows export bids in HASP with or without ETC/TOR, and revise Section 33.3 to consolidate the bidding rules in HASP and make the presentation more clear. The CAISO intends to continue to honor the higher priority of Day-Ahead Schedules relative to Self-Schedules submitted in the HASP and Real-Time Market for capacity not reflected in the Day-Ahead Schedule, as already reflected in Section 34.10.2. Correct the reference to Section 31.4 in Section 33.3 to refer to Section 34.10, in order to make the tariff consistent with this requirement.
33.8.1	Should the tariff include a discussion of eligibility to set LMP with respect to IFM, RUC, or HASP? There is an LMP eligibility discussion for Real-Time in section 34.19.2.3.	Add new Sections 31.3.1.4, 31.5.1.4, and 33.8.1, and clarify Section 34.19.2.3, to address the issue noted by SAIC. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34	Suggest that the tariff could more clearly state "near the top of the hour" or "hourly".	Revise Section 34 to address SAIC comment.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	<p>Suggest that the tariff clarify that STUC starts with the third 15-minute interval of the next Trading Hour, not the fourth interval as the tariff states. Further, consider removing the reference to 255 minutes and just leave "next four Trading Hours".</p> <p>The language in Section 34 regarding the maintenance of required Ancillary Services implies that RTD procures Ancillary Services. In fact, STUC procures and RTD only dispatches.</p> <p>Should the tariff describe Compensating Injections (loop flow or unscheduled flow) with respect to the Real-Time Market? It is discussed with respect to the HASP market in Section 33.2.</p>	<p>Revise Section 34 to make this change.</p> <p>Modify Section 34 to make this change.</p> <p>Revise Section 34 to reflect its accounting for unscheduled flow, which is accomplished through the application of compensating injections at the interties, in the Real-Time Market. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
34.2	<p>In addition to RTCD operating in contingency mode (its only mode), RTUC and RTED can be operated in contingency mode. RTUC and RTED in contingency mode will dispatch Contingent Op Reserves.</p>	<p>Revise Sections 34.2 and 34.3 to add this detail. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
34.3	<p>RTCD completes in 10 minutes but does not run every five minutes. RTCD runs on demand for 10 minutes.</p>	<p>Modify Section 34.3 to eliminate the inference that RTCD runs every five minutes.</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	<p>In addition to RTCD operating in contingency mode (its only mode), RTUC and RTED can be operated in contingency mode. RTUC and RTED in contingency mode will dispatch Contingent Op Reserves.</p> <p>N/A</p>	<p>Revise Sections 34.2 and 34.3 to add this detail. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment</p> <p>Make minor clarifying edits to Section 34.3.</p>
34.5	<p>Tariff language should include Pump Cost, Pump Shutdown Cost in Section 34.5(7) Basic Dispatch Principals list of dispatch inputs.</p> <p>N/A</p>	<p>Add the detail noted by SAIC to Section 34.5(7).</p> <p>In evaluating implementation issues, the CAISO determined the need to simplify the use of the Operational Ramp Rates as opposed to the Regulation Ramp Rates to enhance MRTU functionality performance. Revise Section 34.5(10) to make this change. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
34.8	<p>Section 34.8 does not differentiate between the allocation of capacity for Regulation Up (upper portion) and Regulation Down (lower portion). The tariff should be clarified to state that Regulation Up is allocated from the upper portion and Regulation Down is allocated from the lower portion of the Energy Bid Curve.</p> <p>N/A</p>	<p>Modify Section 34.8 to differentiate between upper and lower portions.</p>
34.9	N/A	Clarify tariff section to be consistent with Paragraphs 441-445 of the June 25, 2007 MRTU order (119

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		FERC ¶ 61,313), in which FERC recognized that Exceptional Dispatches are not limited to the Real-Time time-frame. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.9.1	N/A	Clarify tariff section to be consistent with the PP 441-445 of the June 25, 2007 MRTU order (119 FERC ¶ 61,313), in which recognized that Exceptional Dispatches are not limited to the Real-Time time-frame. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.9.2	In Section 34.9.2, Item #7 on the list may be too specific, CAISO should consider broadening to "(7) to reverse a previously issued commitment instruction." Also, should consider adding an item #8 to cover the ability of operators to use Exceptional Dispatch to reverse the operating mode of a Pump Storage Hydro Unit.	The CAISO has modified #8 as suggested but declined to broaden #7 as stakeholders raised concerns. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
	N/A	Tariff provisions relating to settlements (payments and cost allocation) for Voltage Support and Black Start are revised for MRTU. Deletion of incorrect sentence in Section 34.9.2. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
	N/A	Clarify tariff to be consistent with Paragraphs 441-445 of the June 25, 2007 MRTU order (119 FERC ¶

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		61,313), in which FERC recognized that Exceptional Dispatches are not limited to the Real-Time time-frame. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.9.3	N/A	Clarify tariff to be consistent with Paragraphs 441-445 of the June 25, 2007 MRTU order (119 FERC ¶ 61,313), in which FERC recognized that Exceptional Dispatches are not limited to the Real-Time time-frame. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.12	Suggest clarifying that the State Estimator only "provides" data – does not "clear" the RTM. RTUC and RTD "clear".	Revise Section 34.12 to include the clarification suggested by SAIC. Also make a minor editorial revision to remove the phrase "of the CAISO Tariff," as it is not the practice to reference the tariff by name when referring to sections because the rule is that if a section is mentioned it is assumed to be to the tariff.
34.15.1	N/A	In evaluating implementation issues, the CAISO determined the need to simplify the use of the Operational Ramp Rates as opposed to the Regulation Ramp Rates to enhance MRTU functionality performance. Revise tariff to make this change. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.15.2	Should the transition on-line/off-line be supported in the tariff because it affects the energy	Add new Section 34.15.2 to include this detail.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	calculation?	
34.15.4 (formerly Section 34.16.4)	Discuss clarifying the use of words "HASP Bid" vs. "DA Schedule", and clarifying language when no Bid exists in section 34.16.4.	Correct erroneous use of "HASP Bid" and "Operating Hour" in the section.
34.15.5 (formerly Section 34.16.5)	Discuss clarifying the use of words "HASP Bid" vs. "DA Schedule", and clarifying language when no Bid exists in section 34.16.4.	SAIC's comment regarding the inconsistent use of the terms HASP Bid applied to this section also. Correct inconsistent use of "Trading Hour" and "Operating Hour," correct erroneous use of HASP Bid, and correct erroneous tariff cross-reference; clarify the provisions in the section regarding ramping of resources without Real-Time Energy Bids.
34.15.6 (formerly Section 34.16.6)	N/A	Move tariff section without making any changes to it other than to its section number.
34.16.3.1	In Section 34.16.3.1(b), for Regulation, the bid prices are not considered – Regulation is just dispatched using the EMS. For Spinning and Non-Spinning Reserves, these Ancillary Services are dispatched "optimally," not dispatched in "merit order". Economics is considered, among several other rules (ramp is also considered).	Modify Sections 34.16.3.1 and 34.16.3.2 to add this detail. Also make other minor editorial revisions. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.16.3.2	In Section 34.16.3.1(b), for Regulation, the bid prices are not considered – Regulation is just dispatched using the EMS. For Spinning and Non-Spinning Reserves, these Ancillary Services are dispatched "optimally," not dispatched in "merit order". Economics is considered, among	Modify Sections 34.16.3.1 and 34.16.3.2 to add this detail. Also make other minor editorial revisions. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
	several other rules (ramp is also considered).	
34.16.3.3	Business owners suggested more accurate tariff language for inclusion in Sections 34.16.3.3(a), -(b), and -(c).	Modify Section 34.16.3.3 to add this detail. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
34.17.2	N/A	Correct use of defined terms in tariff section to reflect the fact that Inter-SC Trades are treated differently under MRTU.
34.19.2.2	Software does not use "supply and demand curves" as Section 34.19.2.2 implies.	Revise Section 34.19.2.2 to reflect this detail.
34.19.2.3	N/A	Revise the tariff to correct erroneous use of defined terms. In a number of instances, the term Default Energy Bid was used in the tariff when the term Generated Bid should have been used. Default Energy Bids are used in the MPM-RRD. Generated Bids are bids generated by SIBR in accordance with the bidding rules set forth in Section 30, the provisions regarding RA units in Section 40, and the provisions regarding ICPM units in Section 43. Add new Sections 31.3.1.4, 31.5.1.4, and 33.8.1, and clarify Section 34.19.2.3, to address the issue noted by SAIC. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
	Should the tariff include a discussion of eligibility to set LMP with respect to IFM, RUC, or HASP? There is an LMP eligibility discussion for Real-Time in Section 34.19.2.3.	
	Suggest replacing the words "two-hour Time	Revise tariff section to delete reference to two-hour

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
35.3	<p>Horizon" with "RTUC Time Horizon". RTUC does not always operate in a two-hour horizon.</p> <p>Tariff uses "re-run the market" language for LMP price corrections – SAIC believes "re-calculate the price" is more accurate.</p>	<p>Time Horizon.</p> <p>Revise tariff section to include this change. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
35.5	<p>Tariff uses "re-run the market" language for LMP price corrections – SAIC believes 're-calculate the price' is more accurate.</p>	<p>Revise tariff section to include this change. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
40.4.3	<p>N/A</p>	<p>Revise tariff to reflect implementation requirement to treat RA Resources with contractual RA Capacity that may be less than PMin as having RA Capacity equal to PMin. Clarify that RA Resources must (1) be available for testing by the CAISO to validate Qualifying Capacity, which can be no less than a resource's PMin even if the resource's contractual RA Capacity is for less than its PMin, and (2) for a resource with contractual RA Capacity less than PMin, make the PMin available to the CAISO for commitment or dispatch at PMin, subject to tariff provisions for Bid Cost Recovery, so that the resource's RA Capacity can be utilized as required by the tariff. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.</p>
40.6.8	<p>N/A</p>	<p>Revise the tariff to correct erroneous use of defined term. In a number of instances, the term Default Energy Bid was used in the tariff when the term</p>

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
40.7.2	N/A	Generated Bid should have been used. Default Energy Bids are used in the MPM-RRD. Generated Bids are bids generated by SIBR in accordance with the bidding rules set forth in Section 30, the provisions regarding RA units in Section 40, and the provisions regarding ICPM units in Section 43.
43.4.1	N/A	Revise the tariff to correct erroneous use of defined term. In a number of instances, the term Default Energy Bid was used in the tariff when the term Generated Bid should have been used. Default Energy Bids are used in the MPM-RRD. Generated Bids are bids generated by SIBR in accordance with the bidding rules set forth in Section 30, the provisions regarding RA units in Section 40, and the provisions regarding ICPM units in Section 43.
Appendix A, definition of CAISO Alternative Dispute Resolution Committee (CAISO)	N/A	Revise the tariff to correct erroneous use of defined term. In a number of instances, the term Default Energy Bid was used in the tariff when the term Generated Bid should have been used. Default Energy Bids are used in the MPM-RRD. Generated Bids are bids generated by SIBR in accordance with the bidding rules set forth in Section 30, the provisions regarding RA units in Section 40, and the provisions regarding ICPM units in Section 43. Correct use of defined term, and make factual clarification that the CAISO Governing Board appoints the CAISO ADR Committee.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
ADR Committee)		
Appendix A, definition of CAISO Markets	N/A	Correct typographical error.
Appendix A, definition of Calculated Energy Bid	Incorrect statement in Section 27.7.1.3. Should state that "PMin must be less than or equal to . . ."	Modify the definition of COG and other tariff provisions to correctly reflect the treatment of COGs under MRTU, including adding new defined term "Calculated Energy Bid." See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
Appendix A, definition of Constrained Output Generator (COG)	Incorrect statement in Section 27.7.1.3. Should state that "PMin must be less than or equal to . . ."	Modify the definition of COG and other tariff provisions to correctly reflect the treatment of COGs under MRTU. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
Appendix A, definition of Dynamic Scheduling Agreement for Scheduling Coordinators	N/A	Add new defined term in order to define this type of CAISO agreement.
Appendix A, definition of Economic Bid	N/A	Clarify definition to reflect that a Bid quantity may be expressed in MWh or MW.
Appendix A, definition of Eligible	N/A	Revise overly narrow definition of Eligible Intermittent Resource.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Intermittent Resource		
Appendix A, definition of Energy Limit	Tariff statement is not accurate -in section 30.5.2.3, the Energy Limit should apply to a Pump's output (Generating or Pumping).	Revise Section 30.5.2.3 and the definition of Energy Limit to reflect the correct use of defined terms.
Appendix A, definition of Expected Energy	Market Quality Settlement Hourly Pre-Dispatch Block Accounting Requirement cannot be mapped (is orphaned) to Tariff.	Add detail in the tariff regarding the Block Energy Accounting. Note that it really only pertains to Non-Dynamic System Resources, and that the functionality that SAIC reviewed has been changed due to implementation constraints. The Block Energy Accounting functionality now converts these schedules to HASP Inter tie Schedules instead of a step function to the relevant Dispatch Operating Target.
Appendix A, deletion of defined term Final Settlement Statement	N/A	Delete this defined term to reflect the fact that the names of settlement statements are different under MRTU as compared with under the currently effective CAISO Tariff and that this term is not used in the MRTU Tariff.
Appendix A, definition of Full Network Model (FNM)	N/A	SAIC found that the New Participating TO entity and topology should be defined in the tariff. The New Participating TO topology includes loops in the external network, and reviewing the revisions needed to correctly describe the New Participating TO topology revealed that the definition of Full Network Model in Appendix A also require clarification. Revise definition to make this change.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Appendix A, definition of Gross Load	N/A	Make minor clean-up changes to definition and restore portion of sentence that was unintentionally omitted from the version of the tariff the CAISO filed on December 21, 2007.
Appendix A, definition of HASP Intertie LMP	N/A	Revise definition for accuracy.
Appendix A, definition of IFM Marginal Losses Surplus	N/A	Revise definition to delete extraneous reference and to correct use of defined term.
Appendix A, definition of Incremental Change	N/A	Correct typographical errors.
Appendix A, deletion of defined term Information System (OASIS)	N/A	Delete definition to correct a typographical error in the version of the tariff the CAISO filed on December 21, 2007, reflecting the fact that, under MRTU, Information System is not its own defined term and that OASIS is already separately defined.
Appendix A, definition of Interchange Schedule	N/A	Delete use of outdated term "Control Area".
Appendix A, definition of Interconnected	N/A	Delete reference to pro forma IBAAOA, as it is only the ICAOA that has been accepted by the Commission as a pro forma rate schedule.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Balancing Authority Area Operating Agreement (IBAAOA)		
Appendix A, definition of Interconnected Control Area Operating Agreement (ICAOA)	N/A	Add a missing introductory phrase defining the ICAOA as an agreement between the CAISO and an interconnected Balancing Authority, and replace outdated term "Control Area" with correct term CAISO Balancing Authority Area.
Appendix A, definition of Interest	N/A	Correct erroneous reference to FERC regulations section.
Appendix A, definition of Interim Black Start Agreement	N/A	Correct use of a defined term.
Appendix A, definition of Inter-SC Trade Period	N/A	Add defined term to clarify to apply to both Day Ahead and HASP Inter-SC Trade periods.
Appendix A, definition of Line Loss Correction Factor	N/A	Clarify that the technical specifications for the line loss correction factor are contained in the applicable BPM.
Appendix A, definition of Market Intervention	N/A	Delete term that is not used in the MRTU Tariff. "Market Interruption" has been adopted as the relevant defined term.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Appendix A, definition of Net Hourly Energy Charge	N/A	Correct use of defined terms.
Appendix A, definition of Operating Reserve Ramp Rate	N/A	Correct typographical error.
Appendix A, definition of Participating Intermittent Resource Fees	N/A	Correct erroneous tariff cross-reference.
Appendix A, definition of Physical Trade	N/A	Clarify that Physical Trades can occur at aggregated pricing nodes of Physical Scheduling Plants subject to physical validation, and improve syntax of definition. See also the discussion of these tariff changes in Section II of the transmittal letter for this MRTU Tariff Clarifications Amendment.
Appendix A, definition of Pumping Level	N/A	Add defined term to clarify what Pumping Level is.
Appendix A, definition of Ramp Rate	N/A	Correct typographical error.
Appendix A, definition of Real-	N/A	Add missing words to definition for clarity.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Time Congestion Offset		
Appendix A, definition of Real-Time Marginal Cost of Losses Offset	N/A	Revise definition to use defined terms more accurately.
Appendix A, definition of Real-Time Pumping Energy	Multiple minor Expected Energy Component definition issues.	Correct erroneous tariff cross-reference.
Appendix A, definition of Regulation Ramp Rate	N/A	In reviewing recent tariff changes, the CAISO determined it would provide tariff clarity to add a definition for Regulation Ramp Rate. Revise the tariff to add this definition.
Appendix A, definition of Reliability Must-Run Unit (RMR Unit)	N/A	Revise definition for clarity and accuracy in use of defined terms.
Appendix A, definition of Reliability Requirement Determination (RRD)	N/A	Correct use of defined term and grammar in definition.
Appendix A, definition of	Tariff section reference is confusing in the Appendix A, Residual Imbalance Energy	Revise tariff cross-reference in response to SAIC comment.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Residual Imbalance Energy	definition. May want to more directly state that RIE is settled per Section 11.5.5. Current reference points to Section 11.5.1 which then points to Section 11.5.5.	
Appendix A, definition of Resource ID	N/A	Insert correct definition of Resource ID. The version of the tariff the CAISO filed on December 21, 2007 included an incorrect definition of that term.
Appendix A, definition of RMR Proxy Bid	Definition of RMR Proxy Bid should include use of Default Startup and Default Minimum Load bids as part of the RMR Proxy Bid.	Modify definition of RMR Proxy Bid to include start up and minimum load proxy values in addition to energy.
Appendix A, definition of RTM Pumping Bid Cost	N/A	Explain the defined term for which this abbreviated defined term stands.
Appendix A, definition of Scheduling Point	N/A	Provide further detail in definition to clarify that a Scheduling Point may be at any Intertie, including those where only non-CAISO Controlled Grid connects to the system of a neighboring Balancing Authority.
Appendix A, definition of Settlement Statement Rerun	N/A	Clarify that the defined term includes the term "Rerun" and not "Re-run."
Appendix A, definition of System Emergency	N/A	Added reference to Applicable Reliability Criteria for accuracy and to reflect that the term "minimum operating reliability criteria" is now outdated since the implementation of the NERC and WECC Reliability Standards.

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
Appendix A, definition of TAC Area	N/A	Explain the defined term for which this abbreviated defined term stands.
Appendix A, definition of Transmission Access Charge Area (TAC Area)	N/A	Correct typographical error.
Appendix A, definition of Transmission Revenue Credit	N/A	Under MRTU, Participating TOs will not be allocated CRRs or Congestion revenues unless their CRRs were acquired independently, so the reference to CRR Auction revenue and Congestion Charges in the definition of Transmission Revenue Credit should be omitted. If a Participating TO acquires CRRs, it should be entitled to the revenues from those CRRs and should not have to credit those revenues as an offset to its Transmission Revenue Requirement. Revise the definition to make this change.
Appendix A, definition of Unavailable Capacity	N/A	Correct use of defined term.
Appendix B.6, Section 3.2.1	N/A	Clarify that Meter Data will be submitted through SQMDS as well as through RMDAPS.
Appendix B.6, Section 3.3.1	N/A	Clarify that CAISO certified meters will be subject to direct polling to obtain Revenue Quality Meter Data and that the process will be set forth in the

MRTU Tariff Section	SAIC Comments (with "N/A" Indicating Sections for Which Changes Are Not Based on SAIC's Review)	Proposed MRTU Tariff Changes
		applicable Business Practice Manual.
Appendix B.6, Section 5.1	N/A	Clarify that Authorized Users will be authorized to access Meter Data through the SQMDS, which is an element of the RMDAPS.
Appendix C, Section A	N/A	Correct typographical error.
Appendix F, Schedule 4, definition of Participating Interimittent Resources Export Fee	N/A	Revise tariff provisions to conform PIRP language to MRTU processes and terminology and to reference new MRTU Charge Codes for the Export Fee.
Appendix S, Section 1.3	N/A	Correct erroneous tariff cross-references.