Powerex Comments on CAISO October 31, 2013 Revised Draft Order No. 764 Tariff Changes

Submitted By	Company	Date Submitted
Gifford Jung 604-891-6040	Powerex Corp.	November 12, 2013

I. INTRODUCTION

Powerex appreciates this opportunity to comment on the California Independent System Operator's revised draft Tariff language to comply with Order No. 764[1] that was posted on October 31, 2013. The proposed Tariff revisions are extensive and obviously reflect the dedication of much time and effort on the part of contributors to this project. Powerex thanks all of those involved for generating this substantial work product.

As with any undertaking of this magnitude, various inadvertent errors or oversights should be expected to occur. As an example of matters falling into this category, Powerex has noted that some deletions of the term "HASP" in favor of the term "FMM" (such as in Section 11.1(e)) instead should be "RTM," since the RTM will cover both HASP and the FMM going forward. If FMM replaces HASP in these Tariff provisions, then the RTM will be excluded inappropriately (and we believe unintentionally). Another type of correction in this category is that some sections are out of numerical order (for example, Section 11.10.1.3 appears after Section 11.10.2 and Section 31.8 appears before Section 31.3.1.1).

Powerex will limit its written comments herein to Tariff change issues that are not self-explanatory. It has attached to these comments a proposed redline/comment version of the October 31st revised draft Tariff language that suggests corrections addressing both apparent oversights and its proposed substantive changes on a comprehensive basis. The attached version accepts all of CAISO's proposed redline changes so that Powerex's comments and suggested edits are readily identifiable.

II. SECTION-BY-SECTION SUBSTANTIVE COMMENTS

Section 6.5.4.1 Communications with Scheduling Coordinators

Subsection 6.5.4.1.5 (and elsewhere in the Tariff) – various provisions include a time-frame of 40 minutes before the Trading Hour for the publication of schedules and other materials. Section 34.2.4, on the other hand, states that CAISO will publish HASP results no later than 45 minutes before the Trading Hour. Powerex believes the time-

[1] *Integration of Variable Energy Resources*, Order No. 764, FERC Stats. & Regs. ¶ 31,331 ("Order No. 764"), *order on reh'g and clarification*, Order No. 764-A, 141 FERC ¶ 61,232 ("Order No. 764-A") (2012), *order on clarification and reh'g*, Order No. 764-B, 144 FERC ¶ 61,222 (2013).

frames should be conformed such that 45 minutes is used consistently. These proposed changes are shown in the attached redline.

Section 11.2.4.6. **Adjustment of CRR Revenue Related to Virtual Awards**

Implicit in the discussion here is that reductions made voluntarily by a CRR Holder/Convergence Bidding Entity or a Scheduling Coordinator representing the CRR Holder may precipitate an adjustment of CRR revenue related to virtual awards, and not those that occur on an involuntary basis, by direction of the CAISO. Rather than being implicit, the Tariff should be clear that the CRR reductions will occur in response to actions taken voluntarily by the market participant. To add this clarity, Powerex proposes that that the following insert be added before both of the "reduces": "(as opposed to the CAISO)." This change is shown in the attached redline.

Section 11.31 Intertie Schedules Decline Charges

Subsection (c). CAISO has proposed to impose Decline Potential Charges as to Variable Energy Resources in this subsection depending upon whether the resource has over-forecasted on a net basis over the month instead of adopting other recommendations that were proposed in the stakeholder process, such as the financial impact of the difference between the forecast and actual production. To the extent monthly MW netting is to be used as a basis for the imposition of Decline Potential Charges, as has been proposed, Powerex believes it is important that CAISO make clear that this does not mean that a Variable Energy Resource that has a positive net production relative to its forecast over a month necessarily has met the Tariff requirements by virtue of its net positive monthly status and its avoidance of Decline Potential Charges.

For example, if such a resource engages in profiteering by submitting an hour-ahead forecast that is higher than its expected metered output during hours when congestion is anticipated, and that is lower than its expected output during other hours, CAISO may determine such activity is inappropriate even though such entity may not have a systemic deviation from its forecast on a monthly net basis. That is, if a strategy is employed by which a Variable Energy Resource submits an advisory schedule that exceeds its actual financially binding schedule during the most lucrative time periods to gain financial benefit, the failure to impose a Decline Potential Charge should not be interpreted to mean that such strategy will not be investigated and potentially found inappropriate as an exercise of gaming to benefit from temporal differences in the value of energy over the month.

Powerex notes that this comment was echoed by the CAISO Division of Market Monitoring ("DMM") in its March 13, 2013 Comments on FERC Order 764 Market Changes Revised Straw Proposal in which DMM commented that, in addition to "reserv[ing] the right to cancel a variable energy resource's ability to use their forecast," CAISO should "commit to monitoring for any gaming and/or systematic errors in these forecasts. Moreover we recommend the ISO create a tariff provision that gives the ISO the authority to revoke a specific resource or entity's ability to submit its own forecasts

should the ISO determine the resource has submitted inaccurate forecasts. We also recommend the ISO consider minor revisions to its incentive structure for preventing intertie VERs from inflating hour-ahead forecasts."

Unless such profit-seeking activity that is unrelated to legitimate forecasting variables is foreclosed, the costs will be borne by load and other intertie participants. Accordingly, it should be made clear that the failure to impose a Decline Potential Charge based on a monthly netting approach is not the equivalent of a determination that net positive entities are in compliance with all Tariff obligations.

Section 30.5.1 General Bidding Rules

Subsection (r). The last sentence of this subsection is unclear in several ways and should be replaced with less ambiguous terminology. As currently written, it reads "[i]n addition, the Scheduling Coordinator must complete the certification process defined in the CAISO Business Practice Manual to qualify as a VER using their own forecast."

First, Powerex believes CAISO intends to apply the certification requirement only to dynamically-scheduled Variable Energy Resources rather than imposing a new requirement that all Variable Energy Resources using their own forecast trigger a certification obligation. Yet, the current text does not limit the type of VER triggering the requirement except as to those using their own forecast.

Second, the reference to "the CAISO Business Practice Manual" should be changed in favor of a reference to the specific business practice manual at issue. A visit to the url at http://bpmcm.caiso.com/Pages/BPMLibrary.aspx shows no less than nineteen posted business practice manuals. The intended relevant manual in this context likely is the "Scheduling Coordinator Certification and Termination" Business Practice Manual and should be more specifically identified.

Third, even with that change, the text implies that the certification is only needed for a Scheduling Coordinator "to qualify as a VER *using their own forecast*." Thus, it appears that a VER *not using its own forecast* would not need to complete the certification process. This exception is likely not intended but rather the result of a drafting issue. To the extent this is the case, the text should be revised to make clear that all dynamically-scheduled resources trigger the certification requirement.

Fourth, the currently-posted Scheduling Coordinator Certification and Termination Business Practice Manual is version 5. It contains processes for specific types of registration including categories such as demand response provider, convergence bidding, and CRR, but does not contain any specific mention of a VER registration or certification, although it does make mention of the need for the owner or operator of an Eligible Intermittent Resource to either become or obtain the services of a certified Scheduling Coordinator in order to make sales to the CAISO. Thus, the specific certification process that must be followed is not known by the vague reference to a Business Practice Manual. In sum, substantial additional clarity is required as to what the intended requirements are and to whom precisely they apply. Powerex is unable to

submit redline suggestions in light of the lack of clarity as to the intended scope of the certification requirement.

Section 30.6.2.1 Self-Scheduled Hourly Blocks

This states that for a Self-Scheduled Hourly Block "the transmission profile must be greater than or equal to the Energy profile". However, because the schedule for the hour cannot increase when a block bid for the hour is made, and hence transmission should not be tagged at a level greater than the cleared energy bid for such resources, "greater than or" should be deleted from this section. Only VER or economic bids that are subject to intra-hour change may have transmission profiles that are greater than the Energy profile. Accordingly, the "greater than" text is appropriate in Section 30.6.2.2 as to VER and in 30.6.2.4 as to Economic Hourly Block Bids with Intra-Hour Option but is inappropriate as to Self-Scheduled Hourly Blocks and other Economic Hourly Block Bids.

Section 30.6.2.3 Economic Hourly Block Bid

See comment in Section 30.6.2.1 above.

Section 30.6.2.5 FMM Economic Bid

Powerex believes that bids on the interties must be treated similarly to bids from generators and therefore, the transmission profile should be equal to the bid-in capacity and there should not be an option to effectively change a bid quantity after the bid deadline has passed, except for unforeseen physical circumstances such as transmission de-rates or a unit trip or de-rate. More specifically, intertie participants should not have the unique ability to reduce their quantity offered into the FMM as economic bids, after the HASP advisory awards.

Section 30.7.3.6.3.2. **Position Limits at Interties**

In the Revised Order No. 764 Draft Straw Proposal and in the Intertie Pricing and Settlement stakeholder initiative, CAISO proposed "that a total virtual intertie position limit be established at 10 percent of the largest intertie across all interties scheduling points for each scheduling coordinator" for at least six months after the reinstitution of convergence bidding on the interties. CAISO explained that this was appropriate because it would permit sufficient hedging across most ties. Powerex supported this approach because the protection afforded by position limits is associated with the total limit rather than its imposition at individual interties. In Powerex's view, intertie-specific limits hinder the ability of market participants to respond to and eliminate price anomalies. The proposal to implement position limits on an aggregate basis across all interties will greatly reduce the potential for undesirable price outcomes on specific interties.

CAISO has departed from this approach in the current version of the Tariff, alleging that the costs associated with the implementation of such an approach outweigh the benefits. It instead has proposed to employ location-specific position limits at each

intertie. CAISO has not justified its change in position through its vague reference to costs exceeding benefits of making a change. The benefits of the imposition of position limits across all interties instead of at individual interties is substantial.

Section 31.8 [Missing Heading in Proposed Tariff]

As evidenced by its missing heading, and its appearance out of order before Section 31.3.1.1, this provision may have been inserted prior to being fully considered. The text of this provision deviates from the clarity contained in the proposal made by CAISO in the April 24, 2013 Addendum to Draft Final Proposal at pp. 26-27 and otherwise is insufficiently detailed to warrant inclusion as Tariff language. CAISO should revisit this text in favor of a clear proposal such as is contained in the April 24th document.

Section 34. **Real-Time Market**

The proposed Tariff change includes a statement that "In Real-Time, resources are required to follow Real-Time Dispatch Instructions." Powerex has two comments related to the inclusion of this language. First, this statement is too broad to be accurate, as the CAISO has indicated in this stakeholder process that intertie schedules that do not perform are merely required to settle financially at the applicable LMP process, implying intertie awards are not *physically* binding but rather *financially* binding only. The CAISO also has a practice of allowing "prospective real-time supply" to participate as physical intertie supply in its IFM market, again indicating that the CAISO does not require physical commitment behind its physical bids and offers on the interties. Powerex recognizes that, at other times, the CAISO has indicated that it has an expectation of physical performance on the interties to maintain reliability. While it is unclear the extent, if any, to which the CAISO expects physical commitment or performance on intertie awards, the CAISO's communication to date, including in this stakeholder process, is not consistent with a strict requirement to follow Real-Time Dispatch Instructions.. Second, it is internally inconsistent and may lead to interpretation disputes to include such a requirement in this section when similar statements as to the need to follow the relevant market's rules are not included throughout in each subsection. Once the statement is made accurate, the appropriate location for any such over-arching requirement is a general provision such as Expected Conduct of Market Participants in Section 37.3.1.1.

Section 34.1.2. Submission of Bids For the RTM

Similar to the comment above relating to Section 34, there is a statement in this subsection "provided that the Bid is otherwise submitted in a valid manner." This too is a more appropriate type of insertion to a general provision as opposed to in a specific subsection. Importantly, its inclusion in one section and not another could imply unintentionally and inappropriately that other provisions' applicability are not similarly dependent on the validity of the underlying action.

Section 34.1.3 Real-Time Validation of Schedules and Bids

There is no apparent change associated with the FMM that would precipitate the inclusion of a new validation rule for the RTM, making this change seemingly inappropriate to be made in a compliance filing context at the Federal Energy Regulatory Commission. Moreover, this provision is sufficiently vague that it is unclear when and how CAISO intends to proceed. In particular, the language that CAISO will generate a Self-Schedule to ”fill in any gaps between any Self-Schedule Bid and any Economic Bid components” should be replaced with more descriptive text such as ‘insert a Generated Bid in the event of a volumetric shortfall in an entity’s bids relative to its obligations associated with a RUC Award .”

Section 34.1.4. **Mitigating the Bid Sets Used in the RTM Optimization Processes**

This provision concedes that certain types of bids are not subject to Bid mitigation in one location, but thereafter is written in a way that implies that all bids are subject to mitigation. This language should be tightened. For instance, the text that states “if a Bid is not mitigated in the first fifteen (15) minute interval, it is subject to mitigation in subsequent fifteen (15) minute intervals” is misleading and incorrect as written. It requires the addition of text such as “and is otherwise subject to Bid mitigation” immediately before the second clause in order to make the statement true.

Section 34.2.1 The HASP Optimization

This section adds a provision that “HASP optimization also factors in forecasted unscheduled flow at the Interties.” This discussion is insufficiently concrete as a Tariff provision as there is no understanding as to how such unscheduled flow will be factored in. CAISO should not factor anything subjective into the HASP optimization process without a detailed description in the Tariff of the conditions and methods in which such factoring will be employed. In order to provide the market transparency necessary to permit market participants to make sound business decisions, market rules must put participants on notice of how the optimization process will work with specificity. Moreover, rather than being permitted to make opaque optimization decisions, CAISO should commit to post any proposed forecast of unscheduled flow a the Interties on OASIS prior to the HASP and before the timeline for bid submission, and then should be required to implement the forecast into the optimization process as posted. In addition, section 34.3 is inconsistent with the text in Section 34.2.1, in that it states that forecasted unscheduled flow “may” be factored into the optimization at the Interties for the FMM. If forecasted unscheduled flow at the Interties are factored in the HASP, it is inappropriate to state that such flows only may be factored in the FMM, both of which are part of the RTM.

Section 34.3 Fifteen Minute Market

This section explains that the FMM uses SCUC to, among other things, “(2) determine *financially binding* FMM Schedules. . . “ and (3) determine *financially and operationally binding* Ancillary Services Awards. .. “ (emphasis added). CAISO needs to be clear and consistent as to whether interchange transactions are financial only or if they create any physical performance obligation. If there is a physical performance obligation it needs

to be clearly explained. The implications of the exclusion of operationally binding as to the FMM appear to be that the FMM obligation can be bought back (through economic dispatch in the 5-minute optimization process, or perhaps through economic decision not to perform). However, the reason why the AS market would be operationally binding and the FMM would not similarly be is not made clear and should be better understood by stakeholders. Later in the text there is a reference to a "binding fifteen-minute interval" that does not specify how it is binding and would benefit from the inclusion of "financially" if that is what is intended. *See also* the comment regarding the inconsistency with Section 34.2.1 relayed above.

In this section, there should be additional clarity on the relationship between the HASP and FMM and when FMM results are expected to be published.

Section 37.3.1.1. **Expected Conduct of Market Participants**.

This section should be supplemented internally or a new Tariff section should be added specifically to address expected conduct of Variable Energy Resources in light of the overall Tariff changes relating to such resources and the need for different treatment in light of the recognized differences between Variable Energy Resources and other resources that has precipitated the Order No. 764 changes and are now being incorporated into the Tariff. In particular, given the greater flexibility afforded to Variable Energy Resources to change their schedules intra-hour, it is important that such resources identify themselves as such and specifically be precluded from offering energy on a Firm or Unit Contingent Basis if they may alter schedules within the hour for fuel or forecast reasons. Instead, such units should be required to identify their bids as as a Variable Energy Resource Interchange Schedule (or alternatively as Non-Firm). In order to enforce the Tariff provisions and identify which entities qualify as Variable Energy Resources, CAISO must have a means to identify such resources and must ensure such entities' bids reflect the firmness of the service that is being offered. This will provide the needed transparency regarding which VER may change schedules intra-hour due to fuel loss and which may not. It also will allow the CAISO to apply its various tariff provisions applicable to VERs, such as 11.31 which institute charges designed to curb systemic VER scheduling errors. In the absence of this requirement efforts to accommodate VER in an efficient and transparent manner will be undermined.

Definition of Standard Ramping Energy - the existing definition of the Appendix A Master Definitions is temporally limited to hourly schedule changes. In light of the introduction of the FMM, the definition must be modified to account for ramping that will be required in the FMM context.

Appendix M Section 1.7.3

In this section of the Dynamic Scheduling Protocol, it is unclear what the phrase in brackets "with the exception of intra-hour Dispatch Instructions of the Energy associated with accepted Ancillary Services Bids or Dispatch Instructions for Imbalance Energy" means. The CAISO should clarify if the "exception" applies to congestion and/or

transmission reservations or neither – in which case the phrase should be deleted from the tariff.

III. SCOPE OF COMPLIANCE TARIFF CHANGES

In Order No. 764, the Commission directed each public utility transmission provider to revise its Tariff to provide all transmission customers the option of submitting and modifying transmission schedules at 15-minute intervals. The Commission specifically declined to adopt additional enhancements that commenters suggested, including intra-hour imbalance settlement, an intra-hour transmission product, increasing the frequency of resource commitment through sub-hourly dispatch, the formation of intra-hour imbalance markets, and other market enhancements although, with a sufficient showing, the Commission indicated it would entertain alternative proposals on compliance that are consistent with or superior to the intra-hour scheduling requirements of Order No. 764 and otherwise are just and reasonable.

In light of the issuance of Order No. 764, CAISO opted not to separately revise its tariff based on several then-active stakeholder processes including the Intertie Pricing and Settlement initiative and the Dual Pricing initiative. It instead decided to roll those stakeholder processes into this initiative, Therefore, to the extent that CAISO is proposing tariff changes beyond those that are intended to comply with Order No. 764 in its November 2013 FERC filing, it should invoke and meet the requirements of Federal Power Act Section 205 or 206, as appropriate, rather than styling such changes as a compliance filing.

IV. CONCLUSION

Powerex understands that CAISO already has sought and obtained an extension of the due date to make its Order No. 764 compliance filing with FERC, and the currently set due date absent further extension is November 27, 2013. Powerex hopes that CAISO will continue to dedicate the resources necessary to incorporate the meritorious comments it has received in a revised version of the Tariff prior to making its compliance filing.

Revised FERC Order No. 764 Draft Tariff Language

This revised document does not contain the provisions relating to transitional protective measures for Participating Intermittent Resources (Section 4.8, Section 11.12 & Appendix Q).

Those revised draft tariff provisions will be posted in a separate document and be the subject of a standalone stakeholder call.

This tariff draft is based on the following architecture concept changes.

Section 33, which currently covers HASP, will be removed. The aspects of section 33 that still will be applicable to the market, along with the new market processes, will be consolidated in section 34.

Section 34 covers the RTM. This consolidation makes clear that all of the activities that happen in the hour-ahead timeframe are considered part of the RTM.

Bids to RTM can take the following form:

(1) Economic Bids (for internal and Intertie transactions)
(2) Self-Schedule (for internal and Intertie transactions)
(3) Self-Schedule Hourly Block (for Intertie transactions only)
(4) VER Self-Schedule (for VERs outside the ISO BAA)
(5) Economic Hourly Block Bid (for Intertie transactions only)
(6) Economic Hourly Block Bid with Intra-Hour Option (for Intertie transactions only)

The parts of section 34 that would now relate to hour-ahead activities involve the ISO conducting the following steps:

(1) Accept economic bids and self-schedules for all processes of the RTM.
(2) Run the MPM process to mitigate bids. The existing 15-minute mitigation would be unchanged.
(3) Accept the self-scheduled hourly blocks (normal self-schedule and VER self-schedule) and post the results for self-scheduled AS and energy.
(4) Optimize the hourly economic bids and the hourly economic bids with intra-hour scheduling changes.
(5) Issue advisory schedules for each of the four FMM intervals to all other resources.

Steps three, four, and five, taken together, tentatively would comprise the newly-defined HASP.

The FMM – the "Fifteen Minute Market" – replaces the RTUC as a tariff matter and largely fulfills the same functions. The main difference is that each of the four fifteen-minute FMM intervals is financially binding. To accommodate the new intra-hour variability in intertie transactions, there will be complementary new e-tagging rules.

The RTD and the Day-Ahead processes remain largely unchanged.

Apart from the new market processes, there will also be changes relating to:

(1) VER forecasting;
(2) How Participating Intermittent Resources can continue to use PIRP, including the protective measures for existing intermittent resources; and
(3) Reinstitution of convergence bidding on interties.

* * *

4.5.3.12 Financial Responsibility

Assuming financial responsibility for all Schedules, awards, and Dispatch Instructions issued in the CAISO Markets, and all Virtual Bids in accordance with the provisions of this CAISO Tariff; and

* * *

Revised draft Section 4.8 ("Relationships between CAISO and Intermittent Resources") will be posted in a separate document.

* * *

4.9.5.2 The Scheduling Coordinator for the MSS will designate, in discrete quantities and with prices for both Ancillary Services and Energy: (1) Bids in the Day-Ahead Market and RTM (including Bids for internal Generation and internal Demand within the MSS), (2) Submissions to Self-Provide Ancillary Services or Bids for Regulation, Spinning Reserve, and Non-Spinning Reserve, capacity and associated Bid for Energy, or (3) any feasible combination thereof.

* * *

6.5.4 RTM Communications Before The Trading Hour

The RTM is intended to open at 1:00 p.m. the day before the target Operating Day to coincide with the posting of results from the DAM. Scheduling Coordinators can submit Bids into the RTM as of the time such results are posted.

6.5.4.1 Communications With Scheduling Coordinators

6.5.4.1.1 Before one hundred thirty-five (135) minutes before the Trading Hour, the CAISO will continuously screen Inter-SC Trades of Energy for the RTM, Inter-SC Trades of Ancillary Services, and Inter-SC Trades of IFM Load Uplift Obligations submitted by Scheduling Coordinators and will communicate with the Scheduling Coordinators about the consistency and validity of these Inter-SC Trades based on information available to the CAISO.

6.5.4.1.2 Between one hundred thirty-five (135) minutes before the Trading Hour and forty-five (45) minutes before the Trading Hour, the CAISO will perform the pre-market validation check for Inter-SC

Trades for the RTM and Inter-SC Trades of Ancillary Services and will provide feedback to the Scheduling Coordinators about the validity of these Inter-SC Trades based on information available to the CAISO.

* * *

6.5.4.1.5 No later than ~~forty (40)~~forty-five (45) minutes before the Trading Hour, on an hourly basis, the CAISO will publish via the secure communication system the following:

(a) HASP Block Intertie Schedules;

(b) HASP Advisory Schedules that involve an Intertie transaction; and

(~~b~~c) HASP Block AS Awards

6.5.4.1.6 No later than ~~thirty (30~~forty-five (45) minutes before the Trading Hour, on an hourly basis, the CAISO will publish via the secure communication system the following:

(a) HASP Advisory Schedules;

(b) Final resource Bid mitigation results conducted pursuant to Section 34.1.4.

* * *

6.5.4.2.1 By one hundred five (105) minutes before the Trading Hour the CAISO will publish information regarding Outages on the transmission system on OASIS that will be used for Congestion Management and HASP Schedules involving Interties (HASP Block Intertie Schedules and HASP Advisory Schedules that involve an Intertie transaction).

6.5.4.2.2 No later than ~~forty (40~~forty-five (45) minutes before the Trading Hour, on an hourly basis, the CAISO will publish on OASIS the following:

(a) Total HASP Schedules involving Interties (HASP Block Intertie Schedules, HASP Block AS Awards, and HASP Advisory Schedules that involve an Intertie transaction) for imports and exports by TAC Area and for the entire CAISO Balancing Authority Area;

(c) HASP advisory LMPs by PNode and APNode;

(d) HASP Shadow Prices of binding Transmission Constraints and an indication of whether the constraints were binding because of the base operating conditions or contingencies and if caused by a contingency, the identity of the specific contingency; and

(e) Total HASP system Marginal Losses in MWh for the next Operating Hour.

6.5.5 Real-Time Market Communications During the Trading Hour

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

*** * ***

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

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

(c) FMM LMP.

* * *

6.5.10.1.3 Power Transfer Distribution Factors

Three (3) days after the applicable Trading Day, the CAISO will provide the Integrated Forward Market, FMM and Real-Time Dispatch Power Transfer Distribution Factors for each binding Transmission Constraint in the respective markets. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report for any given successful Integrated Forward Market, FMM and Real-Time Dispatch run within the next thirty (30) days, after which the information will not be provided.

6.5.10.1.4 Transmission Constraints Limits

Three (3) days after the applicable Trading Day, the CAISO will provide a report on the limits associated with all Transmission Constraints, including Nomograms, branch groups, and individual transmission facilities, under both base case and contingencies, that are enforced in

the Integrated Forward Market, FMM and Real-Time Dispatch, and that based on the flows in the respective market runs are approaching the limits. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report within the next thirty (30) days for any given successful Integrated Forward Market, FMM and Real-Time Dispatch run, after which the information will not be provided.

* * *

7.6.1 Actions For Maintaining Reliability Of CAISO Controlled Grid

The CAISO shall obtain the control over Generating Units that it needs to control the CAISO Controlled Grid and maintain reliability by ensuring that sufficient Energy and Ancillary Services are procured through the CAISO Markets. When the CAISO responds to events or circumstances, it shall first use the generation control it is able to obtain from the Energy and Ancillary Services Bids it has received to respond to the operating event and maintain reliability. Only when the CAISO has used the Energy and Ancillary Services that are available to it under such Energy and Ancillary Services Bids which prove to be effective in responding to the problem and the CAISO is still in need of additional control over Generating Units, shall the CAISO assume supervisory control over other Generating Units. It is expected that at this point, the operational circumstances will be so severe that a Real-Time system problem or emergency condition could be in existence or imminent.

Each Participating Generator shall take, at the direction of the CAISO, such actions affecting such Generator as the CAISO determines to be necessary to maintain the reliability of the CAISO Controlled Grid. Such actions shall include (but are not limited to):

(a) compliance with Dispatch Instructions including instructions to deliver Energy and Ancillary Services in Real-Time pursuant to the AS Awards, Day-Ahead Schedules and HASP Block Intertie Schedules, HASP Block AS Awards, FMM Schedules, and FMM AS Awards;

(b) compliance with the system operation requirements set out in this Section 7;

(c) notification to the CAISO of the persons to whom an instruction of the CAISO should be directed on a 24-hour basis, including their telephone and facsimile numbers; and

(d) the provision of communications, telemetry and direct control requirements, including the establishment of a direct communication link from the control room of the Generator to the CAISO in a manner that ensures that the CAISO will have the ability, consistent with this CAISO Tariff, to direct the operations of the Generator as necessary to maintain the reliability of the CAISO Controlled Grid, except that a Participating Generator will be exempt from CAISO requirements imposed in accordance with this subsection (d) with regard to any Generating Unit with a rated capacity of less than ten (10) MW, unless that Generating Unit is certified by the CAISO to provide Ancillary Services.

7.7 Management Of System Emergencies

7.7.1 System Emergency

When, in the judgment of the CAISO, the System Reliability of the CAISO Controlled Grid is in danger of instability, voltage collapse or under-frequency caused by transmission or Generation trouble in the CAISO Balancing Authority Area, or events outside of the CAISO Balancing Authority Area that could result in a cascade of events throughout the WECC grid, the CAISO will declare a System Emergency. This declaration may include a notice to suspend the Day-Ahead and Real-Time Markets, authorize full use of Black Start Generating Units, initiate full control of manual Load Shedding, and authorize the curtailment of Curtailable Demand (even though not scheduled as an Ancillary Service). The CAISO will reduce the System Emergency declaration to a lower alert status when it is satisfied, after conferring with Reliability Coordinators within the WECC, that the major contributing factors have been corrected, and all involuntarily interrupted Demand is back in service (except interrupted Curtailable Demand selected as an Ancillary Service). This reduction in alert status will reinstate the competitive markets if they have been suspended.

* * *

7.7.3.2 System Warning

The CAISO will give an AWE Notice of a system warning when the operating requirements for the CAISO Controlled Grid are not being met in the Real-Time Market, or the quantity of Regulation, Spinning Reserve, Non-Spinning Reserve, and Energy available to the CAISO is not acceptable for the Applicable Reliability Criteria. This system warning notice will notify Market Participants that the CAISO will, acting in accordance with Good Utility Practice, take such steps as it considers necessary to ensure compliance with Applicable Reliability Criteria, including the negotiation of commitments for Generation through processes other than competitive Bids.

* * *

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.

* * *

7.7.14.2.2 Communications during Unavailability of CAISO's Secure Communication System

During any period of CAISO's secure communication system unavailability, the CAISO shall:

(a) make all reasonable efforts to keep Market Participants aware of current CAISO Controlled Grid status using voice communications;

(b) use the most recent set of Day-Ahead Schedules, RUC Schedules, AS Awards, HASP Block Intertie Schedules, HASP Block AS Awards, FMM Schedules, and Dispatch Instructions for each Scheduling Coordinator for the current and all future Settlement Periods and/or Trading Days until the CAISO's secure communication system is restored; and

(c) attempt to take critical Bids, including ETC and TOR Self-Schedules changes, from Scheduling Coordinators via voice communications as time and personnel availability allows.

* * *

7.7.15.2.2 Consequences of Removal of a Bid

The CAISO may remove part of a Bid, but retain other parts of the Bid for the applicable CAISO Market run and interval for the same or different product, and may retain parts of the Bid for subsequent CAISO Market runs or intervals. If a particular Energy or Ancillary Service Bid must be removed pursuant to Section 7.7.15.2.1, the CAISO will remove the entire Bid for that particular service and market. The Scheduling Coordinator may resubmit removed Bids in subsequent CAISO Markets, provided the Scheduling Coordinator complies with any operator instructions regarding the subject Bids. In the event a Bid is removed from an IFM run, the RUC Availability Bid associated with the removed IFM Bid may still be accepted for the corresponding RUC run, unless the RUC Availability Bid is determined to be the cause of the disruption. A problematic Bid as described in Section 7.7.15.2.1 will typically be identified as infeasible prior to publication of the CAISO Market interval in which it is causing a problem, in which case to the extent practicable the CAISO may remove the Bid, execute the CAISO Market without the removed Bid, and publish a CAISO Market result for that interval. In some instances, a Bid may be able to clear through the IFM without causing an infeasibility issue, but then it may be necessary to remove the RUC Availability Bid associated with the IFM Bid for the corresponding RUC run due to infeasibility issues raised for the RUC run. If an Ancillary Service Bid or Submission to Self-Provide Ancillary Services is removed from the IFM, the Scheduling

Coordinator may resubmit these components in the RTM provided the issues identified in the IFM have been resolved and the Bid or submission is otherwise consistent with the Ancillary Service bidding rules in the CAISO Tariff.

If, for the reasons discussed above, the CAISO is required to remove a Bid in the HASP or FMM or RTD runs conducted for future intervals during the Real-Time Market, the removed Bid may still be used in the binding runs of the Real-Time Market for the same interval if the problems previously experienced with the Bid do not arise. If the CAISO is required to remove an Ancillary Services Bid submitted in the Real-Time Market for consideration in the HASP or FMM, the CAISO may retain the Energy Bid submitted in association with the Ancillary Services Bid for that CAISO Market run.

7.7.15.2.3 Settlement Consequences of Removal of Bids

In the event that a Bid is removed from the Day-Ahead Market, the Scheduling Coordinator whose Bid is removed will not be subject to Settlement for the Day-Ahead Market for the affected service. The Scheduling Coordinator may then resubmit the Bid in the Real-Time Market for the same service and, to the extent the Bid is feasible and the issues identified have been resolved, it may be accepted in the Real-Time Market consistent with the CAISO Tariff requirements that apply to the Real-Time Market. In the case of Ancillary Services Bids, including Submissions to Self-Provide an Ancillary Service, that are removed from the Day-Ahead Market, the Scheduling Coordinator will not receive Settlement for the Ancillary Services in the Day-Ahead Market and will not receive an opportunity cost payment in the Day-Ahead Market for the offered service. If the Bid is accepted in the Real-Time Market, the Scheduling Coordinator will be subject to Settlement based on the CAISO Market in which the Bid actually clears. In the event that a Bid is removed from a CAISO Market run or interval, the CAISO may subsequently be required to issue an Exceptional Dispatch for the resource, in which case the Scheduling Coordinator will receive Exceptional Dispatch Settlement as provided in Section 11.5.6. In the event that a Demand Bid is removed from the Day-Ahead Market, because no Demand Bids for load can be submitted in the Real-Time Market, Scheduling Coordinators for the load not cleared in the Day-Ahead Market will be settled as Uninstructed Imbalance Energy as provided in Section 11.5.2.

* * *

8. Ancillary Services

8.1 Scope

The CAISO shall be responsible for ensuring that there are sufficient Ancillary Services available to maintain the reliability of the CAISO Controlled Grid consistent with NERC and WECC reliability standards and any requirements of the NRC. The CAISO's Ancillary Services requirements may be self-provided by Scheduling Coordinators as further provided in the Business Practice Manuals. Those Ancillary Services which the CAISO requires to be available but which are not being self-provided will be competitively procured by the CAISO from Scheduling Coordinators in the Day-Ahead Market and the RTM consistent with Section 8.3. The provision of Ancillary Services from the Interties with interconnected Balancing Authority Areas is limited to Ancillary Services bid into the competitive procurement processes in the IFM and RTM. The CAISO will not accept Submissions to Self-Provide Ancillary Services that are imports to the CAISO Balancing Authority Area over the Interties with interconnected Balancing Authority Areas, except from Dynamic System Resources certified to provide Ancillary Services or if provided pursuant to ETCs, TORs or Converted Rights. The CAISO will accept Submissions to Self-Provide Ancillary Services from Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area if they are certified to provide Ancillary Services. The CAISO will calculate payments for Ancillary Services supplied by Scheduling Coordinators and charge the cost of Ancillary Services to Scheduling Coordinators based on their Ancillary Service Obligations.

For purposes of this CAISO Tariff, Ancillary Services are: (i) Regulation Up and Regulation Down, (ii) Spinning Reserve, (iii) Non-Spinning Reserve, (iv) Voltage Support, and (v) Black Start capability.

These services will be procured as stated in Section 8.3.5. Bids for these services may be submitted by a Scheduling Coordinator for resources that are capable of providing the specific service and that meet applicable Ancillary Service standards and technical requirements, as set forth in Sections 8.1 through 8.4, and are certified by the CAISO to provide Ancillary Services. Identification of specific services in this CAISO Tariff shall not preclude development of additional

interconnected operation services over time. The CAISO and Market Participants will seek to develop additional categories of these unbundled services over time as the operation of the CAISO Controlled Grid matures or as required by regulatory authorities.

*** * ***

8.2.3.1 Regulation Service

The CAISO shall maintain sufficient resources immediately responsive to the CAISO's EMS control in order to provide sufficient Regulation service to allow the CAISO Balancing Authority Area to meet NERC and WECC reliability standards and any requirements of the NRC by continuously balancing resources to meet deviations between actual and scheduled Demand and to maintain Interchange Schedules. The quantity of Regulation Down and Regulation Up capacity needed for each Settlement Period of the Day-Ahead Market and in each fifteen (15) minute period in Real-Time shall be determined by the CAISO as a percentage of the applicable CAISO Forecast of CAISO Demand for the Day-Ahead and Real-Time Markets. In HASP, the amount of advisory Regulation from Dynamic System Resources required for each Settlement Period in the next Trading Hour is also determined based on the CAISO Forecast of CAISO Demand. The advisory awards of Regulation from Dynamic System Resources in HASP are not binding and are re-optimized through the FMM and RTD processes in the Real-Time Market. The CAISO's determination is based upon its need to meet the NERC and WECC reliability standards and any requirements of the NRC.

The requirement for Regulation Down or Regulation Up needed for each Settlement Period of the Day-Ahead Market and in each fifteen (15) minute period in Real-Time shall each be accompanied by a requirement for Mileage as determined by the CAISO. The CAISO shall determine the Mileage requirements in any Settlement Period based on Regulation capacity requirements as well as the Bid-in Regulation capacity for that Settlement Period. Subject to operator adjustment, the Mileage requirement for either Regulation Up or Regulation Down will reflect the minimum of (a) the product of the respective Regulation capacity requirement and the System Mileage Multiplier; (b) the average Instructed Mileage for the applicable Trading Hour

from the prior seven (7) days; or (c) the product of each resource's resource specific Mileage multiplier(s) and its Bid-in Regulation capacity summed for all resources.

The CAISO will publish on OASIS the estimated quantity, or the percentage used to determine the estimated quantity, of Regulation Reserves required for each hour of the Day-Ahead Market and in each fifteen (15) minute period in Real-Time for the Trading Day. The CAISO will publish on OASIS the Mileage requirements for each hour of the Day-Ahead Market and each fifteen (15) minute period in Real-Time for the Trading Day. The CAISO will also publish on OASIS the average Instructed Mileage from the prior seven (7) days for each hour of a Trading Day no later than seven (7) calendar days after the applicable Trading Day.

* * *

8.3 Procurement; Certification And Testing; Contracting Period

8.3.1 Procurement Of Ancillary Services

The CAISO shall operate a competitive Day-Ahead Market and Real-Time Market to procure Ancillary Services. The Security Constrained Unit Commitment (SCUC) and Security Constrained Economic Dispatch (SCED) applications used in the Integrated Forward Market (IFM) and the Real-Time Market (RTM) shall calculate optimal resource commitment, Energy, and Ancillary Services Awards and Schedules at least cost to End-Use Customers consistent with maintaining System Reliability. Any Scheduling Coordinator representing resources, System Units, Participating Loads, Proxy Demand Resources or imports of System Resources may submit Bids into the CAISO's Ancillary Services markets provided that it is in possession of a current certificate for the resources concerned. Regulation Up, Regulation Down, and Operating Reserves necessary to meet CAISO requirements not met by self-provision will be procured by the CAISO as described in this CAISO Tariff. The amount of Ancillary Services procured in the IFM is based on the CAISO Forecast of CAISO Demand and the forecasted intertie ~~schedules in RTM~~ for the Operating Hour net of (i) Self-Provided Ancillary Services from resources internal to the CAISO Balancing Authority Area (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) and Dynamic System Resources certified to provide Ancillary Services and (ii) Ancillary Services self-provided pursuant to an ETC, TOR or Converted Right.

The amount of additional Ancillary Services procured in the RTM is based on the CAISO Forecast of CAISO Demand, the Day-Ahead Schedules established net interchange, and the forecast of the Intertie Schedules for the Operating Hour in the RTM net of (i) available awarded Day-Ahead Ancillary Services, (ii) Self-Provided Ancillary Services from resources internal to the CAISO Balancing Authority Area (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) and Dynamic System Resources certified to provide Ancillary Services, and (iii) Ancillary Services self-provided pursuant to an ETC, TOR or Converted Right. The amount of Ancillary Services procured in the Real-Time Market is based upon the CAISO Forecast of CAISO Demand, HASP Block Intertie Schedules, and the FMM Intertie Schedule established net interchange for the Operating Hour net of (i) available awarded Day-Ahead Ancillary Services, (ii) Self-Provided Ancillary Services from resources internal to the CAISO Balancing Authority Area (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) and Dynamic System Resources certified to provide Ancillary Services, (iii) additional Operating Reserves procured in the HASP and FMM, and (iv) Ancillary Services self-provided pursuant to an ETC, TOR or Converted Right. The CAISO may procure incremental Ancillary Services in the Real-Time Market based in part on a determination during the Hour-Ahead Scheduling Process or FMM that any Ancillary Services capacity awarded or self-provided in the Day-Ahead Market is not available as a result of a resource constraint or Transmission Constraints. Resource constraints may include but are not limited to an Outage of a resource or Ramp Rate constraints. Incremental procurement in the Real-Time Market will exclude Ancillary Services Capacity the CAISO has determined is not available.

The CAISO will manage the Energy from both CAISO procured and Self-Provided Ancillary Services as part of the Real-Time Dispatch. In the Day-Ahead Market, the CAISO procures one-hundred (100) percent of its Ancillary Service requirements based on the Day-Ahead Demand Forecast net of Self-Provided Ancillary Services. After the Day-Ahead Market, the CAISO procures additional Ancillary Services needed to meet system requirements from all resources in the Real-Time Market. The amount of Ancillary Services procured in the Real-Time Market is based on the CAISO Forecast of CAISO Demand plus submitted Export Bids, to the extent

Export Bids are selected in the MPM process for the Operating Hour net of Self-Provided Ancillary Services.

The CAISO procurement of Ancillary Services from Non-Dynamic System Resources in the HASP is for the entire next Operating Hour. The CAISO procurement of Ancillary Services from all other resources in the Real-Time Market is for a fifteen (15) minute FMM interval. The CAISO's procurement of Ancillary Services from Non-Dynamic System Resources, Dynamic System Resources and internal Generation (which includes Generation from Generating Units that are Pseudo-Ties to the CAISO Balancing Authority Area) in the Real-Time Market is based on the Ancillary Service Bids submitted or generated in the RTM consistent with the requirements in Section 30. The CAISO may also procure Ancillary Services pursuant to the requirements in Section 42.1 and as permitted under the terms and conditions of a Reliability Must-Run Contract. The CAISO will contract for long-term Voltage Support service with owners of Reliability Must-Run Units under Reliability Must-Run Contracts. The CAISO will procure Black Start capability through individual contracts with Scheduling Coordinators for Reliability Must-Run Units and other Generating Units which have Black Start capability. These requirements and standards apply to all Ancillary Services whether self-provided or procured by the CAISO.

8.3.2 Procurement from Internal And External Resources

The CAISO will procure Spinning Reserves and Non-Spinning Reserves from resources operating within the CAISO Balancing Authority Area (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) and from imports of System Resources. Scheduling Coordinators are allowed to bid Regulation from resources located outside the CAISO Balancing Authority Area by dynamically scheduling such System Resources certified to provide Regulation. Each System Resource used to bid Regulation must comply with the Dynamic Scheduling Protocol in Appendix M. Scheduling Coordinators may submit Bids for Operating Reserves from Non-Dynamic System Resources but they may not submit Bids for Regulation from such resources because these resources cannot be dynamically scheduled consistent with Appendix M. When bidding to supply Ancillary Services in the IFM or RTM, imports and Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area compete for use of Intertie

transmission capacity when the requested use is in the same direction, e.g., imports of Ancillary Services and Ancillary Services from Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area compete with Energy on Interties in the import direction, and exports of Ancillary Services (i.e., on demand obligations) compete with Energy on Interties in the export direction. To the extent there is Congestion, imports of Ancillary Services and suppliers of Ancillary Services from Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area will pay Congestion costs in the IFM and RTM markets pursuant to Section 11.

*** * ***

8.3.3.2 Criteria For Use of Ancillary Service Regions and Sub-Regions

The CAISO's use of an Ancillary Service Sub-Region occurs when the CAISO establishes a minimum or maximum limit for that Sub-Region. The CAISO's use of minimum and maximum procurement limits for Ancillary Services help to ensure that the Ancillary Services required in the CAISO Balancing Authority Area are dispersed appropriately throughout the CAISO Balancing Authority Area and accurately reflect the system topology and deliverability needs. The factors the CAISO will use in determining whether to establish or change minimum or maximum limits include, but are not limited to, the following: (a) the CAISO Forecast of CAISO Demand, (b) the location of Demand within the Balancing Authority Area, (c) information regarding network and resource operating constraints that affect the deliverability of Ancillary Services into or out of an Ancillary Service Region, (d) the locational mix of generating resources, (e) generating resource Outages, (f) historical patterns of transmission and generating resource availability, (g) regional transmission limitations and constraints, (h) transmission Outages, (i) Available Transfer Capability, (j) DA Schedules or FMM Intertie Schedules, (k) whether any Ancillary Services provided from System Resources requiring a NERC tag fail to have a NERC tag, and (l) other factors affecting System Reliability. Ancillary Services procured within a Sub-Region count toward satisfying the Ancillary Service requirements for the System Region or the Expanded System Region.

8.3.3.3 Notice to Market Participants

Pursuant to Section 6.5.2.3.3, the CAISO will publish forecasted Ancillary Service requirements, regional constraints, and the minimum and/or maximum Ancillary Service Regional Limits for the Ancillary Service Regions and any Sub-Regions by 6:00 p.m. on the day before the close of the Day-Ahead Market (two days prior to the Operating Day). After the completion of the Day-Ahead Market for a given Trading Day, the CAISO will publish the limits that were used in the IFM. If prior to the close of the RTM for a Trading Hour the CAISO makes a substantial change to a minimum and/or maximum limit for an Ancillary Service Region or Sub-Region, it will issue a Market Notice as soon as reasonably practicable after the occurrence of the circumstances that led to the change. After the close of the RTM for a Trading Hour, the CAISO will publish the limits that were used in the RTM.

8.3.3.4 Establishment of New Ancillary Service Regions or Sub-Regions

The CAISO will consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region through a stakeholder process if: (a) there is a persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Balancing Authority Area using market procurement mechanisms, and (b) adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region would reduce the persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Balancing Authority Area using market procurement mechanisms. Factors that would affect the CAISO's determination to consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region include, but are not limited to operational reliability needs, the pattern of the growth of Demand in the CAISO Balancing Authority Area, the addition of new generating resources, the retirement of existing generating resources, the addition of new transmission facilities, changes in regional transmission limitations, changes in Available Transfer Capability, and extended transmission or generating resource Outages. If the CAISO considers adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region, the CAISO will conduct an analysis to determine whether the adjustments being considered create market power issues in either the new Ancillary Service Regions being considered or the pre-existing Ancillary Service Regions. The CAISO's analysis

will be included in the stakeholder process and stakeholders will be able to comment on any new market power mitigation measures proposed for the CAISO's procurement of Ancillary Services.

* * *

8.3.5 Daily And Hourly Procurement

The CAISO shall procure Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve on a daily 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 AS Bidding Requirements

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 (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) or Dynamic System

Resources certified to provide Ancillary Services, (ii) submit Submissions to Self-Provide an Ancillary Service from System Resources located outside the CAISO Balancing Authority Area if provided pursuant to ETCs, TORs, or Converted Rights, (iii) submit Bids for Ancillary Services from Dynamic and Non-Dynamic System Resources located outside the CAISO Balancing Authority Area certified to provide Ancillary Services, or (iv) submit Inter-SC Trades of Ancillary Services. Ancillary Services procured in the IFM and in the Real-Time Market are comprised of the following: Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve. Each 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 simultaneously offered to the same CAISO Market for multiple Ancillary Services types. Ancillary Services Bids and Submissions to Self-Provide an Ancillary Service can be submitted up to seven (7) days in advance. The CAISO will only use Operating Reserve Ramp Rates 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 30.7.7. 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. All resources subject to the Ancillary Services must offer requirements, as specified in Section 40.6, must submit Bids consistent with the requirements specified therein and in Section 30.

*** * ***

8.4.1.2 Regulation Energy Management

THIS TARIFF SECTION WILL BECOME EFFECTIVE ON NOVEMBER 27, 2012.

The CAISO will make Regulation Energy Management available to Scheduling Coordinators for Non-Generator Resources located within the CAISO Balancing Authority Area that require Energy from the Real-Time Market to offer their full capacity as Regulation. A Scheduling Coordinator for a resource using Regulation Energy Management may submit a Regulation Bid for capacity (MW) of up to four (4) times the maximum Energy (MWh) the resource can generate or curtail for fifteen (15) minutes after issuance of a Dispatch Instruction. In the Real-Time Market, a Scheduling Coordinator for a resource using Regulation Energy Management will procure Imbalance Energy as needed to satisfy the sixty (60) minute continuous Energy requirement for Regulation Awards in the Day-Ahead Market.

Scheduling Coordinators may request to use Regulation Energy Management for these Non-Generator Resources by submitting a request to certify such a resource to provide Regulation using Regulation Energy Management. The owner or operator of a Resource using Regulation Energy Management must execute both a Participating Generator Agreement and/or Participating Load Agreement and may provide only Regulation in the CAISO Market. A resource using Regulation Energy Management may not provide Energy other than Energy associated with Regulation. Scheduling Coordinators for Resources using Regulation Energy Management may define a Ramp Rate for operating as Generation and a Ramp Rate for operating as Load, respectively. These resources shall comply with the requirements to provide Regulation as specified in this Section 8, Appendix K, and the CAISO's Operating Procedures, including the requirement to undergo a market simulation using Regulation Energy Management as part of the certification procedure.

Scheduling Coordinators for resources using Regulation Energy Management shall register these resources in the Master File. Scheduling Coordinators may only submit Bids for Regulation Up and Regulation Down and Mileage for these resources. Scheduling Coordinators may not submit Energy Bids, Energy Self-Schedules, Residual Unit Commitment Bids, or Ancillary Service Bids other than Regulation and Mileage for these resources. Scheduling Coordinators may not submit any type of commitment costs as part of their Regulation Up and Regulation Down Bids for resources using Regulation Energy Management, including Start-Up Cost, Minimum Load Costs,

Pumping Cost or Pump Shut-Down Costs, or Transition Cost. All other bidding rules for Regulation set forth in Section 30 shall apply to resources using Regulation Energy Management. The CAISO will settle Dispatches from resources using Regulation Energy Management as Instructed Imbalance Energy. The portion of Demand of Non-Generator Resources using Regulation Energy Management that is dispatched as Regulation in any Settlement Interval shall not be considered Measured Demand for purposes of allocating payments and charges pursuant to Section 11 during that Settlement Interval.

The CAISO shall control the resource's operating set point through its Energy Management System with the objective of maintaining the resource's operating set point at its preferred operating point. In the Day-Ahead Market and FMM, the procurement of Regulation from resources using Regulation Energy Management will not be constrained by the resource's MWh limit to generate, curtail the consumption of, or consume Energy continuously. In the Real-Time Dispatch, the CAISO will base the Dispatches on the resource's capability to provide Regulation. When the resource has a physical MWh limit, the CAISO will observe the resource's MWh constraint during Real-Time Dispatch and will assess whether the CAISO can support the resource's self-provided Regulation capacity or Regulation award with Real-Time Market Dispatches. To the extent the CAISO determines in the Integrated Forward Market or FMM processes that the MWh constraint of resources using Regulation Energy Management limits the capability of the CAISO, through Real-time Dispatch, to support these resources' self-provided Regulation capacity or Regulation awards, the CAISO may disqualify resources using Regulation Energy Management on a pro rata basis across the System Region from providing Regulation, which shall result in the rescission of the disqualified portion of the resources' self-provided or awarded Regulation capacity payments.

*** * ***

8.5 Time Frame To Submit And Evaluate Ancillary Services Bids

All Ancillary Services Bids must be submitted pursuant to the rules provided in Section 30.5.

8.6 Obligations For And Self-Provision Of Ancillary Services

8.6.1 Ancillary Service Obligations

Each Scheduling Coordinator shall be assigned a share of the total Regulation Down, Regulation Up, Spinning Reserve, and Non-Spinning Reserve requirements by the CAISO, as set forth in Sections 11.10.2, 11.10.3 and 11.10.4, (i.e., a share of the total requirements for each Ancillary Service in the Day-Ahead Market and the Real-Time Market). Any references in this CAISO Tariff to Regulation shall be read as referring to Regulation Up or Regulation Down.

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 IFM, and, to the extent needed to satisfy the CAISO's additional requirement, the Real-Time Market, from resources eligible for self-provision, as may be permissible for any given Ancillary Service in these respective markets. 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 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. The CAISO will treat resources subject to Resource Adequacy requirements consistently with and such resources must comply with the bidding requirements in Section 40.6. 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 Ancillary Services 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 to the extent qualified in the IFM 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 IFM 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.

8.6.3 Services Which May Be Self-Provided

The CAISO shall permit Scheduling Coordinators to self-provide the following Ancillary Services:

(a) Regulation Up;

(b) Regulation Down;

(c) Spinning Reserve; and

(d) Non-Spinning Reserve.

Submissions to Self-Provide Ancillary Services for Regulation Up and Regulation Down capacity will be rejected if the Energy Bid provided in the submission is outside of the resource's Regulating Range. The CAISO may from time to time add other Ancillary Services to this list as it considers appropriate.

8.6.4 Time Frame For Informing CAISO Of Self-Provision

8.6.4.1 Day-Ahead Schedule

At the Day-Ahead Market, Scheduling Coordinators shall be required to submit information on Self-Provided Ancillary Services within the time frame stated in Section 30. Failure to submit the required information within the stated time frame for any hour shall lead to the self-provision for that hour being declared invalid by the CAISO.

8.6.4.2 RTM

In the RTM, Scheduling Coordinators shall be required to submit information on Self-Provided Ancillary Services within the time frame stated in Section 30.1. Failure to submit the required adjusted information within the stated time frame shall lead to the self-provision being declared invalid by the CAISO.

*** * ***

8.7 Ancillary Services Awards

The CAISO shall provide Scheduling Coordinators with Ancillary Services Awards for the Day-Aheadand Real-Time Markets consistent with the provisions of the CAISO Tariff. The CAISO shall post the Ancillary Service Awards and Ancillary Service Schedules for the applicable Day-Ahead Market no later than the publication of the Day-Ahead Schedule for the applicable Day-Ahead Market; no later than approximately ~~forty (40)~~forty-five (45) minutes prior to the Operating Hour of their advisory HASP Ancillary Services schedules; and no later than ~~approximately fifteen (15)~~twenty-two and a half (22.5) minutes prior to the next FMM Interval. Where long-term contracts are involved, the information may be treated as standing information for the duration of the contract.

Once the CAISO has given Scheduling Coordinators notice of the Day-Ahead and Real-Time Market Ancillary Service Awards and Ancillary Service Schedules, these awards and Schedules represent binding commitments made in the markets between the CAISO and the Scheduling Coordinators concerned, subject to any amendments issued as described above.

* * *

8.10.8.7 Rescission of Payments for Resource and Transmission Constraints

If the CAISO determines that any Day-Ahead Market award for Ancillary Services capacity or Self-Provided Ancillary Services capacity is not available during the RTM as a result of a resource constraint, then payments for that capacity will be rescinded in accordance with Section 11.10 or, in the case of Self-Provided Ancillary Services capacity, that capacity will not be compensated at the user rate as described in Sections 11.10.2, 11.10.3 and 11.10.4.

If the CAISO determines that any Day-Ahead Market award for Ancillary Services capacity or Self-Provided Ancillary Services capacity is not available during the RTM as a result of a Transmission Constraint, then payments for that capacity will not be rescinded, except as provided in section 11.10.9.1 for System Resources or, in the case of Self-Provided Ancillary Services capacity, that capacity will continue to be compensated at the user rate as described in Sections 11.10.2, 11.10.3 and 11.10.4.

For purposes of applying this Section to Dynamic Resources or Pseudo-Tie resources, the CAISO shall treat a reduction in the Operating Transfer Capability at an Intertie between the Day-Ahead Market and FMM that is registered in SLIC or any successor outage management system as a Transmission Constraint. For all other constraints that cause the CAISO to determine that any Day-Ahead Market award for Ancillary Services capacity or Self-Provided Ancillary Services capacity from Dynamic Resource or Pseudo-Tie resources is not available, the ISO shall treat these constraints as resource constraints.

* * *

9.3.6.4 Changes to Maintenance Outages

A Participating TO may submit changes to its Maintenance Outage information at any time, provided, however, that if the Participating TO cancels an Approved Maintenance Outage after 5:00 a.m. of the day prior to the day upon which the Outage is scheduled to commence and the CAISO determines that the change was not required to preserve System Reliability, the CAISO may disregard the availability of the affected facilities in determining the availability of transmission capacity in the Day-Ahead Market. The CAISO will, however, notify Market Participants and reflect the availability of transmission capacity in the Real-Time Market as promptly as practicable.

* * *

9.3.6.11 Cancellation of Approved Maintenance Outage

In the event an Operator of facilities forming part of the CAISO Controlled Grid cancels an Approved Maintenance Outage after 5:00 a.m. of the day prior to the day upon which the Outage is scheduled to commence and the CAISO determines that the change was not required to preserve System Reliability, the CAISO may disregard the availability of the affected facilities in determining the availability of transmission capacity in the Day-Ahead Market, provided, however, that the CAISO will, as promptly as practicable, notify Market Participants and reflect the availability of the affected facilities in determining the availability of transmission capacity in the Real-Time Market.

* * *

9.3.10.2 Each Participating TO shall report any change or potential change in equipment status of the Participating TO'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 upon discovery to the CAISO (this will include line and station equipment, line protection, Remedial Action Schemes and communication problems, etc.). Each Participating TO shall also keep the CAISO immediately informed upon discovery as to any change or potential change in the Participating TO's transmission system that could affect the reliability of the CAISO Controlled Grid. This would include, but is not limited to, adverse weather conditions, fires, bomb threats, system failures, etc. To the extent possible, the CAISO shall reflect all transmission Outages in the Integrated Forward Market and Real-Time Market.

* * *

11. CAISO Settlements And Billing

11.1 Settlement Principles

The CAISO shall calculate, account for and settle payments and charges with Business Associates in accordance with the following principles:

(a) The CAISO shall be responsible for calculating Settlement balances for any penalty or dispute in accordance with the CAISO Tariff, and any transmission Access Charge to UDCs or MSSs and Participating TOs;

(b) The CAISO shall create and maintain computer back-up systems, including off- site storage of all necessary computer hardware, software, records and data at an alternative location that, in the event of a Settlement system breakdown at the primary location of the day-to-day operations of the CAISO, could serve as an alternative location for day-to-day Settlement operations within a reasonable period of time;

(c) The CAISO shall retain all Settlement data records for a period which, at least, allows for the re-run of data as required by this CAISO Tariff and any adjustment rules of the Local Regulatory Authority governing the Scheduling Coordinators and their End-Use Customers and FERC;

(d) The CAISO shall calculate, account for and settle all charges and payments for Initial Settlement Statement T+3B based on CAISO estimates and for all other settlement statements based on the Settlement Quality Meter Data it has received, or, if Settlement Quality Meter Data is not available, based on the best available information or estimate it has received in accordance with the provisions in Section 10 and the applicable Business Practice Manuals; and

(e) Day-Ahead Schedules, RUC Awards and AS Awards shall be settled at the relevant LMP, RUC Price, and ASMPs, respectively. ~~FMM~~ RTM Schedules shall be settled at the relevant ~~FMM~~ RTM LMP at the relevant Scheduling Point. ~~FMM~~ RTM AS Awards shall be settled at the relevant ~~FMM~~ RTM ASMP. All Dispatch Instructions shall be deemed delivered and settled at relevant Real-Time Market prices. Deviations from Dispatch Instructions shall be settled as Uninstructed Deviations.

* * *

11.1.2 Settlement Charges And Payments

The CAISO shall settle the following charges in accordance with this CAISO Tariff: (1) Grid Management Charge; (2) Bid Cost Recovery; (3) IFM charges and payments, including Energy and Ancillary Services; (4) RUC charges and payments; (5) Real-Time Market charges and payments, including Energy and Ancillary Services; (6) High Voltage Access Charges and TAC Transition Charges; (7) Wheeling Access Charges; (8) Voltage Support and Black Start charges; (9) Excess Cost Payments; (10) default interest charges; (11) CRR Charges and Payments, (12) Inter-SC Trades charges and payments; (13 neutrality adjustments; (14) FERC Annual Charges;

(15) distribution of excess Marginal Losses; (16) Virtual Bid Submission Charges; (17) miscellaneous charges and payments; and (18) Participating Intermittent Resource Fees.

* * *

11.2.4.4.1 Daily Clearing of the CRR Balancing Account – Full Funding of CRRs

At the end of each day, 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 day. 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 RTM Congestion Credits were provided in the same relevant day) divided by (c) the total Measured Demand for all Scheduling Coordinators for the relevant day (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 day).

* * *

11.2.4.6 Adjustment of CRR Revenue Related to Virtual Awards

In accordance with this Section 11.2.4.6, the CAISO will adjust the revenue from the CRRs of a CRR Holder that is also a Convergence Bidding Entity whenever either of the following creates a significant impact on the value of the CRRs in the DAM held by that entity: the CRR Holder/Convergence Bidding Entity engages in virtual bidding; or the CRR Holder/Convergence Bidding Entity (as opposed to the CAISO) reduces in the RTM an import or export awarded in a Day-Ahead Schedule. As set forth in Section 11.32, the CAISO will also adjust the revenue from

the CRRs of a CRR Holder (regardless of whether the CRR Holder is also a Convergence Bidding Entity) where the Scheduling Coordinator representing that CRR Holder (as opposed to the CAISO) reduces in the RTM an import or export awarded in a Day-Ahead Schedule.

(a) For purposes of this Section 11.2.4.6 and the definition of Flow Impact, any reduction by a Scheduling Coordinator submitting Schedules on behalf of an entity that is a CRR Holder to an import or export Schedule in the RTM will be treated as a Virtual Award. For each CRR Holder subject to this Section 11.2.4.6, for each hour, and for each Transmission Constraint binding in the IFM or RTM the CAISO will calculate the Flow Impact of the Virtual Awards awarded to the Scheduling Coordinator that represents the CRR Holder, excluding Virtual Awards at LAPs and generation Trading Hubs.

(b) The CAISO will determine the peak and off-peak hours of the day in which Congestion on the Transmission Constraint was significantly impacted by the Virtual Awards awarded to the Scheduling Coordinator that represents the CRR Holder. Congestion on the Transmission Constraint will be deemed to have been significantly impacted by the Virtual Awards awarded to the Scheduling Coordinator that represents the CRR Holder if the Flow Impact passes two criteria. First, the Flow Impact must be in the direction to increase the value of the CRR Holder's CRR portfolio. Second, the Flow Impact must exceed the threshold percentage of the flow limit for the Transmission Constraint. The threshold percentage is ten (10) percent of the flow limit for each Transmission Constraint.

(c) For each peak or off-peak hour that passes both criteria in Section 11.2.4.6(b), the CAISO will compare the Transmission Constraint's impact on the Day-Ahead Market value of the CRR Holder's CRR

portfolio with the Transmission Constraint's impact on the Real-Time Market value of the CRR Holder's CRR portfolio, as applicable.

(d) The CAISO will adjust the peak or off-peak period revenue from the CRR Holder's CRRs in the event that, over the peak or off-peak period of a day, the Transmission Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Transmission Constraint's contribution to the Real-Time Market value of the CRR Holder's CRR portfolio, as applicable. The amount of the peak period adjustment will be the amount by which the Transmission Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Transmission Constraint's contribution to the Real-Time Market value of the CRR Holder's CRR portfolio for the peak-period hours that passed both criteria in Section 11.2.4.6(b), as applicable. The amount of the off-peak period adjustment will be the amount by which the Transmission Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Transmission Constraint's contribution to the Real-Time Market value of the CRR Holder's CRR portfolio for the off-peak period hours that passed both criteria in Section 11.2.4.6(b), as applicable.

All adjustments of CRR revenue calculated pursuant to this Section 11.2.4.6 will be added to the CRR Balancing Account.

11.3 Settlement of Virtual Awards

11.3.1 Virtual Supply Awards

The CAISO will pay each Scheduling Coordinator with Virtual Supply Awards at an Eligible PNode or Eligible Aggregated PNode an amount equal to the Day-Ahead LMP at the Eligible PNode or Eligible Aggregated PNode multiplied by the MWhs of Virtual Supply Awards. Virtual Supply Awards subject to price correction will be settled as specified in Section 11.21. The CAISO will charge each Scheduling Coordinator with Virtual Supply Awards at an Eligible PNode

or Eligible Aggregated PNode an amount equal to the simple average of the four FMM LMPs for the applicable Trading Hour at the Eligible PNode or Eligible Aggregated PNode multiplied by the MWhs of Virtual Supply Awards.

11.3.2 Virtual Demand Awards

The CAISO will charge each Scheduling Coordinator with Virtual Demand Awards at an Eligible PNode or Eligible Aggregated PNode an amount equal to the Day-Ahead Market LMP at the Eligible PNode or Eligible Aggregated PNode multiplied by the MWhs of Virtual Demand Awards. Virtual Demand Awards subject to price correction will be settled as specified in Section 11.21. The CAISO will pay each Scheduling Coordinator with Virtual Demand Awards at an Eligible PNode or Eligible Aggregated PNode an amount equal to the simple average of the four FMM LMPs for the applicable Trading Hour at the Eligible PNode or Eligible Aggregated PNode multiplied by the IFM MWhs of Virtual Demand Awards.

11.4 [Not Used]

11.5 Real-Time Market Settlements

The CAISO shall calculate and account for Imbalance Energy for each Dispatch Interval and settle Imbalance Energy in the Real-Time Market for each Settlement Interval for each resource within the CAISO Balancing Authority Area and all System Resources dispatched in Real-Time. There are two categories of Imbalance Energy: FMM Instructed Imbalance Energy and RTD Imbalance Energy. RTD Imbalance Energy consists of RTD IIE and UIE. FMM IIE includes Energy associated with the FMM Schedule. FMM Instructed Imbalance Energy is settled pursuant to Section 11.5.1.1. RTD IIE is settled pursuant to Section 11.5.1.2 and UIE is settled pursuant to Section 11.5.2. In addition, the CAISO shall settle UFE as part of the Real-Time Market Settlements. To the extent that the sum of the Settlements Amounts for FMM IIE, RTD IIE, and UIE does not equal zero, the CAISO will assess charges or make payments for the resulting differences to all Scheduling Coordinators based on a pro rata share of their Measured Demand for the relevant Settlement Interval, as further described in Section 11.5.4.Imbalance Energy due to Exceptional Dispatches, as well as the allocation of related costs, including Excess Costs Payments is settled as described in Section 11.5.6. The CAISO shall reverse RTM

Congestion Charges for valid and balanced ETC and TOR Self-Schedules as described in Section 11.5.7. The CAISO will settle Energy for emergency assistance as described in Section 11.5.8.**11.5.1 Imbalance Energy Settlements**

11.5.1.1 FMM Instructed Imbalance Energy Settlements

For each Settlement Interval, FMM IIE consists of the following types of Energy: (1) FMM Optimal Energy; (2) FMM Minimum Load Energy; (3) FMM Exceptional Dispatch Energy; (4) FMM Derate Energy; and (5) FMM Pumping Energy. Payments and charges for FMM IIE attributable to each resource in each Settlement Interval shall be settled by debiting or crediting, as appropriate, the specific Scheduling Coordinator's FMM IIE Settlement Amount. The FMM IIE Settlement Amounts for FMM Optimal Energy, FMM Minimum Load Energy, FMM Derate Energy, and FMM Pumping Energy, and shall be calculated as the product of the sum of all of these types of Energy and the FMM LMP. For MSS Operators that have elected net Settlement, the FMM IIE Settlement Amounts for Energy dispatched through the FMM, FMM Minimum Load Energy from System Units dispatched in FMM, FMM Derate Energy, FMM Pumping Energy shall be calculated as the product of the sum of all of these types of Energy and the FMM MSS Price. For MSS Operators that have elected gross Settlement, regardless of whether that entity has elected to follow its Load or to participate in RUC, the FMM IIE for such entities is settled similarly to non-MSS entities as provided in this Section 11.5.1. The remaining FMM IIE Settlement Amounts for Exceptional Dispatches are settled pursuant to Section 11.5.6.

11.5.1.2 RTD Instructed Imbalance Energy Settlements

For each Settlement Interval, RTD IIE consists of the following types of Energy: (1) RTD Optimal Energy; (2) Residual Imbalance Energy; (3) RTD Minimum Load Energy; (4) RTD Exceptional Dispatch Energy; (5) Regulation Energy; (6) Standard Ramping Energy; (7) Ramping Energy Deviation; (8) RTD Derate Energy; (9) (10) MSS Load Following Energy; (11) RTD Pumping Energy; and (12) Operational AdjustmentsPayments and charges for RTD IIE attributable to each resource in each Settlement Interval shall be settled by debiting or crediting, as appropriate, the specific Scheduling Coordinator's RTD IIE Settlement Amount. The RTD IIE Settlement Amounts for the Standard Ramping Energy shall be zero. The RTD IIE Settlement Amounts for RTD

Comment [A1]: See comment in overview.

Optimal Energy, RTD Minimum Load Energy, Regulation Energy, Ramping Energy Deviation, RTD Derate Energy, and RTD Pumping Energy shall be calculated as the product of the sum of all of these types of Energy and the RTD LMP. For MSS Operators that have elected net Settlement, the RTD IIE Settlement Amounts for Energy dispatched through the RTD optimization, RTD Minimum Load Energy from System Units dispatched in Real-Time, Regulation Energy, Ramping Energy Deviation, RTD Derate Energy, MSS Load Following Energy, and RTD Pumping Energy shall be calculated as the product of the sum of all of these types of Energy and the RTD MSS Price. For MSS Operators that have elected gross Settlement, regardless of whether that entity has elected to follow its Load or to participate in RUC, the RTD IIE for such entities is settled similarly to non-MSS entities as provided in this Section 11.5.1. The remaining RTD IIE Settlement Amounts are determined as follows: (1) IIE Settlement Amounts for Residual Imbalance Energy are determined pursuant to Section 11.5.5.; and (2) RTD IIE Settlement Amounts for Exceptional Dispatches are settled pursuant to Section 11.5.6.

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 for each Settlement Interval. 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 every five minutes based on the resource's Dispatch Instruction~~.~~. For all resources, including Generating Units, System Units of MSS Operators that have elected gross Settlement, Physical Scheduling Plants, System Resources and all Participating Load and Proxy Demand Resources,the UIE Settlement Amount is calculated for each Settlement Interval as the product of its UIE MWh quantity and the applicable RTD LMP. . The UIE Settlement Amount for non-Participating Load and MSS Demand under gross Settlement is settled as described in Section 11.5.2.2. For MSS Operators

that have elected net Settlement, the UIE Settlement Amount is calculated for each Settlement Interval as the product of its UIE quantity and its Real-Time Settlement Interval MSS Price.

11.5.2.2 Hourly Real-Time Demand Settlement

The Default Hourly Real-Time LAP Price will apply to CAISO Demand and MSS Demand under net Settlement of Imbalance Energy, except for CAISO Demand not settled at the Default LAP as provided in Section 30.5.3.2. For each Settlement Interval, the differences between the Day-Ahead Scheduled CAISO Demand and Metered Demand (MWh) will be settled at the Default Hourly Real-Time LAP Price or the Custom LAP Hourly Real-Time Price as appropriate.

For each Default LAP, the ISO will calculate the applicable Default Hourly Real-Time LAP Price as the weighted average LMP of the four Default LAP FMM LMPs and the twelve (12) five-minute Default LAP RTD LMPs. The weighted average LMP for each Default LAP will be calculated as the summation of the weighted average SMEC, the weighted average MCC, and the weighted average MLC for that Default LAP. The weighted average SMEC, MCC, and MLC for each hour will be calculated based upon the four applicable Default LAP FMM SMECs, MCCs, and MLCs, respectively, and the twelve (12) applicable Default LAP RTD SMECs, MCCs, and MLCs, respectively.

For each Custom LAP, the ISO will calculate the applicable Custom Hourly Real-Time LAP Price as the weighted average LMP of the four Custom LAP FMM LMPs and the twelve (12) five-minute Custom LAP RTD LMPs. The weighted average LMP for each Custom LAP will be calculated as the summation of the weighted average SMEC, the weighted average MCC, and the weighted average MLC for that Custom LAP. The weighted average SMEC, MCC, and MLC for each hour will be calculated based upon the four applicable Custom LAP FMM SMECs, MCCs, and MLCs, respectively, and the twelve (12) applicable Custom LAP RTD SMECs, MCCs, and MLCs, respectively.

In calculating the weighted average SMEC, MCC, and MLC for each hour for either the Default LAPs or Custom LAPs, the CAISO shall weight according to the difference between DAM LAP schedules and the FMM Forecast multiplied by the relevant FMM LAP price plus the difference between FMM Forecast and RTD Forecast multiplied by the relevant RTD LAP Price divided by

the sum of the difference between DAM LAP schedules and the FMM Forecast plus the difference between FMM Forecast and RTD Forecast.

Furthermore, the Default or Custom Hourly Real-Time LAP Price will be bounded by the maximum positive LMP and the lowest negative LMP for the applicable Trading Hour from those relevant intervals. If the calculated price exceeds the upper boundary or is below the lower boundary, then the price instead will be calculated based on a weighted average price with the weightings based on gross deviations (absolute value of each deviation)

The Default or Custom Hourly Real-Time LAP Price is further determined by the requirements in Section 27.2.2.2.1 and 27.2.2.2.2, respectively.

11.5.2.3 Revenue Neutrality Resulting from Changes in LAP Load Distribution Factors

Any resulting revenue from changes in the LAP Load Distribution Factors between the Day-Ahead Market and the Real-Time Dispatch shall be allocated to metered CAISO Demand in the corresponding Default LAP.

*** * ***

11.5.3 Unaccounted For Energy (UFE)

For each Settlement Interval, the CAISO will calculate UFE for each utility Service Area for which the IOU or Local Publicly Owned Electric Utility has requested separate UFE calculation and has met the requirements applicable to a CAISO Metered Entity. The UFE will be settled as Imbalance Energy at the Hourly Real-Time LAP Price calculated for each utility Service Area for which UFE is calculated separately. UFE will be allocated to each Scheduling Coordinator based on the ratio of its metered CAISO Demand within the relevant utility Service Area for which UFE is calculated separately to total metered CAISO Demand within that utility Service Area. UFE charges will not be estimated or included on Initial Settlement Statement T+3B.

11.5.4 Imbalance Energy Pricing; Non-Zero Offset Amount Allocation

11.5.4.1 [Not Used]

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

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 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 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 that have elected to Load follow or net settlement, or both, the Real-Time Marginal Cost of Losses Offset will be allocated based on their MSS Aggregation Net 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 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, the Real-Time Ancillary Services Congestion revenues and Virtual Awards settlements in the Real-Time Market in accordance with Section 11.3, less Real-Time Congestion Offset, and less the Real-Time Marginal Cost of Losses 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 net Settlement, 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, the Real-Time Ancillary Services Congestion Revenues and Virtual Awards settlements in the Real-Time Market in accordance with Section 11.3, less Real-Time Congestion Offset and less the Real-Time Marginal Cost of Losses Offset, based on their MSS Aggregation Net Measured Demand. For Scheduling Coordinators for MSS Operators that have elected Load following, the CAISO will not assess any charges or make payments for the resulting non-zero differences of the sum of the Settlement amounts for IIE, UIE, and UFE, the Real-Time Ancillary Services Congestion Revenues and Virtual Awards settlements in the Real-Time Market in accordance with Section 11.3, less Real-Time Congestion Offset and less the Real-Time Marginal Cost of Losses Offset.

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, as mitigated pursuant to Section 39.7 that led to the Residual Imbalance Energy from the relevant Dispatch Interval in which the resource was dispatched, subject to additional rules specified in this section below and in Section 11.17. The relevant Dispatch Interval and Bid that led to the Residual Imbalance Energy may occur prior or subsequent to the interval in which the relevant Residual Imbalance Energy occurs and can be contiguous, or not, with the applicable Trading Hour in which the relevant Residual Imbalance Energy Settlement Interval occurs. 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). When a Scheduling Coordinator increases the Minimum Load amount for a resource through SLIC, for the Settlement Interval(s) during which the affected resource is ramping up towards or ramping down from such a Minimum Load change, the Residual Imbalance Energy for the applicable Settlement Interval(s) will be re-classified as Derate Energy and will be paid at the applicable RTD Locational Marginal Price.

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 34.10 is calculated as the sum of the products of the relevant FMM IIE or RTD IIE quantity for the Settlement Interval and the relevant FMM or RTD Settlement price for each type of Exceptional Dispatch as further described in this Section 11.5.6. For MSS Operators the Settlement for FMM or RTD 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 FMM or RTD 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 FMM or RTD 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) applicable FMM or RTD LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM 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 applicable FMM or RTD 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 FMM or RTD 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) FMM or RTD 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 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 FMM or RTD 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 34.10.3 is the maximum of (a) the FMM or RTD LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM 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 FMM or RTD 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 FMM or RTD LMP, (b) the Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM 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 FMM or RTD 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.

11.5.6.2.2 [NOT USED]

11.5.6.2.3 Settlement of Excess Cost Payments for Exceptional Dispatches used for Transmission-Related Modeling Limitations

The Excess Cost Payment for Exceptional Dispatches used for transmission-related modeling limitations as described in Section 34.9.3 is calculated for each resource for each Settlement Interval as the cost difference between the Settlement amount calculated pursuant to Section 11.5.6.2.1 or 11.5.6.2.2 for the applicable delivered Exceptional Dispatch quantity at the FMM or RTD LMP and 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.

11.5.6.2.4 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 34.10.3 is the maximum of the (a) FMM or RTD LMP, (b) Energy Bid price, (c) the Default Energy Bid price if the resource has been mitigated through the MPM 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) FMM or RTD LMP, (b) Energy Bid Price, (c) or the Default Energy Bid price if the resource has been mitigated through the MPM 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.

*** * ***

11.5.6.4 Settlement of IIE from Exceptional Dispatches for Testing

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, periodic testing, including PMax testing, or pre-commercial operation testing for Generating Units is the maximum of the FMM or RTD 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.

*** * ***

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

The Exceptional Dispatch Settlement price for IIE from Real-Time ETC and TOR Self-Schedules shall be the FMM or RTD 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 FMM or RTD 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 [NOT USED]

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

Except as specified in Section 11.5.6.7.3, 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 shall be the higher of (a) the resource's Energy Bid price or (b) the FMM or RTD LMP.

* * *

11.5.6.7.3 Exception to the Other Provisions of Section 11.5.6.7

Notwithstanding any other provisions of this Section 11.5.6.7, if the Energy Bid price for a resource that satisfies all of the criteria set forth in Sections 39.10.1 or 39.10.2 is lower than the Default Energy Bid price for the resource, and the FMM or RTD LMP is lower than both the Energy Bid price for the resource and the Default Energy Bid price for the resource, the Exceptional Dispatch Settlement price for the Exceptional Dispatch Energy delivered by the resource shall be the Energy Bid price for the resource.

11.5.7 Congestion Credit And Marginal Cost Of Losses Credit

11.5.7.1 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 after the Day-Ahead market. The balanced portion for each ETC or TOR contract for each Settlement Interval will be based on the difference between: (1) the minimum of (a) the total Demand, (b) the total ETC or TOR Supply Self-Schedule submitted in RTM, including up to T-20 minutes schedule changes if permitted by the Existing Contract, or (c) the Existing Contract maximum capacity as specified in the TRTC Instructions; and (2) the valid and balanced portion of the Day-Ahead Schedule. In determining the balanced portions, the ISO will evaluate the amounts based on the following variables: a) for exports and imports, the CAISO shall use the schedule quantity specified in the Interchange schedule for check out between CAISO and other balancing authority areas; b) for CAISO Demand, the CAISO shall use the metered CAISO Demand associated with the applicable ETC or TOR; and c) for all Generation the CAISO shall use the quantity specified in the Dispatch Instructions. For each Scheduling Coordinator, the CAISO shall determine for each Settlement

Interval the applicable RTM Congestion Creditfor Imbalance Energy, which can be positive or negative, as the sum of the product of the relevant MWh quantity and the weighted average 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. The weights in the two markets will be based on the absolute values of (a) deviation of FMM schedule or Load forecast from Day-Ahead Schedules and (b) deviation of RTD schedule or Load forecast from Day-Ahead Schedules.

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 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 after the Day-Ahead market is the same balanced quantity mentioned in Section 11.5.7.2 for the TOR Self-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 of the relevant MWh quantity and the weighted average MCL at each eligible Points of Receipt and Points of Delivery associated with the valid and balanced portions of that Scheduling Coordinator's TOR Self-Schedules. The weights in the two markets will be based on the absolute values of (a) deviation of FMM schedule or Load forecast from Day-Ahead

Schedules and (b) deviation of RTD schedule or Load forecast from Day-Ahead Schedules. For applicable losses charge specified in Section 17.3.3, the specific loss charge amount shall be the product of (a) the loss percentage specific to the TOR contract, (b) the weighted average SMEC price from the FMM and RTD markets with weights based on the absolute values of (1) deviation of FMM schedule or Load forecast from Day-Ahead Schedules and (2) deviation of RTD schedule or Load forecast from Day-Ahead Schedules, and (c) the balanced contract quantity mentioned in Section 11.5.7.1.

*** * ***

11.5.8.1 Settlement for Energy Purchased by the CAISO for System Emergency Conditions, to Avoid Market Interruption, or to Prevent or Relieve Imminent System Emergencies, Other than Exceptional Dispatch Energy

The Settlement price for Energy that is delivered to the CAISO from a utility in another Balancing Authority Area as a result of a CAISO request pursuant to Section 42.1.5 or any other provision for assistance in System Emergency conditions, to avoid a Market Interruption, or to prevent or relieve an imminent System Emergency, other than Energy from an Exceptional Dispatch, shall be either (i) a negotiated price agreed upon by the CAISO and the seller or (ii) a price established by the seller for such emergency assistance in advance, as may be applicable. In the event no Settlement price is established prior to the delivery of the emergency Energy, the default Settlement price shall be the simple average of the relevant Dispatch Interval LMPs at the applicable Scheduling Point, plus all other charges applicable to imports to the CAISO Balancing Authority Area, as specified in the CAISO Tariff. If the default Settlement price is determined by the seller not to compensate the seller for the value of the emergency Energy delivered to the CAISO, then the seller shall have the opportunity to provide the CAISO with cost support information demonstrating that a higher price is justified. The cost support information must be provided in writing to the CAISO within thirty (30) days following the date of the provision of emergency assistance. The CAISO shall have the discretion to pay that higher price based on the seller's justification of this higher price. The CAISO will provide notice of its determination whether to pay such a higher price within thirty (30) days after receipt of the cost support

information. Any dispute regarding the CAISO's determination whether to pay a higher price for emergency assistance based on cost support information shall be subject to the CAISO ADR Procedures. Payment by the CAISO for such emergency assistance will be made in accordance with the Settlement process, billing cycle, and payment timeline set forth in the CAISO Tariff. The costs for such emergency assistance, including the payment of a price based on cost support information, will be settled in two payments: (1) the costs will first be settled at the simple average of the relevant Dispatch Interval LMPs and included in the total IIE Settlement Amount as described in Section 11.5.2.1; and (2) costs in excess of the simple average of the relevant Dispatch Interval LMPs plus other applicable charges will be settled in accordance with Section 11.5.8.1.1. The allocation of the amounts settled in accordance with Section 11.5.1.1 will be settled according to Section 11.5.4.2.

11.5.9 Settlement Of Scheduling Points in Real-Time Market

The CAISO shall settle both incremental and decremental Energy at the relevant Scheduling Points for Non-Dynamic System Resources scheduled in the FMM based on the FMM LMP in accordance with Sections 11.5.9.1, 11.5.9.2 and 11.32.

11.5.9.1 Exports Settlements

For each Settlement Period that the CAISO accepts Energy transactions at Scheduling Points the Settlement for such transactions will be the CAISO FMM LMP multiplied by the MWh quantity of export scheduled in the FMM Schedule at the individual Scheduling Point, in excess of or less than the Day-Ahead Schedule, respectively. For Scheduling Coordinators whose exports scheduled at the individual Scheduling Point is subject to an upward price correction as specified in Section 11.21, the CAISO will use the Price Correction Derived LMP to settle the MWh quantity of Energy exports scheduled in excess of the Day-Ahead Schedule at the relevant Scheduling Point.

11.5.9.2 Imports Settlements

For each Settlement Period that the CAISO accepts Energy transactions at Scheduling Points for all Non-Dynamic System Resources in RTM , the CAISO shall pay or charge Scheduling Coordinators for each System Resource an amount equal to the FMM LMP multiplied by the

MWh quantity of import scheduled at the individual Scheduling Point as specified in the FMM Schedule in excess of or less than the import at that Scheduling Point scheduled in the Day-Ahead Schedule, respectively.

* * *

11.8 Bid Cost Recovery

For purposes of determining the Unrecovered Bid Cost Uplift Payments for each Bid Cost Recovery Eligible Resource as determined in Section 11.8.5 and the allocation of Unrecovered Bid Cost Uplift Payments for each Settlement Interval, the CAISO shall sequentially calculate the Bid Costs, which can be positive (IFM, RUC or RTM Bid Cost Shortfall) or negative (IFM, RUC or RTM Bid Cost Surplus) in the IFM, RUC and the Real-Time Market, as the algebraic difference between the respective IFM, RUC or RTM Bid Cost and the IFM, RUC or RTM Market Revenues as further described below in this Section 11.8. The RTM Energy Bid Costs and RTM Market Revenues include the FMM Energy Bid Costs. In any Settlement Interval a resource is eligible for Bid Cost Recovery payments pursuant to the rules described in the subsections of Section 11.8 and Section 11.17. Bid Cost Recovery Eligible Resources for different MSS Operators are supply resources listed in the applicable MSS Agreement. All Bid Costs shall be based on Bids as mitigated pursuant to the requirements specified in Section 39.7. Virtual Awards are not eligible for Bid Cost Recovery. Virtual Awards are eligible for make-whole payments due to price corrections pursuant to Section 11.21.2. In order to be eligible for Bid Cost Recovery, Non-Dynamic Resource-Specific System Resources must provide to the CAISO SCADA data by telemetry to the CAISO's EMS in accordance with Section 4.12.3 demonstrating that they have performed in accordance with their CAISO commitments. Scheduling Coordinators for Non-Generator Resources are not eligible to recover Start-Up Costs, Minimum Load Costs, Pumping Costs, Pump Shut-Down Costs, or Transition Costs but are eligible to recover Energy Bid Costs, RUC Availability Payments and Ancillary Service Bid Costs.

11.8.1 CAISO Determination Of Self-Commitment Periods

For the purposes of identifying the periods during which a Bid Cost Recovery Eligible Resource is deemed self-committed and thus ineligible for Start-Up Costs, Transition Costs, Minimum Load Costs, IFM Pump Shut-Down Costs and IFM Pumping Costs, the CAISO derives the Self-Commitment Periods as described below. The CAISO will determine the Self-Commitment Periods for Multi-Stage Generating Resources based on the applicable MSG Configuration. MSS resources designated for Load following are considered to be self-committed if they have been scheduled with non-zero Load following capacity, or are otherwise used to follow Load in the Real-Time. The IFM and RUC Self-Commitment Periods will be available as part of the Day-Ahead Market results provided to the applicable Scheduling Coordinator. The interim RTM Self-Commitment Periods as reflected in the RTM will be available as part of the RTM results for the relevant Trading Hour as provided to the applicable Scheduling Coordinator. The final RTM Self-Commitment Period is determined ex-post for Settlements purposes. ELS Resources committed through the ELC Process described in Section 31.7 are considered to have been committed in the IFM Commitment Period for the applicable Trading Day for the purposes of determining BCR settlement in this section 11.8.

*** * ***

11.8.1.3 Multi-Stage Generating Resource Start-Up, Minimum Load, or Transition Costs

For the settlement of the Multi-Stage Generating Resource Start-Up Cost, Minimum Load Cost, and Transition Cost in the IFM, RUC, and RTM, the CAISO will determine the applicable Commitment Period and select the applicable Start-Up Cost, Minimum Load Cost, and Transition Cost based on the following rules.

(1) In any given Settlement Interval, the CAISO will first apply the following rules to determine the applicable Start-Up Cost, Minimum Load Cost, and Transition Cost for the Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period and/or RUC Commitment Period MSG Configuration(s) are different from the RTM CAISO Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the RTM CAISO Commitment Period MSG Configuration Start-Up Cost, and Transition Cost, as described in Section 11.8.4.1. This rule does not apply in cases where there is a CAISO IFM Commitment Period, in which case the Minimum Load Costs will be settled based on the: (i) CAISO IFM Commitment Period MSG Configuration's Minimum Load costs, plus (ii) the positive or negative difference of the CAISO RTM Commitment Period MSG Configuration's Minimum Load Costs and the CAISO IFM Commitment Period MSG Configuration's Minimum Load Costs

(b) there is a CAISO IFM Commitment Period and/or CAISO RUC Commitment Period in any MSG Configuration and there is also a RTM Self-Commitment Period in any MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost, Minimum Load Cost, and Transition Cost, as described in Sections 11.8.2.1 and 11.8.3.1, and further determined pursuant to part (2) of this Section below.

(c) the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration is the same as the CAISO RTM Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load

Cost, and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost, Minimum Load Cost, and Transition Cost described in Sections 11.8.2.1 and 11.8.3.1, and further determined pursuant to part (2) of this Section below.

(d) the IFM and RUC Self-Commitment Period MSG Configuration(s) are the same as the CAISO RTM Commitment Period MSG Configuration, then the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the CAISO RTM Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.4.1.

(2) In any given Settlement Interval, after the rules specified in part (1) above of this Section have been executed, the ISO will apply the following rules to determine whether the IFM or RUC Start-Up Cost, Minimum Load Cost, and Transition Cost apply for Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period MSG Configuration is different from the CAISO RUC Commitment Period MSG Configuration the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the CAISO RUC Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.3.1.

(b) the CAISO IFM Commitment Period MSG Configuration is the same as the CAISO RUC Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up

Cost, Minimum Load Cost, and Transition Cost will be based on the CAISO IFM Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.2.1.

*** * ***

11.8.2.2.1 CAISO IFM Commitment

For any Settlement Interval in a CAISO IFM Commitment Period the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the two products specified below. In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.

(1) The product of the delivered MWh in the relevant Day-Ahead Schedule in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load the MWh is negative), and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour.

(2) The product of the IFM AS Award from each accepted IFM AS Bid and the relevant Resource-Specific ASMP, divided by the number of Settlement Intervals in a Trading Hour.

*** * ***

11.8.4 RTM Bid Cost Recovery Amount

For purposes of determining the RTM Unrecovered Bid Cost Uplift Payments as determined in Section 11.8.5, and for the purposes of allocation of Net RTM Bid Cost Uplift as described in Section 11.8.6.6 the CAISO shall calculate the RTM Bid Cost Shortfall or the RTM Bid Cost Surplus as the algebraic difference between the RTM Bid Cost and the RTM Market Revenues for each Settlement Interval. The RTM Bid Costs shall be calculated pursuant to Section 11.8.4.1 and the RTM Market Revenues, include the FMM Market Revenues and the RTD Market Revenues and shall be calculated pursuant to Section 11.8.4.2. The Energy subject to RTM Bid Cost Recovery is the Instructed Imbalance Energy described in Section 11.5.1, excluding

Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, Ramping Energy Deviation, Regulation Energy and MSS Load Following Energy regardless of whether the Energy is from the FMM or RTD, and is subject to the application of the Real-Time Performance Metric as described in Section 11.8.4.4 and the Persistent Deviation Metric described in Section 11.17.

* * *

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 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 34.10.2 for the purpose of performing Ancillary Services testing or pre-commercial operation testing.

* * *

11.8.4.2.1 For each Settlement Interval in a CAISO Real-Time Market Commitment Period, the RTM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the elements listed below in this Section. For Multi-Stage Generating Resources the RTM Market Revenue calculations will be made at the Generating Unit or Dynamic Resource-Specific System Resource level.

(a) The sum of the products of the FMM or RTD Instructed Imbalance Energy (including Energy from Minimum Load of the Bid Cost Recovery Eligible Resource committed in RUC and where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load, the MWh is negative), except Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load following Energy, Ramping Energy Deviation and Regulation Energy, with the relevant FMM and RTD LMP, for each Dispatch Interval in the Settlement Interval.

(b) The product of the Real-Time Market AS Award from each accepted Real-Time Market AS Bid in the Settlement Interval with the relevant ASMP, divided by the number of fifteen (15)-minute Commitment Intervals in a Trading Hour (4), and prorated to the duration of the Settlement Interval.

(c) The relevant tier-1 No Pay charges for that Bid Cost Recovery Eligible Resource in that Settlement Interval.

11.8.4.2.2 For each Settlement Interval in a non-CAISO Real-Time Market Commitment Period, the Real-Time Market Revenue for a Bid Cost Recovery Eligible Resource is subject to the Real-Time Performance Metric and is the algebraic sum of the following:

(a) The sum of the products of the FMM or RTD Instructed Imbalance Energy (excluding the Energy from Minimum Load of Bid Cost Recovery Eligible Resources committed in RUC), except, Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load Following Energy, Ramping Energy Deviation

and Regulating Energy, with the relevant FMM or RTD Market LMP, for each Dispatch Interval in the Settlement Interval;

(b) The product of the Real-Time Market AS Award from each accepted Real-Time Market AS Bid in the Settlement Interval with the relevant ASMP, divided by the number of fifteen (15)-minute Commitment Intervals in a Trading Hour (4), and prorated to the duration of the Settlement Interval.

(c) The relevant tier-1 No Pay charges for that Bid Cost Recovery Eligible Resource in that Settlement Interval.

* * *

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 Section 11.8.6.3 and the sum over all of the 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 plus any FMM reductions not associated with valid and balanced ETCs, TORs or Converted Rights Self-Schedules in the Day-Ahead Market 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 plus any FMM reductions not associated with valid and balanced ETCs, TORs or Converted Rights Self-Schedules in the Day-Ahead Market. 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 plus any FMM reductions not associated with valid and balanced ETCs, TORs or Converted Rights Self-Schedules in the Day-Ahead Market. Accordingly, each Scheduling Coordinator shall be charged an amount equal to its Measured Demand plus any FMM reductions not associated with valid and balanced ETCs, TORs or Converted Rights Self-Schedules in the Day-Ahead

Market 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 plus any FMM reductions not associated with valid and balanced ETCs, TORs or Converted Rights Self-Schedules in the Day-Ahead Market across all Scheduling Coordinators for the Trading Hour. Any real-time reductions after HASP results are published to HASP Intertie Schedules in response to Dispatch Instructions or real-time scheduling curtailments are not allocated any Net RTM Bid Cost Uplift.

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 RTM. Both the Day-Ahead and RTM 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 Physical Trades that are reduced during the Physical Trade post market confirmation shall be settled at the relevant Existing Zone (EZ) Generation Trading Hub price. All MWh quantities of Physical Trades submitted to the CAISO for Settlement in the RTM that are confirmed through the Physical Trade post market confirmation pursuant to Section 28.6.1.3 shall be settled at the simple average of the four FMM LMPs at the relevant Pricing Node. All MWh quantities of Physical Trades submitted for Settlement in RTM that are reduced during the Physical Trade post market confirmation shall be settled at the relevant Real-Time price for the EZ Generation Trading Hub.

11.9.2 Inter-SC Trades At Aggregated Pricing Nodes

Inter-SC Trades of Energy at Aggregated Pricing Nodes in the Day-Ahead Market will be settled separately from Inter-SC Trades at Aggregated Pricing Nodes in the RTM. Both the Day-Ahead and RTM Inter-SC Trades at Aggregated Pricing Nodes 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 Inter-SC Trades at Aggregated Pricing Nodes submitted to the CAISO for Settlement in the Day-Ahead Market shall be settled at the relevant Day-Ahead Aggregated Pricing Node price such as the Existing Zone (EZ) Generation Trading Hub price or LAP price. All MWh quantities of Inter-SC Trades at Aggregated Pricing Nodes submitted to the CAISO for Settlement in the RTM shall be settled at the relevant Real-Time Aggregated Pricing Node price.

* * *

11.10.1.2 Ancillary Services Provided in ~~FMM~~RTM

The ~~FMM~~ RTM optimization establishes Ancillary Services Awards and prices for Ancillary Services. The CAISO pays Scheduling Coordinators that supply Ancillary Services from HASP Block Intertie Schedules an amount equal to the product of the simple average of the ASMPs computed for the four FMM intervals for each Ancillary Service as described in Section 27.1.2, and the quantity of the capacity awarded for the Ancillary Service in the Settlement Period. The CAISO charges Scheduling Coordinators that receive an Ancillary Service Award or have qualified Self-Provided Ancillary Services at a Scheduling Point in the FMM the simple average of the fifteen (15) minute Marginal Cost of Congestion over the applicable Trading Hour as described in Section 11.10.1.2.1.

11.10.1.2.1 Congestion Charges

If a Scheduling Coordinator, including a Scheduling Coordinator for a Pseudo-Tie of a Generating Unit to the CAISO Balancing Authority Area, receives an Ancillary Services Award or provides a qualified Self- Provided Ancillary Service at a congested Scheduling Point, the CAISO will charge the Scheduling Coordinator for Congestion. The charge for Congestion at such locations is equal to the simple average of the fifteen (15) minute applicable intertie constraint Shadow Price over the applicable Trading Hour at the location of the Ancillary Service Award, multiplied by the quantity of Ancillary Services Award or the capacity of the qualified Self-Provided Ancillary Service for the Settlement Period. No such charge for Congestion will apply when the Scheduling Coordinator's FMM Ancillary Services Awards and qualified Self- Provided

Ancillary Services at Scheduling Points are provided pursuant to the CAISO Tariff rules that apply to Existing Rights and Transmission Ownership Rights.

* * *

11.10.2 Settlement For User Charges For Ancillary Services

The CAISO shall determine a separate hourly user rate for Regulation Down Reserve, Regulation Up Reserve, Spinning Reserve, and Non-Spinning Reserve purchased for each Settlement Period. The hourly user rates for Regulation Down, Regulation Up, Spinning Reserve, and Non-Spinning Reserve include the cost incurred by the CAISO across the Day-Ahead Market and the Real-Time Market to procure this service. In computing the user rate for each service the quantity (MW) and costs of any substituting Ancillary Service will be treated as if they are costs and MW associated with the Ancillary Service need they are being used to fulfill. Each rate will be charged to Scheduling Coordinators on a volumetric basis applied to each Scheduling Coordinator's obligation for the specific Ancillary Service concerned which it has not self-provided, as adjusted by any Inter-SC Trades of Ancillary Services.

Each Scheduling Coordinator's obligation for Regulation Down Reserve, Regulation Up Reserve, Spinning Reserve, and Non-Spinning Reserve shall be calculated in accordance with this Section 11.10.2, notwithstanding any adjustment to the quantities of each Ancillary Service purchased by the CAISO in accordance with Section 8.2.3.5. The cost of Voltage Support and Black Start shall be allocated to Scheduling Coordinators as described in Sections 11.10.7 and 11.10.8.

Ancillary Services Obligations for an individual Scheduling Coordinator (before taking into account Self-Provided Ancillary Services) or Inter-SC Trades of Ancillary Services may be negative. Credits for such negative obligations will be in accordance with the rates calculated in this Section 11.10.2, except that a Scheduling Coordinator's credit shall be reduced pro rata to the extent the sum of the negative obligations of all Scheduling Coordinators with the negative Ancillary Services Obligation (before self-provision or Inter-SC Trade) exceeds the obligation of all Scheduling Coordinators with positive obligation net of Self- Provided Ancillary Services, as specified in Section 11.10.5 in any Settlement

Period, the net procurement quantity of Regulation Up, Regulation Down, Spinning Reserve, or Non-Spinning Reserve purchased by the CAISO in the Day-Ahead Market and the Real-Time Market due to the operation of Section 8.2.3.5 is zero (0), then the user rate for that Ancillary Service type will be zero (0). With respect to each Settlement Period, in addition to the user rates determined in accordance with this Section 11.10.2, each Scheduling Coordinator shall be charged an additional amount equal to its proportionate share, based on total purchases by Scheduling Coordinators of Regulation Down, Regulation Up, Spinning Reserve, and Non-Spinning Reserve of the amount, if any, by which (i) the total payments to Scheduling Coordinators pursuant to this Section 11.10.2 for the Day-Ahead Market, HASP, and the Real-Time Market, exceed (ii) the total amounts charged to Scheduling Coordinators pursuant to this Section 11.10.2, for the Day-Ahead Market and the Real-Time Market. If total amounts charged to Scheduling Coordinators exceed the total payments to Scheduling Coordinators, each Scheduling Coordinator will be refunded its proportionate share, based on total purchases by Scheduling Coordinators of Regulation Down, Regulation Up, Spinning Reserve, and Non-Spinning Reserve.

With respect to each Settlement Period, in addition to Ancillary Service charges at the applicable user rates determined in accordance with this Section 11.10.2, each Scheduling Coordinator shall be charged additional neutrality adjustment amounts for each Ancillary Service type pursuant to Sections 11.10.2.4, 11.10.2.2.3, 11.10.3.3, and 11.10.4.3 and a neutrality adjustment amount for upward Ancillary Service types pursuant to Section 11.14.

*** * ***

11.10.1.3 Ancillary Services Provided in ~~Real-Time~~FMM

Suppliers of Ancillary Services from resources awarded in FMM are paid a price equal to one-quarter of the fifteen (15) minute ASMP (in $/MW/h) in each fifteen (15) minute interval of the applicable Trading Hour in which the capacity is procured for each Ancillary Service times the amount of the capacity awarded (MW) for the Ancillary Service in the relevant Ancillary Services Region for the applicable trading hour in which the capacity is procured. For each Ancillary

Service, the ASMP is calculated as set forth in Section 27.1.2. Suppliers of Self-Provided Ancillary Services in the Real-Time Market are not eligible to receive payment using the ASMP; rather to the extent the self-provision is qualified it will be valued at the user rate for the relevant service (i.e., will either reduce the Ancillary Services Obligation or receive the user rate if it exceeds the Scheduling Coordinator's Ancillary Service Obligation) as described in Sections 11.10.2, 11.10.3 and 11.10.4.

* * *

11.10.4.1 Hourly User Rate Non-Spinning Reserves

The hourly user rate for Non-Spinning Reserves is calculated as the ratio of: i) the sum of the portion of the Non-Spinning Reserve Cost used to meet the Non-Spinning requirement and a portion of the Regulation Up and Spinning Reserve costs that can substitute for Non-Spinning Reserve and ii) the Net Procurement quantity of Non-Spinning Reserves by the CAISO ($/MW). The CAISO's Non-Spinning Reserve Cost includes the costs associated with any Regulation Up Reserve or Spinning Reserve capacity used as Non-Spinning Reserve under Section 8.2.3.5.

The CAISO's Non-Spinning Reserve Cost is equal to: (i) the revenues paid to the suppliers of the total awarded Non-Spinning Reserve capacity in the Day-Ahead Market and Real-Time Market, minus, (ii) the payments rescinded due to either the failure to conform to CAISO Dispatch Instructions or the unavailability of the Non-Spinning Reserves under Section 8.10.8. The Net Procurement of Non-Spinning Reserves is equal to: (i) the amount (MWs) of total awarded Non-Spinning Reserve capacity in the Day- Ahead Market and Real-Time Market, minus, (ii) the Non-Spinning Reserve capacity associated with payments rescinded pursuant to any of the provisions of Section 8.10.8. The amount (MW) of awarded Non-Spinning Reserve capacity includes the amounts (MW) associated with any Regulation Up Reserve or Spinning Reserve capacity used as Non-Spinning Reserve under Section 8.2.3.5.

* * *

11.10.9 Settlements Of Rescission Of Payments For AS 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 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 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 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 weighted average Ancillary Service Marginal Price (ASMP) is less than or equal to zero (0).

* * *

Revised draft Section 11.12 (settlement of Participating Intermittent Resources) will be posted in a separate document.

* * *

11.17.1.2.1 Rule 1

If six (6) or fewer Settlement Intervals out of the previous twenty four (24) Settlement Intervals are flagged pursuant to the rules in Section 11.17.1.1, then: (a) the RTM Energy Bid Costs will be based on the applicable Energy Bid price as specified in Section 11.8.4.1.5, and (b) Residual Imbalance Energy will be settled based on the reference hour Energy Bid as specified in Section 11.5.5.

11.17.1.2.2 Rule 2

If seven (7) or more Settlement Intervals of the previous twenty four (24) Settlement Intervals are flagged as exceeding the Persistent Deviation Metric Threshold, then for all the previous twenty four(24) Settlement Intervals in the two-hour window: (a) the RTM Energy Bid Costs specified in Section 11.8.4.1.5 (i) for Optimal Energy above the Day-Ahead Scheduled Energy will be based on the lesser of the applicable Default Energy Bid price, the applicable Energy Bid price, as

mitigated, or the applicable FMM or RTD Locational Marginal Price, and (ii) for Optimal Energy below the Day-Ahead Scheduled Energy the greater of the applicable Default Energy Bid price, the applicable Energy Bid price, as mitigated, or the applicable FMM or RTD Locational Marginal Price; and (b) Residual Imbalance Energy as specified in Section 11.5.5 (i) for Residual Imbalance Energy above the Day-Ahead Scheduled Energy will be based on the lesser of the applicable Default Energy Bid price, the relevant Energy Bid Price, as mitigated, or the applicable RTD Locational Marginal Price, and (ii) Residual Imbalance Energy below the Day-Ahead Scheduled Energy will be based on the greater of the applicable Default Energy Bid price, the relevant Energy Bid Price, or the applicable RTD Locational Marginal Price.

* * *

11.21.1 CAISO Demand and Exports

If the CAISO corrects an LMP in the upward direction pursuant to Section 35 that impacts Demand in the Day-Ahead Market and the FMM such that either a portion of or the entire cleared CAISO Demand or export Economic Bid curve becomes uneconomic, then the CAISO will calculate and apply the Price Correction Derived LMP for settlement of CAISO Demand and exports in Section 11.2.1.2, 11.2.3, 11.2.1.4 and 11.4.1. The CAISO shall not calculate and apply a Price Correction Derived LMP for settlement of exports that are part of a Schedule that results from Bids submitted in violation of Section 30.5.5. The CAISO will calculate a Price Correction Derived LMP for each affected CAISO Demand and exports as follows: the total cleared MWhs of CAISO Demand or exports in the Day-Ahead Schedule or HASP Block Intertie Schedule or FMM Schedule, as applicable, multiplied by the corrected LMP, minus the make-whole payment amount, all of which is divided by the total cleared MWhs of CAISO Demand or export in the Day-Ahead Schedule or HASP Block Intertie Schedule or FMM Schedule, as applicable. The make-whole payment amount will be calculated on an hourly basis determined by the area between the Scheduling Coordinator's CAISO Demand or Export Bid curve and the corrected LMP, which is calculated as the MWhs for each of the cleared bid segments in the Day-Ahead Schedule or HASP Intertie Schedule for the affected resource, multiplied by the maximum of zero or the corrected LMP minus the bid segment price. For the purpose of this calculation,

the CAISO will not factor in a make-whole payment amount for Self-Scheduled CAISO Demand or exports. Any non-zero amounts in revenue collected as a result of the application of the Price Correction Derived LMP will be captured through the calculation of the IFM Congestion Charge reflected in Section 11.2.4.1 and the allocation of non-zero amounts of the sum of Imbalance Energy, Uninstructed Imbalance Energy, and Unaccounted for Energy in accordance with Section 11.5.4.

* * *

11.25.1 Compensation

All resources identified as resolving the Flexible Ramping Constraint in the applicable FMM interval are awarded Flexible Ramping Constraint capacity and will be compensated for such capacity for each FMM interval, whether or not the Flexible Ramping Constraint is binding, limited by the quantity of Flexible Ramping Constraint requirements set by the CAISO operators as follows: The Scheduling Coordinator is paid the product of the (1) upward MW of capacity identified to satisfy the constraint, multiplied by 0.25 hours, and (2) Flexible Ramping Constraint Derived Price calculated for each applicable fifteen-minute FMM interval as described further in this Section 11.25.1. Payment to resources will be rescinded as set forth in Section 11.25.2. For each applicable fifteen-minute FMM interval, the Flexible Ramping Constraint Derived Price is equal to the lesser of: 1) $800/MWh; or 2) the greater of: (a) zero (0), or (b) the Real-Time CAISO ASMP for Spinning Reserves for the applicable fifteen-minute FMM interval; or (c) the Flexible Ramping Constraint Shadow Price minus seventy-five (75) percent of the maximum of (i) zero (0), or (ii) the FMM Real-Time System Marginal Energy Cost for the applicable fifteen-minute FMM interval. The Shadow Price of the binding Flexible Ramping Constraint represents the reduction of the total Energy and Ancillary Services procurement cost associated with a marginal change of that constraint, which is equal to zero (0) if the Flexible Ramping Constraint is not binding. All costs associated with payments made pursuant to this Section 11.25 are allocated to all Scheduling Coordinators pursuant to the requirements set forth in Section 11.25.3.

11.25.2 Rescission of Payment for Non-Performance

Payments to Scheduling Coordinators are rescinded for the quantity of MWs of undelivered

Flexible Ramping Constraint capacity determined as the hourly sum of the Settlement Interval amounts calculated as the minimum of: 1) the Flexible Ramping Constraint capacity identified as having contributed to the relief of the Flexible Ramping Constraint, or 2) the maximum of (a) zero (0), or (b) the difference between (i) the absolute value of the negative UIE and (ii) the upward MWs identified as Undelivered Ancillary Services Capacity as required in Section 11.10.9.3. The rescinded amounts will be based on the product of the: 1) MWs quantities to be rescinded determined as described in this Section 11.25.2; and 2) hourly Flexible Ramping Constraint price determined as the weighted average of the four fifteen-minute Flexible Ramping Constraint Derived Prices derived as described in Section 11.25.1.

* * *

11.29.5.3 Data Files

Settlement Statements relating to each Scheduling Coordinator, CRR Holder, Black Start Generator or Participating TO shall be accompanied by data files of supporting information that includes the following for each Settlement Period of the Trading Day:

(a) the aggregate quantity (in MWh) of Energy supplied or withdrawn by the Scheduling Coordinator Metered Entities represented by the Scheduling Coordinator;

(b) the aggregate quantity (in MW) and type of Ancillary Services capacity provided or purchased;

(c) the relevant prices that the CAISO has applied in its calculations;

(d) details of the scheduled quantities of Energy and Ancillary Services accepted by the CAISO in the Day-Ahead Market and the RTM;

(e) details of Imbalance Energy and penalty payments;

(f) details of the CRR Payments or CRR Charges, and any payments or charges associated with the CRR Auctions; and

(g) detailed calculations of all fees, charges and payments allocated among Scheduling Coordinators and each Scheduling Coordinator's share.

* * *

11.29.17.2.1 Methodology for Allocating Payment Default Amounts

Except as set forth in Section 11.29.17.2.2, each payment default amount allocated to CAISO Creditors through a shortfall allocation pursuant to Section 11.29.17.1 and that remains unpaid by the defaulting Scheduling Coordinator or CRR Holder will be allocated on the next practicable Invoices to the Default- Invoiced SCIDs to which the percentage shares calculated pursuant to Section 11.29.17.2.7 for the current calendar quarter apply, excluding the CAISO Debtor that has not paid the payment default amount, pursuant to the following methodology:

(a) Twenty (20) percent of the payment default amount will be allocated to the Default- Invoiced SCIDs in proportion to the net amounts that were payable in each applicable calendar quarter (and averaged within such calendar quarter) to the Default-Invoiced SCIDs over the applicable Default Look-Back Periods. For Market Participants subject to Default Election option 1, these net amounts will be calculated on an SCID-by-SCID basis. For Market Participants that are eligible for and have chosen Default Election option 2, these net amounts will be calculated by consolidating all of the data for the applicable SCIDs, recognizing any offsetting effect of an individual SCID's positive or negative dollar amount in the consolidated total.

(b) Thirty (30) percent of the payment default amount will be allocated to the Default-Invoiced SCIDs in proportion to the sum of the absolute values of the dollar amounts shown on their Invoices payable or receivable in each applicable calendar quarter (and averaged within such calendar quarter) over the applicable Default Look-Back Periods, after excluding dollar amounts shown on the Invoices for payments and charges for GMC, RMR, and Wheeling Access Charge costs, and after excluding the billing of Access Charges and the payment of Transmission Revenue Requirements to Participating Transmission Owners. For Market Participants subject to Default Election option 1, the sum of the absolute values of the dollar amounts shown on their Invoices payable or

receivable in each applicable calendar quarter will be calculated on an SCID-by-SCID basis. For Market Participants that are eligible for and have chosen Default Election option 2, the absolute values of the net sum of the dollar amounts shown on their Invoices payable or receivable in each applicable calendar quarter will be calculated by consolidating all of the data for the applicable SCIDs, recognizing any offsetting effect of an individual SCID's positive or negative dollar amount in the consolidated total.

(c) Fifty (50) percent of the payment default amount will be allocated to the Default-Invoiced SCIDs in proportion to the largest of the following five (5) amounts calculated in MWh for every month in each applicable calendar quarter (and averaged within such calendar quarter) for each Default-Invoiced SCID over the applicable Default Look-Back Periods:

(1) Cleared Day-Ahead Schedules to supply Energy, plus Day-Ahead Ancillary Services Awards and qualified Self-Provided Ancillary Services, plus scheduled supply obligation for Ancillary Services (including imports but excluding RUC Schedules), plus Virtual Supply Awards;

(2) Metered Generation, plus Real-Time Interchange Import Schedules, plus Real-Time Ancillary Services Awards and qualified Self-Provided Ancillary Services, plus FMM Ancillary Services Awards and qualified Self-Provided Ancillary Services, plus Real-Time supply obligation for Ancillary Services;

(3) Cleared Day-Ahead Schedules for Demand (including Demand served by Pumped-Storage Hydro Units and exports) multiplied by one-hundred three (103) percent to reflect Transmission Losses, plus scheduled demand obligation for Ancillary Services, plus Virtual Demand Awards;

(4) Metered Load multiplied by one-hundred three (103) percent to reflect Transmission Losses, plus Real-Time Interchange Export Schedules, plus Real-Time demand obligation for Ancillary Services; or

(5) The greater of (A) the quantity of CRRs acquired in CRR Auctions or transferred through the Secondary Registration System (excluding CRRs acquired in CRR Allocations) or (B) Inter-SC Trades of Energy.

For Market Participants subject to Default Election option 1, each of the five (5) amounts calculated in MWh for every month in each applicable calendar quarter (and averaged within such calendar quarter) will be calculated on an SCID-by-SCID basis. For Market Participants that are eligible for and have chosen Default Election option 2, each of the five (5) amounts calculated in MWh for every month in each applicable calendar quarter (and averaged within such calendar quarter) will be calculated by consolidating all of the data for the applicable SCIDs.

* * *

11.31 Intertie Schedules Decline Charges

The Decline Potential Charge – Imports shall apply to the following intertie and internal schedules:

a. Any HASP Block Intertie Schedule for an Energy import when the HASP Block Intertie Schedule is not delivered for any reason (with no exceptions based on the circumstances of a particular failure to deliver), to the extent the decline is made prior to the start of the applicable FMM interval. The Decline Potential Charge – Exports shall apply to any HASP Block Intertie Schedule for an Energy export when the HASP Block Intertie Schedule is not delivered for any reason (with no exceptions based on the circumstances of a particular failure to deliver), to the extent the decline is made prior to the start of the applicable FMM interval. The Decline Potential Charge will not apply if the decline is made after the applicable E-tag deadline, as defined in Section 30.6.2 but will be subject to Uninstructed Imbalance Energy, as defined in Section 11.5.2.

b. Imports and exports accepted in an HASP Block Intertie Schedule that are incremental to Day-Ahead Schedules are subject to the Decline Potential Charge to the extent the decline is made prior to the start of the applicable FMM interval. The Decline Potential Charge will not apply if the decline is made after the applicable E-tag deadline, as defined in Section 30.6.2 but will be subject to Uninstructed Imbalance Energy, as defined in Section 11.5.2. To the extent the incremental import or export is schedule is curtailed through the FMM, for the 15-minute FMM interval in which the resource follows the CAISO instructions will not be subject to Decline Potential Charge.

c. Imports from Variable Energy Resource using their own forecast are subject to the Decline Potential Charge to the extent the resource over-forecasts over the month. For each hour, the CAISO compares maximum 15-minute FMM binding schedule (that is submitted 37.5 minutes prior to flow) to the maximum 15-minute advisory schedule from the Hour-Ahead Scheduling Process to accept Self-Schedule Intertie Blocks (based upon the hourly forecast received 75 minutes prior to flow) and calculates the differences between the two. These hourly differences are summed over the month. If the maximum advisory schedule exceeds the actual financially biding schedule by the threshold over the course of the month, the Decline Potential Charge applies.

d. For any Settlement Interval, the Decline Potential Charge – Imports or Decline Potential Charge – Exports, as the case may be, shall equal the MWh quantity of the import or export not delivered multiplied by the greater of $10/MWh or fifty percent (50%) of the FMM LMP. The Decline Potential Charge – Imports and Decline Potential Charge – Exports will be calculated for each HASP Block Intertie Schedule or VER Self-Schedule that is not delivered, provided that only the Decline Monthly

Charge – Imports and Decline Monthly Charge – Exports shall be payable by the Scheduling Coordinator as described in Section 11.31.1.

11.31.1 Decline Monthly Charge – Imports

The Decline Monthly Charge – Imports shall be applied to each Scheduling Coordinator on the Settlement Statements issued for the last Trading Day of each Trading Month, and shall be the sum of the Scheduling Coordinator's Decline Potential Charges – Imports for each Settlement Period during that Trading Month multiplied by a ratio. The ratio will represent the portion of the Scheduling Coordinator's declined HASP Block Intertie Schedule for Energy imports or the VER Self-Schedule that exceed the applicable exemption threshold during the Trading Month.

(a) The ratio will be calculated as follows:

(i) the Scheduling Coordinator's total MWh quantity of HASP Block Intertie Schedule for Energy imports that were not delivered during that Trading Month minus the applicable exemption threshold, divided by

(ii) the Scheduling Coordinator's total MWh quantity of HASP Block Intertie Schedule for Energy imports that were not delivered during the Trading Month.

(b) The applicable exemption threshold is the greater of the following:

(i) the Decline Threshold Quantity – Imports/Exports; or

(ii) the total MWh quantity of HASP Block Intertie Schedule for Energy imports during the Trading Month multiplied by the Scheduling Coordinator's Decline Threshold Percentage – Imports/Exports.

Notwithstanding the foregoing, the Decline Monthly Charge – Imports shall equal zero if either:

a) The percentage of the MWh quantity of HASP Block Intertie Schedule for Energy imports that the Scheduling Coordinator did not deliver during the Trading Month is less than the Decline Threshold Percentage – Imports/Exports; or

b) The total MWh quantity of HASP Block Intertie Schedule for Energy imports that the Scheduling Coordinator did not deliver in the applicable Trading Month is less than the Decline Threshold Quantity – Imports/Exports.

11.31.2 Decline Monthly Charge – Exports

The Decline Monthly Charge – Exports shall be applied to each Scheduling Coordinator on the Settlement Statements issued for the last Trading Day of each Trading Month, and shall be the sum of the Scheduling Coordinator's Decline Potential Charges – Exports for each Settlement Interval during that Trading Month multiplied by a ratio. The ratio will represent the portion of the Scheduling Coordinator's declined HASP Block Intertie Schedule for Energy exports that exceed the applicable exemption threshold during the Trading Month.

(a) The ratio will be calculated as follows:

(i) the Scheduling Coordinator's total MWh quantity of HASP Block Intertie Schedule for Energy exports that were not delivered during that Trading Month minus the applicable exemption threshold, divided by

(ii) the Scheduling Coordinator's total MWh quantity of HASP Block Intertie Schedule for Energy exports that were not delivered during the Trading Month.

(b) The applicable exemption threshold is the greater of the following:

(i) the Decline Threshold Quantity – Imports/Exports; or

(ii) the total MWh quantity of HASP Block Intertie Schedules for Energy exports during the Trading Month multiplied by the Scheduling Coordinator's Decline Threshold Percentage – Imports/Exports.

Notwithstanding the foregoing, the Decline Monthly Charge – Exports shall equal zero if either:

a) The percentage of the MWh quantity of HASP Block Intertie Schedules for Energy exports that the Scheduling Coordinator did not deliver during

the Trading Month is less than the Decline Threshold Percentage – Imports/Exports; or

b) The total MWh quantity of HASP Block Intertie Schedules for Energy exports that the Scheduling Coordinator did not deliver in the applicable Trading Month is less than the Decline Threshold Quantity – Imports/Exports.*** * ***

11.32 Measures to Address Intertie Scheduling Practices

The CAISO will take the following actions regarding Schedules that clear the Day-Ahead Market at the Interties and that are wholly or partially reversed in the ~~FMM~~RTM:

(i) The CAISO will charge the Scheduling Coordinator the positive difference between the Day-Ahead Market price and the FMM LMP applicable to any imports that clear the Day-Ahead Market and are reduced in the ~~FMM~~ RTM for which the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with Section 30.6.2.

(ii) The CAISO will charge the Scheduling Coordinator the positive difference between the FMM LMP and the Day-Ahead Market LMP applicable to any exports that clear the Day-Ahead Market and are reduced in the ~~HASP~~RTM for which the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with Section 30.6.2.

(iii) The CAISO will treat any reduction by a Scheduling Coordinator to a Day-Ahead import or export Schedule in the ~~HASP OR FMM~~RTM as a Virtual Award for purposes of adjusting CRR Revenue pursuant to Section 11.2.4.6 if the Scheduling Coordinator submits Schedules on behalf of or is a CRR Holder.

(iv) For any import Schedule that clears the Day-Ahead Market which a Scheduling Coordinator reduces in the ~~HASP~~RTM, such reduced quantities will be subject to the allocation of Net RTM Bid Cost Uplift as set forth in Section 11.8.6.6.

(v) The provisions of this Section 11.32 will not apply to Schedules that clear the Day-Ahead Market at the Scheduling Points and that a Scheduling Coordinator wholly or partially reverses in the ~~HASP or the FMM~~RTM to the extent such Schedules are valid and balanced ETC, TOR, or Converted Rights Self-Schedules in the Day-Ahead Market.

11.33 Settling Revenue from Schedule Sourcing/Sinking in Same BAA

The import portion of any Schedule resulting from Bids submitted in violation of Section 30.5.5 will be settled at the lower of the: (a) LMP of the Scheduling Point for the import portion of the Schedule in the market in which the import portion of the Schedule was awarded; or (b) LMP of the Scheduling Point for the export portion of the Schedule in the market in which the export portion of the Schedule was awarded. Such settlement will occur irrespective of whether the import and export were scheduled in the same market or are split between the Day-Ahead Market and the Real-Time Market.

* * *

16.4.5 TRTC Instructions Content

TRTC Instructions will include the following information at a minimum and such other information as the CAISO may reasonably require the Participating TO to provide to enable the CAISO to carry out its functions under the CAISO Tariff, Operating Procedures and Business Practice Manuals:

(1) A unique Contract Reference Number for each source and sink combination applicable to the Existing Contract (i.e., the CRN that will be assigned by the CAISO and communicated to the Participating TO that references a single Existing Contract or a set of interdependent Existing Contracts for each source and sink combination);

(2) Whether the instruction can be exercised independent of the CAISO's day-to-day involvement ("Yes/No");

(3) Name of an operational single point of contact for instructions and a 24-hour a day telephone number for the Participating TO contact for Existing Contract issues or the agreed upon party;

(4) Name(s) and number(s) of Existing Contract(s) that are represented by the unique CRN;

(5) The following information as stored in the Master File: (a) the applicable Point(s) of Receipt and Point(s) of Delivery); (b) for each Point of Receipt, the resource names for the physical resources as the eligible sources (eligible physical sources include Generating Units and System Resources), and for each Point of Delivery, the resource names for the physical resources as the eligible sinks (eligible physical sinks include Load PNodes, Custom Load Aggregation Points and System Resources); (c) for each physical source or sink, the maximum Existing Rights capacity (MW) that can be scheduled as an Existing Right under the Existing Contract; and (d) for each physical source and sink, the Scheduling Coordinator(s) and their Business Associate Identification (BAID) that is(are) eligible to submit ETC Self-Schedules utilizing these sources and sinks;

(6) Names of the party(ies) to the Existing Contract(s);

(7) The Scheduling Coordinator BAID that is entitled to the Settlement of reversal of Congestion Charges;

(8) Type(s) of service rights by the holder of the Existing Rights, by type of service (firm, conditional firm, or non-firm), with priorities for firm and conditional firm transmission services and maximum amounts of service rights in MW;

(9) Instructions for the allowable timeframes at which the ETC Self-Schedules and ETC Self-Schedule changes may be submitted to the CAISO, which include whether the Scheduling Coordinator may

submit ETC Self-Schedules or ETC Self-Schedule changes: (a) into the DAM;(b) into the RTM; (c) after the close of submitting Bids into the RTM, but before twenty (20) minutes before the applicable Trading Hour of the Trading Day; and (d) at or after twenty (20) minutes before the applicable Trading Hour of the Trading Day; in addition, the TRTC Instructions may also include any additional comments and restrictions on the submission time of ETC Self- Schedules and ETC Self-Schedule changes;

(10) Term or service period(s) of the Existing Contract(s);

(11) Any special procedures that would require the CAISO to implement curtailments in any manner different from pro rata reduction of the transfer capability of the transmission line; any such TRTC Instructions submitted to the CAISO must be clear, unambiguous, and not require the CAISO to make any judgments or interpretations as to the meaning intent, results, or purpose of the curtailment procedures or the Existing Contract and the section of the Existing Contract that provides this right for reference, otherwise, they will not be accepted by the CAISO;

(12) The forecasted usage patterns for each Existing Contract for the upcoming annual period of the annual CRR release processes as well as for the upcoming monthly period of the monthly CRR release processes, which will consist of hourly MWh data over the whole year for those resources that will use the Existing Contract; this information will be considered by the CAISO in managing its accounting for usage of Existing Rights in the release of CRRs; this information shall not be used by the CAISO to validate ETC Self-Schedules when submitted by Scheduling Coordinators and therefore shall not affect the Existing Rights holder's ability to utilize its rights under the Existing Contract;

(13) Whether or not the Existing Contract provides for the right to self-provide Ancillary Services; and

(14) Specification of any contract requirements in the ETC that warrants special consideration in the implementation of the physical rights under the ETC.

* * *

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 set-aside capacity associated with the Existing Rights transmission capacity.

(3) In the RTM, the CAISO will give valid ETC Self-Schedules priority over other non-ETC Day-Ahead Schedules. 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 withthe 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.

(5) All contractual provisions that have been communicated to the CAISO in writing in accordance with this Section 16 by the parties to the Existing Contracts, shall be honored by the CAISO and the parties to the Existing Contracts and shall be implemented by the CAISO in accordance with the terms and conditions of the relevant Existing Contracts so notified.

16.5.1 System Emergency Exceptions

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with CAISO Dispatch Instructions and operating orders, unless such operation would impair public health or safety. The CAISO will honor the terms of Existing Contracts, provided that in a System Emergency and circumstances

in which the CAISO considers that a System Emergency is imminent or threatened, holders of Existing Rights must follow CAISO operating orders even if those operating orders directly conflict with the terms of Existing Contracts, unless such operating orders are inconsistent with

the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict

between the CAISO Tariff and an agreement 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 Real-Time Market.

* * *

16.9.1 Scheduling Deadlines

Those holders of Existing Rights who have Existing Rights as reflected in the TRTC Instructions that allow scheduling after the close of the Day-Ahead Market may submit ETC Self-Schedules for the use of those rights by the deadline for the Market Close for RTM. Submission of schedule changes beyond the Market Close for RTM that are 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..

* * *

16.11 Inter-Balancing Authority Area ETC Self-Schedule Bid Changes

Changes to ETC Self-Schedules that occur during the CAISO's Real-Time Market that involve changes to CAISO Balancing Authority Area imports or exports with other Balancing Authority Areas (that is, inter-Balancing Authority Area changes to ETC Self-Schedules) will be allowed and will be recorded by the CAISO based upon notification received from the Scheduling Coordinator representing the holder of the Existing Rights. The Scheduling Coordinator representing the holder of the Existing Right must notify the CAISO of any such changes to external import/export in submitted ETC Self-Schedules. The Scheduling Coordinator representing the holder of the Existing Right must notify the CAISO of Real-Time Market changes to external import/export Interchange Schedules in submitted ETC Self-Schedules, by telephone. The timing and content of any such notification must be consistent with the TRTC Instructions previously submitted to the CAISO by the Responsible PTO. The CAISO will manually adjust or

update the HASP Block Intertie Schedule, HASP Block AS Awards and/or FMM Intertie Schedule for the Scheduling Coordinator to conform with the other Balancing Authority Area's net ETC Self-Schedule in Real-Time, and the notifying Scheduling Coordinator will be responsible for and manage any resulting Energy imbalance. These Imbalance Energy deviations will be priced and charged to the Scheduling Coordinator representing the holder of Existing Rights in accordance with the Real-Time LMP.

* * *

17.1.4 TRTC Instructions Content

TRTC Instructions will include the following information at a minimum and such other information as the CAISO may reasonably require the Non-Participating TO holder of a TOR to provide to enable the CAISO to carry out its functions under the CAISO Tariff, Operating Procedures and Business Practice Manuals:

(1) A unique Contract Reference Number for each source and sink combination applicable to the TOR (i.e., the CRN that will be assigned by the CAISO and communicated to the Non-Participating TO that references a single TOR or a set of interdependent TORs for each source and sink combination);

(2) Whether the instruction can be exercised independent of the CAISO's day-to-day involvement ("Yes/No");

(3) Name of an operational single point of contact for instructions and a 24- hour a day telephone number for the Non-Participating TO contact for TOR issues or the agreed upon party;

(4) Name(s) and number(s) of TOR(s) that are represented by the unique CRN;

(5) The following information, as stored in the Master File: (a) the applicable Point(s) of Receipt and Point(s) of Delivery); (b) for each Point of Receipt, the resource names for the physical resources as the eligible sources (eligible physical sources include Generating Units and

System Resources), and for each Point of Delivery, the resource names for the physical resources as the eligible sinks (eligible physical sinks include Load PNodes, Custom Load Aggregation Points and System Resources); (c) for each physical source or sink, the maximum capacity (MW) that can be scheduled as a TOR; and (d) for each physical source and sink, the Scheduling Coordinator(s) and their Business Associate Identification (BAID) that is (are) eligible to submit TOR Self-Schedules utilizing these sources and sinks;

(6) Names of the party(ies) holding the TOR(s) and the parties to any agreements applicable to the TORs;

(7) The Scheduling Coordinator BAID that is entitled to the Settlement of reversal of Congestion Charges;

(8) Amount of TORs, in maximum MW, that may be utilized under the relevant TRTC Instructions;

(9) Instructions for the allowable timeframes at which the TOR Self-Schedules and TOR Self-Schedule changes may be submitted to the CAISO, which include whether the Scheduling Coordinator may submit TOR Self-Schedules or TOR Self-Schedule changes: (a) into the DAM; (b) into the RTM; (c) after the close of submitting Bids into the RTM, but before twenty (20) minutes before the applicable Trading Hour of the Trading Day; and (d) at or after twenty (20) minutes before the applicable Trading Hour of the Trading Day; in addition, the Non-Participating TO may also provide any additional comments and restrictions on the submission time of TOR Self- Schedules and TOR Self-Schedule changes;

(10) Term of ownership interest in the TOR(s) and of any agreements applicable to the TOR(s);

(11) Any special procedures that would require the CAISO to

implement curtailments in any manner different than pro rata reduction of the transfer capability of the transmission line; any such instructionssubmitted to the CAISO must be clear, unambiguous, and not require the CAISO to make any judgments or interpretations as to the meaning, intent, results, or purpose of the curtailment procedures or of any applicable Existing Contract, otherwise, they will not be accepted by the CAISO; and

(12) Whether or not the TOR provides the right to self-provide Ancillary Services.

* * *

17.2 Treatment Of TORs

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

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

(1) The CAISO will reserve transmission capacity equal to the TOR transmission capacity and make a corresponding adjustment in its determination of ATC. The CAISO will not limit parallel flow from flowing on TOR transmission capacity consistent with the redispatch provisions of Section 17.2(3), just as the CAISO does not limit TOR Self-Schedules from flowing on non-TOR transmission. There shall be no compensation for parallel flow for either the CAISO or the TOR holder.

(2) In the RTM, the CAISO will give valid TOR Self-Schedules priority over other non-TOR Day-Ahead Schedules. In the event of a reduction in

capacity on the transmission path associated with the TOR, the CAISO will honor the TOR priority in accordance with this Section 17.

(3) The CAISO will allow the holder of a TOR to make changes to the scheduled amounts of supply after the submission of HASP TOR Self-Schedules in accordance with the TRTC Instructions established for such changes. The CAISO will, as necessary, redispatch non-TOR resources to accommodate valid TOR Self-Schedule changes in Real- Time.

(4) The CAISO will allow the holder of a TOR to self-provide Ancillary Services, which will include the ability of the holder of a TOR to import Ancillary Services at Scheduling Points with the CAISO.

(5) The submission of a TOR Self-Schedule change that is authorized pursuant to an applicable existing agreement shall not affect the application of the IFM Congestion Credit or the RTM Congestion Credit, and the IFM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules or the RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules for a TOR Self-Schedule that satisfies the applicable requirements of Sections 17.4.1 and 17.5.

17.2.1 System Emergency Exceptions

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators(which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with the CAISO's Dispatch Instructions and operating orders, unless such operation would impair public health or safety.

The CAISO will honor the terms of TORs, provided that in a System Emergency and

circumstances in which the CAISO considers that a System Emergency is imminent or threatened, to enable the CAISO to exercise its responsibilities as Balancing Authority in accordance with Applicable Reliability Criteria, holders of TORs must follow CAISO operating orders even if those operating orders directly conflict with the terms of applicable Existing Contracts or any other contracts pertaining to the TORs, unless such operating orders are inconsistent with the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict between the CAISO Tariff and an agreement 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 RTM.

* * *

17.4 The HASP

17.4.1 Scheduling Deadlines

Holders of TORs may submit TOR Self-Schedules for the use of those rights by the deadline for the Market Close for the RTM.

* * *

17.6 Inter-Balancing Authority Area TOR Self-Schedule Bid Changes

Changes to TOR Self-Schedules that occur during the CAISO's Real-Time Market that involve changes to CAISO Balancing Authority Area imports or exports with other Balancing Authority Areas (that is, inter-Balancing Authority Area changes to TOR Self-Schedules) will be allowed and will be recorded by the CAISO based upon notification received from the Scheduling Coordinator representing the holder of the TOR. The Scheduling Coordinator representing the holder of the TOR must notify the CAISO of any such changes to external import/export in submitted TOR Self-Schedules. The Scheduling Coordinator representing the holder of the TOR must notify the CAISO of Real-Time Market changes to external import/export Interchange Schedules in submitted TOR Self-Schedules, by telephone. The timing and content of any such notification must be consistent with the TRTC Instructions previously submitted to the CAISO by

the Non-Participating TO. The CAISO will manually adjust or update the HASP Block Intertie Schedule, HASP Block AS Award, and/or FMM Intertie Schedule for the Scheduling Coordinator to conform with the other Balancing Authority Area's net TOR Self-Schedule in Real-Time, and the notifying Scheduling Coordinator will be responsible for and manage any resulting Energy imbalance. These Imbalance Energy deviations will be priced and charged to the Scheduling Coordinator representing the holder of the TOR in accordance with the Real-Time LMP.

* * *

27 CAISO Markets And Processes

In the Day-Ahead and Real-Time time frames the CAISO operates a series of procedures and markets that together comprise the CAISO Markets Processes. In the Day-Ahead time frame, the CAISO conducts the Market Power Mitigation (MPM) process, the Integrated Forward Market (IFM) and the Residual Unit Commitment (RUC) process. In the Real-Time time frame, the CAISO does the following: 1)accepts the Economic Bids and Self-Schedules used in the Real-Time Market procedures, 2) conducts the MPM process for the RTM, 3) accepts and awards HASP Block Intertie Schedules for Energy and Ancillary Services, 4) provides HASP Advisory Schedules for Energy and Ancillary Services for Bids that do no create a HASP Block Intertie Schedule, 5) conducts the Short-Term Unit Commitment (STUC), 6) conducts the Fifteen Minute Market (FMM), and 7) conducts the five-minute Real-Time Dispatch (RTD). The CAISO Markets Processes utilize transmission and Security Constrained Unit Commitment and dispatch algorithms in conjunction with a Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 to optimally commit, schedule and Dispatch resources and determine marginal prices for Energy, Ancillary Services and RUC Capacity. Congestion Revenue Rights are available and entitle holders of such instruments to a stream of hourly payments or charges associated with revenue the CAISO collects or pays from the Marginal Cost of Congestion component of hourly Day-Ahead LMPs. Through the operation of the CAISO Markets Processes the CAISO develops Day-Ahead Schedules, Day-Ahead AS Awards and RUC Schedules~~,~~, HASP Block Intertie Schedules for Energy and AS Awards, HASP Advisory Schedules, FMM Energy Schedules, and FMM Ancillary Services Awards, Real-Time AS Awards

and Dispatch Instructions to ensure that sufficient supply resources are available in Real-Time to balance Supply and Demand and operate in accordance with Reliability Criteria.

* * *

27.1.1 Locational Marginal Prices For Energy

As further described in Appendix C, the LMP for Energy at any PNode is the marginal cost of serving the next increment of Demand at that PNode consistent with existing Transmission Constraints and the performance characteristics of resources, also considering, among other things, 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 FMM calculates distinct financially binding fifteen-minute LMPs for each of the four fifteen-minute intervals within a Trading Hour. 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 FMM or RTD LMPs for Settlements of the Real-Time Market. In the event that a Pricing Node becomes electrically disconnected from the market model during a CAISO Market run, the LMP, including the SMEC, MCC and MCL, at the closest electrically connected Pricing Node will be used as the LMP at the affected location.

*** * ***

27.1.2.1 Ancillary Service Marginal Prices – Sufficient Supply

As provided in Section 8.3, Ancillary Services are procured and awarded through the IFM and the FMM, and the CAISO also accepts and awards HASP Block Intertie Schedules for Ancillary services in HASP. The IFM calculates hourly Day-Ahead Ancillary Service Awards and establishes Ancillary Service Marginal Prices (ASMPs) for the accepted Regulation Up, Regulation Down, Spinning Reserve and Non-Spinning Reserve Bids. The IFM co-optimizes Energy and Ancillary Services subject to resource, network and regional constraints. In the HASP, the CAISO accepts and awards Ancillary Services from HASP Block Intertie Schedules for the next Trading Hour as described in Section ~~33.7~~34.2. The CAISO calculates the price for the settlement of Ancillary Services accepted and awarded in HASP based on the FMM ASMP as

described herein and further described in Section ~~33.8~~34.3. The FMM process that is performed every fifteen (15) minutes establishes fifteen (15) minute Ancillary Service ~~Schedules,~~ Awards, and prices for the upcoming quarter of the given Trading Hour. ASMPs are determined by first calculating Shadow Prices of Ancillary Services for each Ancillary Service type and the applicable Ancillary Services Regions. The Ancillary Services Shadow Prices are produced as a result of the co-optimization of Energy and Ancillary Services through the IFM and the Real-Time Market, subject to resource, network, and requirement constraints. The Ancillary Services Shadow Prices represent the marginal cost of the relevant binding regional constraints at the optimal solution, or the reduction of the combined Energy and Ancillary Service procurement cost associated with a marginal relaxation of that constraint. If the constraint for an Ancillary Services Region is not binding, the corresponding Ancillary Services Shadow Price in the Ancillary Services Region is zero (0). During periods in which supply is sufficient, the ASMP for a particular Ancillary Service type and Ancillary Services Region is then the sum of the Ancillary Services Shadow Prices for the specific type of Ancillary Service and all the other types of Ancillary Services for which the subject Ancillary Service can substitute, as described in Section 8.2.3.5, for the given Ancillary Service Region and all the other Ancillary Service Regions that include that given Ancillary Service Region. During periods in which supply is insufficient, the ASMP for a particular Ancillary Service type and Ancillary Services Region will reflect the Scarcity Reserve Demand Curve Values set forth in Section 27.1.2.3.

27.1.2.2 Opportunity Cost in ASMP

The Ancillary Services Shadow Price, which, as described above, is a result of the Energy and Ancillary Service co-optimization, includes the foregone opportunity cost of the marginal resource, if any, for not providing Energy or other types of Ancillary Services the marginal resource is capable of providing in the relevant market. The ASMPs determined by the IFM or FMM optimization process for each resource whose Ancillary Service Bid is accepted will be no lower than the sum of (i) the Ancillary Service capacity Bid price submitted for that resource, and (ii) the foregone opportunity cost of Energy in the IFM or FMM for that resource. The foregone opportunity cost of Energy for this purpose is measured as the positive difference between the

IFM or FMM LMP at the resource's Pricing Node and the resource's Energy Bid price. If the resource's Energy Bid price is higher than the LMP, the opportunity cost measured for this calculation is $0. If a resource has submitted an Ancillary Service Bid but no Energy Bid and is under an obligation to offer Energy in the Day-Ahead Market (e.g. a non-hydro Resource Adequacy Resource), its Default Energy Bid will be used, and its opportunity cost will be calculated accordingly. If a resource has submitted an Ancillary Service Bid but no Energy Bid and is not under an obligation to offer Energy in the Day-Ahead Market, its Energy opportunity cost measured for this calculation is $0 since it cannot be dispatched for Energy. For Self-Scheduled Hourly Block Bids for Ancillary Services awarded in HASP, the opportunity cost measured for this purpose is $0 because, as provided in Section 34.2.3**,** the CAISO cannot Schedule Energy in HASP from the Energy Bid under the same Resource ID as the submitted Ancillary Service Bid.

* * *

27.2.2.2 Real-Time Market LAP Prices

The Default and Custom Hourly Real-Time LAP Prices are calculated as described in Section 11.5.2.2.

27.2.2.2.1 Default LAP Pricing

The FMM and RTD Default LAP Price for a fifteen minute FMM interval and five minute Dispatch Interval is the price as produced by the FMM and RTD optimization runs, respectively, based on the distribution of system Load at the constituent Pricing Nodes within the applicable Default LAP and is determined by the effectiveness of the Load within the Default LAP in relieving a Transmission Constraint within the effectiveness threshold as specified in Section 27.3.4.6. The Default Hourly Real-Time LAP Price is then determined for Settlement purposes as further described in Section 11.5.2.2.

27.2.2.2.2 Custom LAP Pricing

The FMM and RTD LAP Prices for Settlement of Demand at Custom LAPs for a given fifteen minute FMM interval and five minute Dispatch interval are calculated as a Load-weighted average of the individual FMM and RTD LMPs at the PNodes within the Custom LAP, respectively, where

the weights are calculated based on Meter Data. The Custom LAP Hourly Real-Time LAP Price is then determined for Settlement purposes as further described in Section 11.5.2.2.

***

27.4.1 Security Constrained Unit Commitment

The CAISO uses SCUC to run the MPM process associated with the DAM and the RTM**.** SCUC is conducted over multiple varying intervals to commit and schedule resources as follows: (1) in the Day-Ahead time frame, to meet Demand reflected in Bids submitted in the Day-Ahead Market and considered in the MPM process and IFM, and to procure AS in the IFM; (2) to meet the CAISO Forecast of CAISO Demand in the RUC, HASP, STUC and FMM, and in the MPM process utilized in the ~~HASP and~~ RTM; and (3) to procure any incremental AS in the HASP and FMM. In the Day-Ahead MPM, IFM and RUC processes, the SCUC commits resources over the twenty-four (24) hourly intervals of the next Trading Day. In the FMM, which runs every fifteen (15) minutes and commits resources for the RTM, the SCUC optimizes over a number of 15-minute intervals corresponding to the Trading Hours for which the Real-Time Markets have closed. The Trading Hours for which the Real-Time Markets have closed consist of (a) the Trading Hour in which the applicable run is conducted and (b) all the fifteen-minute intervals of the entire subsequent Trading Hour. In the HASP, which runs once per hour, the SCUC: 1) accepts and awards HASP Block Intertie Schedules for Energy and Ancillary Services, respectively; 2) provides HASP Advisory Schedules to Economic Hourly Block Bids with Intra-Hour Option that will change for economic reasons at most once in the Trading Hour; and 3) provides HASP Advisory Schedules to all other participants in the RTM. In the STUC, which runs once an hour, the SCUC commits resources over the last fifteen (15) minutes of the imminent Trading Hour and the entire next four Trading Hours. The CAISO will commit Extremely Long Start Resources, for which commitment in the DAM does not provide sufficient time to Start-Up and be available to supply Energy during the next Trading Day as provided in Section 31.7.

* * *

27.4.3.1 Scheduling Parameters for Transmission Constraint Relaxation

In the IFM, the internal Transmission Constraint scheduling parameter is set to $5000 per MWh for the purpose of determining when the SCUC and SCED software in the IFM will relax an internal Transmission Constraint rather than adjust Supply or Demand bids or Non-priced Quantities as specified in Sections 31.3.1.3, 31.4 to relieve Congestion on the constrained facility. This scheduling parameter is set to $1,500 per MWh for the RTM. The effect of this scheduling parameter value is that if the optimization can re-dispatch resources to relieve Congestion on a Transmission Constraint at a cost of $5000 per MWh or less for the IFM (or $1,500 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds $5000 per MWh in the IFM (or $1,500 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to $1250 per MWh.

* * *

27.5 Full Network Model

27.5.1 Network Models used in CAISO Markets

The FNM is a representation of the WECC network model including the CAISO Balancing Authority Area that enables the CAISO to produce a Base Market Model that the CAISO then uses as the basis for formulating the individual market models used to conduct power flow analyses to manage Transmission Constraints for the optimization of each of the CAISO Markets.

27.5.1.1 Base Market Model used in the CAISO Markets

Based on the FNM the CAISO creates the Base Market Model, which is used as the basis for formulating, as described in section 27.5.6, the individual market models used in each of the CAISO Markets to establish, enforce, and manage the Transmission Constraints associated with network facilities. The Base Market Model is derived from the FNM by (1) introducing locations

for modeling Intertie Schedules; and (2) introducing market resources that do not currently exist in the FNM due to their size and lack of visibility. In the Base Market Model, external Balancing Authority Areas and external transmission systems are modeled to the extent necessary to

support the commercial requirements of the CAISO Markets. For those portions of the FNM that are external to the CAISO Balancing Authority Area, the Base Market Model may model the resistive component for accurate modeling of Transmission Losses, but accounts for losses in the external portions of the market model separately from Transmission Losses within the CAISO Balancing Authority Area. As a result, the Marginal Cost of Losses in the LMPs is not affected by external losses. For portions of the Base Market Model that are external to the CAISO Balancing Authority Area, the CAISO Markets only enforce Transmission Constraints that reflect limitations of the transmission facilities and Entitlements turned over to the Operational Control of the CAISO by a Participating Transmission Owner, or that affect Congestion Management within the CAISO Balancing Authority Area or on Interties. 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 Unit is 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 Base Market Model for network analysis purposes at the corresponding Generating Unit's physical interconnection point), taking into account any losses in the non-CAISO Controlled Grid leading to the point where Energy is delivered to CAISO Controlled Grid. Based on the Base Market Model, the market models used in each of the CAISO markets incorporate physical characteristics needed for determining Transmission Losses and model Transmission Constraints within the CAISO Balancing Authority Area, which are then reflected in the Day-Ahead Schedules, AS Awards and RUC Awards, HASP Block Intertie Schedules, HASP Block AS Awards, FMM Schedules, Dispatch Instructions, and LMPs resulting from each CAISO Markets Process. The Dispatch, Schedule, and LMP of a Dynamic System Resource or Pseudo-Tie of a Generating Unit to the CAISO Balancing Authority Area refer to a PNode, or Aggregated Pricing Node, if applicable, of the resource at its physical location in the external transmission systems

that are modeled in the Base Market Model, subject to the modeling of Transmission Losses in the portions of the FNM and exclusion of such Transmission Losses' effects on the LMPs that are external to the CAISO Balancing Authority Area described in this Section 27.5.1.1. The LMP price thus associated with a Dynamic System Resource or Pseudo-Tie Generating Unit will be used for Settlement of Energy and will include the Marginal Cost of Congestion and Marginal Cost of Losses components of the LMP to that Dynamic System Resource or Pseudo-Tie Generating Unit point, excluding losses and congestion external to the CAISO Balancing Authority Area, in accordance with this Section 27.5.1.1. Further, in formulating the market models for the RTM processes, the Real-Time power flow parameters developed from the State Estimator are applied to the Base Market Model.

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. Transmission Constraints (i.e. circuit ratings, thermal ratings, etc.) within the MSS, or at its boundaries, that are modeled in the Base Market Model shall be monitored but not enforced in operation of the CAISO Markets. If overloads are observed in the forward markets, are internal to the MSS or at the MSS boundaries, and are attributable to MSS operations, the CAISO shall communicate such events to the Scheduling Coordinator for the MSS and coordinate any manual Re-dispatch required in Real-Time. If, independent of the CAISO, the Scheduling Coordinator for the MSS is unable to resolve Congestion internal to the MSS or at the MSS boundaries in Real-Time, the CAISO will use Exceptional Dispatch Instructions on resources that have been bid into the RTM to resolve the Congestion. The costs of such Exceptional Dispatch will be allocated to the responsible MSS Operator. Consistent with Section 4.9, the CAISO and MSS Operator shall develop specific procedures for each MSS to determine how Transmission Constraints will be handled.

* * *

27.5.6 Management & Enforcement of Constraints in the CAISO Markets

The CAISO operates the CAISO Markets through the use of a market software system that

utilizes various information including the Base Market Model, the State Estimator, submitted Bids including Self-Schedules, Generated Bids, and Transmission Constraints, including Nomograms

and Contingencies transmission and generation Outages. The market model used in each of the CAISO Markets is derived from the most current Base Market Model available at that time. To create a more relevant time-specific network model for use in each of the CAISO Markets, the CAISO will adjust the Base Market Model to reflect Outages and derates that are known and applicable when the respective CAISO Market will operate, and to compensate for observed discrepancies between actual real-time power flows and flows calculated by the market software. Through this process the CAISO creates the market model to be used in each Day-Ahead Market and each process of the Real-Time Market. The CAISO will manage the enforcement of Transmission Constraints, including Nomograms and Contingencies, consistent with good utility practice, to ensure, to the extent possible, that the market model used in each market accurately reflects all the factors that contribute to actual Real-Time flows on the CAISO Controlled Grid and that the CAISO Market results are better aligned with actual physical conditions on the CAISO Controlled Grid. In operating the CAISO Markets, the CAISO may take the following actions so that, to the extent possible, the CAISO Market solutions are feasible, accurate, and consistent with good utility practice:

(a) The CAISO may enforce, not enforce, or adjust flow-based Transmission Constraints, including Nomograms and Contingencies, if the CAISO observes that the CAISO Markets produce or may produce results that are inconsistent with observed or reasonably anticipated conditions or infeasible market solutions either because (a) the CAISO reasonably anticipates that the CAISO Market run will identify Congestion that is unlikely to materialize in Real-Time even if the Transmission Constraint were to be ignored in all the markets leading to Real-Time, or (b) the CAISO reasonably anticipates that the CAISO Market will fail to identify Congestion that is likely to appear in the Real-

Time. The CAISO does not make such adjustments to intertie Scheduling Limits.

(b) The CAISO may enforce or not enforce Transmission Constraints, including Nomograms and Contingencies, if the CAISO has determined

that non-enforcement or enforcement, respectively, of such Transmission Constraints may result in the unnecessary pre-commitment and scheduling of use-limited resources.

(c) The CAISO may not enforce Transmission Constraints, including Nomograms and Contingencies, if it has determined it lacks sufficient visibility to conditions on transmission facilities necessary to reliably ascertain constraint flows required for a feasible, accurate and reliable market solution.

(d) For the duration of a planned or unplanned Outage, the CAISO may create and apply alternative Transmission Constraints, including Nomograms and Contingencies, that may add to or replace certain originally defined constraints.

(e) The CAISO may adjust Transmission Constraints, including Nomograms and Contingencies, for the purpose of setting prudent operating margins consistent with good utility practice to ensure reliable operation under anticipated conditions of unpredictable and uncontrollable flow volatility consistent with the requirements of Section 7.

To the extent that particular Transmission Constraints, including Nomograms and Contingencies, are not enforced in the operations of the CAISO Markets, the CAISO will operate the CAISO Controlled Grid and manage any Congestion based on available information including the State Estimator solutions and available telemetry to Dispatch resources through Exceptional Dispatch to ensure the CAISO is operating the CAISO

Controlled Grid consistent with the requirements of Section 7.

* * *

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 (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 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, or RTM.

* * *

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 applicable FMM run as described in Section 34.3 can be committed by the FMM. 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.

* * *

27.9 Non-Generator Resources MWh Constraints

THIS TARIFF SECTION WILL BECOME EFFECTIVE ON NOVEMBER 27, 2012.

The CAISO will observe Non-Generator Resources' MWh constraints in the IFM as part of the co-optimization unless the resources are using Regulation Energy Management. The CAISO will observe Non-Generator Resources' MWh constraints in RUC as part of the co-optimization unless the resources are using Regulation Energy Management. The CAISO will observe Non-Generator Resources' MWh constraints in FMM as part of the co-optimization unless the resources are using Regulation Energy Management. The CAISO will observe Non-Generator

Resources' MWh constraints in Real-Time Dispatch, including constraints of resources using Regulatory Energy Management

* * *

27.10 Flexible Ramping Constraint

The CAISO may enforce a Flexible Ramping Constraint in the RTM. Any flexible Dispatch capacity constrained to be available as a result of the Flexible Ramping Constraint in FMM will come from capacity that is not designated to provide Regulation or Operating Reserves, and will not offset the required procurement of those Regulation or Operating Reserves in FMM. To the extent a resource incurs an opportunity cost for not providing Energy or Ancillary Services in the FMM interval as a result of a binding Flexible Ramping Constraint, all resources resolving that Flexible Ramping Constraint will be compensated pursuant to Section 11.25. In RTD the resources identified as resolving the Flexible Ramping Constraint in the corresponding FMM run will be the only resources used to resolve the Flexible Ramping Constraint enforced in RTD. The Flexible Ramping Constraint can be satisfied only by committed online dispatchable Generating Units, Participating Load, and Proxy Demand Response resources with ramping capability for which a Scheduling Coordinator has submitted Economic Bids for Energy for the applicable Trading Hour, and Dynamic System resources as specified below. This constraint cannot be satisfied by System Resources that are not Dynamic System Resources. Dynamic System Resources can become eligible to participate in relieving the Flexible Ramping Constraint if the Scheduling Coordinator scheduling that Resource can demonstrate that it has firm transmission service to the CAISO Balancing Authority Area intertie that allows the resource to deliver additional Energy in Real-Time, consistent with the requirements of Section 1.5 of the Dynamic Scheduling Protocol in Appendix M. This Dynamic System Resource must demonstrate that the Dynamic System Resource has acquired sufficient firm transmission to support the total quantity of Energy and Ancillary Services offered in the Real-Time Market by submitting an E-Tag with a transmission profile that reflects the necessary transmission reservation(s) outside the CAISO Balancing

Authority Area.

Procurement of Flexible Ramping Constraint capacity from Dynamic System Resources is limited by the available capacity in Real-Time for the applicable interval on the applicable intertie transmission constraint with which the Dynamic System Resource is associated. The quantity of the flexible ramping capacity for each applicable CAISO Market run will be determined by CAISO operators using tools that estimate the: 1) expected level of imbalance variability; 2) uncertainty due to forecast error; and 3) differences between the hourly, fifteen (15) minute average and historical five (5) minute Demand levels.

* * *

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 RTM. 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 RTM are settled hourly based on the simple average of the four FMM 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 four FMM LMPs during that hour at any time during the RTM 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., DAM or FMM) 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, HASP Block Intertie 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.

* * *

28.1.6.2 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 RTM, the CAISO also considers final Inter-SC Trades of Energy for the DAM in determining whether the RTM Physical Trades are physically supported individually or in the aggregate. Specifically, the CAISO determines whether the resource's Bid in RTM 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 RTM 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 RTM, the CAISO will adjust down on a prorated basis the RTM Physical Trades. Final Day-Ahead Physical Trades are not adjusted in the RTM 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 Day-Ahead Schedule, HASP Block Intertie Schedule, or 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.

* * *

28.2.2 Validation

The CAISO's validation of Inter-SC Trades of AS will begin upon submission of an Inter-SC Trade of AS. The CAISO shall conduct a final validation for Inter-SC Trades of AS at the end of the RTM Inter-SC Trade Period. The CAISO will validate each submitted Inter-SC Trade of AS to verify that the contents of the submission match the submittal by the counter-party Scheduling Coordinator by type (Regulation Up, Regulation Down, Spinning Reserve and Non-Spinning Reserve), quantity (MW), and time period. The CAISO will inform the submitting Scheduling Coordinators regarding the validity of a submitted trade of an AS and will allow the Scheduling Coordinator to resubmit the entire Inter-SC Trade of AS if it is not accepted. If only one of the two Scheduling Coordinators successfully submits an Inter-SC Trade of AS, the CAISO will notify both Scheduling Coordinators that the Inter-SC Trade of AS for the specific hour does not match the corresponding Inter-SC Trade of AS. If both Scheduling Coordinators successfully submit the

Inter-SC Trade of AS, the CAISO will notify the Scheduling Coordinators that their Inter-SC Trade of AS for the specific hour has been accepted. An Inter-SC Trade of Ancillary Services submitted at a later time, but before the deadline for the submission of the trade for the Trading Hour, renders a previously submitted Inter-SC Trade of AS invalid if it applies to the same hour, same type of AS, and the same Scheduling Coordinators to whom and from whom the AS is traded.

28.2.3 Submission Of Inter-SC Trades Of Ancillary Services

Scheduling Coordinators may submit Inter-SC Trades of Ancillary Services at any time during the RTM Inter-SC Trade Period.

* * *

28.3.2 Validation

The CAISO's validation of Inter-SC Trades of IFM Load Uplift Obligations will begin upon submission of an Inter-SC Trade of IFM Load Uplift Obligation. The CAISO shall conduct a final validation for Inter-SC Trades of IFM Load Uplift Obligations at the end of the RTM Inter-SC Trade Period. The CAISO will validate each submitted Inter-SC Trade of IFM Load Uplift Obligation to verify that the contents of the submission match the submittal by the counter-party Scheduling Coordinator in terms of quantity (MW), and time period. The CAISO will inform the submitting Scheduling Coordinators regarding the validity of a submitted Inter-SC Trade of IFM Load Uplift Obligation and will allow the Scheduling Coordinator to resubmit the entire Inter-SC Trade of IFM Load Uplift Obligation if it is not accepted. If only one of the two Scheduling Coordinators successfully submits an Inter-SC Trade of IFM Load Uplift Obligation, the CAISO will notify both Scheduling Coordinators that the Inter-SC Trade of IFM Load Uplift Obligation for the specific hour does not match the corresponding Inter-SC Trade of IFM Load Uplift Obligation. If both Scheduling Coordinators successfully submit the Inter-SC Trade of IFM Load Uplift Obligation, the CAISO will notify the Scheduling Coordinators that their Inter-SC Trade of IFM Load Uplift Obligations for the specific hour has been accepted. The CAISO will verify that an Inter-SC Trade of IFM Load Uplift Obligation is between different Scheduling Coordinators that are authorized to participate in the CAISO Markets during the time period covered by the trade and that the Trading Hour and the quantity of the trade must be greater than or equal to zero. An

Inter-SC Trade of IFM Load Uplift Obligation submitted at a later time renders a previously submitted Inter-SC Trade of IFM Load Uplift Obligation invalid if it applies to the same hour and the same Scheduling Coordinators to whom and from whom the net IFM Load Uplift Obligation is traded.

28.3.3 Submission Of Inter-SC Trades Of IFM Load Uplift Obligation

Scheduling Coordinators may submit Inter-SC Trades of IFM Load Uplift Obligations at any time during the RTM Inter-SC Trade Period.

* * *

30.1.2 Real-Time Market

Economic Bids and Self-Schedules submitted in the RTM apply to a single Trading Hour and are used for all market processes of the RTM. The CAISO will require Scheduling Coordinators to honor their Day-Ahead Ancillary Services Awards when submitting Ancillary Services Bids in the RTM. Bids for Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve service for each Settlement Period must be received at least seventy-five minutes prior to the commencement of that Settlement Period. The Bids shall include information for only the relevant Settlement Period. Failure to provide the information within the stated timeframe shall result in the Bids being declared invalid and being rejected by the CAISO.

30.2 Bid Types

There are three types of Bids: Energy Bids (which include Virtual Bids), Ancillary Services Bids, and RUC Availability Bids. Each Bid type can be submitted as either an Economic Bid or a Self-Schedule (except for RUC Availability Bids and Virtual Bids, which cannot be self-scheduled). Economic Bids specify prices for MW amounts of capacity or MWh amounts of Energy. Self-Schedules do not have any prices associated for MW or MWh. Energy Bids, including both Economic Bids and Self-Schedules (where Self-Schedules are otherwise permitted), may be either Supply Bids, Demand Bids, Virtual Supply Bids, or Virtual Demand Bids. Ancillary Services Bids and RUC Availability Bids are Supply Bids only. Ancillary Services may be self-provided by providing a Submission to Self-Provide an Ancillary Service and having that submission accepted by the CAISO. Rules for submitting the three types of Bids vary by the type of resource to which

the Bid applies as described in Section 30.5 and as further required in each CAISO Markets process as specified in Sections 31, 33, and 34.

***

30.5.1 General Bidding Rules

(a) All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the DAM for the following Trading Day shall be submitted at or prior to 10:00 a.m. on the day preceding the Trading Day, but no sooner than seven (7) days prior to the Trading Day. All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the RTM for the following Trading Day shall be submitted starting from the time of publication, at 1:00 p.m. on the day preceding the Trading Day, of DAM results for the Trading Day, and ending seventy-five (75) minutes prior to each applicable Trading Hour in the RTM. The CAISO will not accept any Energy or Ancillary Services Bids for the following Trading Day between 10:00 a.m. on the day preceding the Trading Day and the publication, at 1:00 p.m. on the day preceding the Trading Day, of DAM results for the Trading Day;

(b) Bid prices submitted by a Scheduling Coordinator for Energy accepted and cleared in the IFM and scheduled in the Day-Ahead Schedule may be increased or decreased in the RTM market processes. Incremental Bid prices for Energy associated with Day-Ahead AS or RUC Awards in Bids submitted to the RTM may be revised. Scheduling Coordinators may revise ETC Self-Schedules for Supply in the RTM to the extent such a change is consistent with TRTC Instructions provided to the CAISO by the Participating TO in accordance with Section 16. Scheduling Coordinators may revise TOR Self-Schedules for Supply only in the HASP to the extent such a change is consistent with TRTC Instructions provided to the CAISO by the Non-Participating TO in accordance with

Section 17. Energy associated with awarded Ancillary Services capacity cannot be offered in the Real-Time Market separate and apart from the awarded Ancillary Services capacity;

(c) Scheduling Coordinators may submit Energy, AS and RUC Bids in the DAM that are different for each Trading Hour of the Trading Day;

(d) Bids for Energy or capacity that are submitted to one CAISO Market, but are not accepted in that market are no longer a binding commitment and Scheduling Coordinators may submit Bids in a subsequent CAISO Market at a different price;

(e) The CAISO shall be entitled to take all reasonable measures to verify that Scheduling Coordinators meet the technical and financial criteria set forth in Section 4.5.1 and the accuracy of information submitted to the CAISO pursuant to this Section 30; and

(f) In order to retain the priorities specified in Section 31.4 and 34.10 for scheduled amounts in the Day-Ahead Schedule associated with ETC and TOR Self-Schedules or Self-Schedules associated with Regulatory Must-Take Generation, a Scheduling Coordinator must submit to the Real-Time Market ETC or TOR Self-Schedules, or Self-Schedules associated with Regulatory Must-Take Generation, at or below the Day-Ahead Schedule quantities associated with the scheduled ETC, TOR or Regulatory Must-Take Generation Self-Schedules. If the Scheduling Coordinator fails to submit such Real-Time Market ETC, TOR or Regulatory Must-Take Generation Self-Schedules, the defined scheduling priorities of the ETC, TOR, or Regulatory Must-Take Generation Day-Ahead Schedule quantities may be subject to adjustment in the HASP and the Real-Time Market as further provided in Section 31.4 and 34.10 in order to meet operating conditions.

(g) For Multi-Stage Generating Resources that receive a Day-Ahead Schedule, are awarded a RUC Schedule, or receive an Ancillary Services Award the Scheduling Coordinator must submit an Energy Bid in the Real-Time Market for the same Trading Hour(s) If the Scheduling Coordinator submits an Economic Bid for such Trading Hour(s), the Economic Bid must be for either: the same MSG Configuration scheduled or awarded in the Integrated Forward Market, or the MSG Configuration committed in RUC. If the Scheduling Coordinator submits a Self-Schedule in the Real-Time Market for such Trading Hour(s), then the Energy Self-Schedule may be submitted in any registered MSG Configuration, including the MSG Configuration awarded in the Day-Ahead Market, that can support the awarded Ancillary Services (as further required by Section 8). Scheduling Coordinators for Multi-Stage Generating Resources may submit into the Real-Time Market bids from up to six (6) MSG Configurations in addition to the MSG Configuration scheduled or awarded in the Integrated Forward Market and Residual Unit Commitment, provided that the MSG Transitions between the MSG Configurations bid into the Real-Time Market are feasible and the transition from the previous Trading Hour are also feasible.

(h) For the Trading Hours that Multi-Stage Generating Resources do not have a CAISO Schedule or award from a prior CAISO Market run, the Scheduling Coordinator can submit up to six (6) MSG Configurations into the RTM.

(i) A Scheduling Coordinator cannot submit a Bid to the CAISO Markets for a MSG Configuration into which the Multi-Stage Generating Resource cannot transition due to lack of Bids for the specific Multi-Stage Generating Resource in other MSG Configurations that are required for the requisite MSG Transition.

(j) In order for Multi-Stage Generating Resource to meet any Resource Adequacy must-offer obligations, the responsible Scheduling Coordinator must submit either an Economic Bid or Self-Schedule for at least one MSG Configuration into the Day-Ahead Market and Real-Time Market that is capable of fulfilling that Resource Adequacy obligation, as feasible. The Economic Bid shall cover the entire capacity range between the maximum bid-in Energy MW and the higher of Self-Scheduled Energy MW and the Multi-Stage Generating Resource plant-level PMin.

(k) For any given Trading Hour, a Scheduling Coordinator may submit Self-Schedules and/or Submissions to Self-Provide Ancillary Services in only one MSG Configuration for each Generating Unit or Dynamic Resource-Specific System Resource.

(l) In any given Trading Hour in which a Scheduling Coordinator has submitted a Self-Schedule for a Multi-Stage Generating Resource, the Scheduling Coordinator may also submit Bids for other MSG Configurations provided that they concurrently submit Bids that enable the applicable CAISO Market to transition the Multi-Stage Generating Resource to other MSG Configurations.

(m) If in any given Trading Hour the Multi-Stage Generating Resource was awarded Regulation or Operating Reserves in the IFM, any Self-Schedules or Submissions to Self-Provide Ancillary Services the Scheduling Coordinator submits for that Multi-Stage Generating Resource in the RTM must be for the same MSG Configuration for which Regulation or Operating Reserve is Awarded in IFM for that Multi-Stage Generating Resource in that given Trading Hour.

(n) If a Multi-Stage Generating Resource has received a binding RUC Start-Up Instruction as provided in Section 31, any Self-Schedule or

Submission to Self-Provide Ancillary Services in the RTM must be in the same MSG Configuration committed in RUC.

(o) If in any given Trading Hour the Multi-Stage Generating Resource is scheduled for Energy in the IFM, any Self-Schedules the Scheduling Coordinator submits for that Multi-Stage Generating Resource in the RTM must be for the same MSG Configuration for which Energy is scheduled in IFM for that Multi-Stage Generating Resource in that given Trading Hour.

(p) For a Multi-Stage Generating Resource, the Bid(s) submitted for the resource's configuration(s) shall collectively cover the entire capacity range between the maximum bid-in Energy MW and the higher of the Self-Scheduled Energy MW and the Multi-Stage Generating Resource plant-level PMin. This rule shall apply separately to the Day-Ahead Market and the Real-Time Market.

(q) Self-Schedule Hourly Block for the RTM can be submitted as an import or an export to or from the CAISO Balancing Authority Area. Self-Scheduled Hourly Blocks can be submitted for Ancillary Services imports. Such a Bid shall be for the same MWh quantity for each of the four fifteen (15)-minute intervals that make up the applicable Trading Hour.

(r) Variable Energy Resource Self-Schedule for the RTM can be submitted from a Variable Energy Resource. Scheduling Coordinators can use either the CAISO forecast for expected Energy in the RTM or can provide its own forecast for expected Energy. The Scheduling Coordinator must indicate in Master File whether it is using its own forecast or the CAISO forecast for its resource in support of the Variable Energy Self-Schedule. Neither option requires that the Variable Energy Resource Self-Schedule include the same MWh quantity for each of the

four fifteen (15)-minute intervals that make up the applicable Trading Hour. If an external resource submits a Variable Energy Resource Self-schedule and the expected Energy is not delivered in the FMM, the Variable Energy Resource will be subject to the Decline Potential Charge as described in Section 11.31. Scheduling Coordinators for Dynamically Scheduled Variable Energy Resources that provide the CAISO with a two-hour rolling forecast with five-minute granularity can submit VER Self-Schedules. In addition, the Scheduling Coordinator must complete the certification process defined in the CAISO Business Practice Manual to qualify as a VER using their own forecast.

Comment [A2]: This sentence is unclear and should be replaced with less ambiguous terminology – see comments in overview.

(s) Scheduling Coordinators can submit Economic Hourly Block Bids to be considered for a financially binding Schedule in HASP that creates the same MW award for each of the four FMM intervals. Economic Hourly Block Bids can also be submitted for Ancillary Services. As specified in Section 11, a cleared Economic Hourly Block Bid is not eligible for Bid Cost Recovery.

(t) Scheduling Coordinators can submit Economic Hourly Block Bids with Intra-Hour Option. If accepted, such a Bid creates a binding Schedule in HASP that creates the same MW award for each of the four FMM intervals, except that the Schedule can be reoptimized through the FMM once during the Trading Hour. If reoptimized once, the Schedule cannot be ~~changed for economic reasons~~reoptimized again during the Trading Hour. As specified in Section 11, a cleared Economic Hourly Block Bid with Intra-Hour Option is not eligible for Bid Cost Recovery.

(u) A Scheduling Coordinator submitting Bids to the RTM is not required to submit either a Self-Schedule Hourly Block, a Variable Energy Resource Self-Schedule, an Economic Hourly Block Bid, or an Economic Hourly Block Bid with Intra-Hour Option. A Scheduling Coordinator may choose

to participate in the RTM through regular Economic Bids or Self-Schedules.

30.5.2 Supply Bids

30.5.2.1 Common Elements for Supply Bids

In addition to the resource-specific Bid requirements of this Section, all Supply Bids must contain the following components: Scheduling Coordinator ID Code; Resource Location or Resource ID, as appropriate; MSG Configuration ID, as applicable; PNode or Aggregated Pricing Node as applicable; Energy Bid Curve; Self-Schedule component; Ancillary Services Bid; RUC Availability Bid as applicable, the CAISO Market to which the Bid applies; Trading Day to which the Bid applies; Priority Type (if any). Supply Bids offered in the CAISO Markets must be monotonically increasing. Energy Bids in the RTM must also contain a Bid for Ancillary Services to the extent the resource is certified and capable of providing Ancillary Service in the RTM up to the registered certified capacity for that Ancillary Service less any Day-Ahead Ancillary Services Awards.

Scheduling Coordinators must submit the applicable Supply Bid components, including Self-Schedules, for the submitted MSG Configuration.

Scheduling Coordinators submitting bids for Intertie Schedules must adhere to the e-Tagging requirements outlined in Section 30.6.2.

* * *

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 participate in the Day-Ahead Market on an equivalent basis as Generating Units and are not obligated to participate in RUC or the RTM if the resource

did not receive a Day-Ahead Schedule unless the resource is a Resource Adequacy Resource. If the Resource-Specific System Resource is a Resource Adequacy Resource, the Scheduling Coordinator for the resource is obligated to make it available to the CAISO Market as prescribed by Section 40.6. Dynamic Resource-Specific System Resources are also eligible to participate in the HASP and RTM on an equivalent basis as Generating Units. The quantity (in MWh) of Energy categorized as Interruptible Imports (non-firm imports) can only be submitted through Self-Schedules in the Day-Ahead Market and cannot be incrementally increased in the HASP or RTM. Bids submitted to the Day-Ahead Market for ELS Resources will be applicable for two days after they have been submitted and cannot be changed the day after they have been submitted.

* * *

30.5.2.5 Supply Bids for Metered Subsystems

Consistent with the bidding rules specified in this Section 30.5, Scheduling Coordinators that represent MSS Operators may submit Bids for Energy and Ancillary Services, including Self-Schedules and Submissions to Self-Provide an Ancillary Service, to the DAM. All Bids to supply Energy by MSS Operators must identify each Generating Unit on an individual unit basis. The CAISO will not accept aggregated Generation Bids without complying with the requirements of Section 4.9.12 of the CAISO Tariff. All Scheduling Coordinators that represent MSS Operators must submit Demand Bids at the relevant MSS LAP. Scheduling Coordinators that represent MSS Operators must comply with Section 4.9 of the CAISO Tariff. Scheduling Coordinators that represent MSS Operators that have opted out of RUC participation pursuant to Section 31.5 must Self-Schedule one hundred percent (100%) of the Demand Forecast for the MSS. For an MSS that elects Load following, the MSS Operator shall also self-schedule or bid Supply to match the Demand Forecast. All Bids for MSSs must be identify each Generating Unit on an individual unit basis or a System Unit. For an MSS that elects Load following consistent with Section 4.9.13.2, the Scheduling Coordinator for the MSS Operator must include the following additional information with its Bids: the Generating Unit(s) that are Load following; the range of the Generating Unit(s) being reserved for Load following; whether the quantity of Load following capacity is either up or down; and, if there are multiple Generating Units in the MSS, the priority

list or distribution factors among the Generating Units. The CAISO will not dispatch the resource within the range declared as Load following capacity, leaving that capacity entirely available for the MSS to dispatch. The CAISO uses this information in the IFM runs and the RUC to simulate MSS Load following. The Scheduling Coordinator for the MSS Operator may change these characteristics through the Bid submission process in the RTM.

If the Load following resource is also an RMR Unit, the MSS Operator must not specify the Maximum Net Dependable Capacity specified in the RMR Contract as Load following up or down capacity to allow the CAISO to access such capacity for RMR Dispatch.

30.5.2.6 Ancillary Services Bids

There are four distinct Ancillary Services: Regulation Up, Regulation Down, Spinning Reserve and Non-Spinning Reserve. A resource shall be eligible to provide Ancillary Service if it has complied with the CAISO's certification and testing requirements as contained in Appendix K and the CAISO's Operating Procedures. Scheduling Coordinators may use Dynamic System Resources to Self-Provide Ancillary Services as specified in Section 8. All System Resources, including Dynamic System Resources and Non-Dynamic System Resources, will be charged the Shadow Price as prescribed in Section 11.10, for any awarded Ancillary Services. 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 and submit Ancillary Services Bids. 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); and (3) Distribution Curve for Physical Scheduling Plant or System Unit. A Scheduling Coordinator may only submit an Ancillary Services Bid or Submission to Self-Provide an Ancillary Service for Multi-Stage Generating Resources for the Ancillary Service for which the specific MSG Configurations are certified. For any such certified MSG Configurations the Scheduling Coordinator may submit

only one Operating Reserve Ramp Rate and Regulation Ramp Rate. 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. If a Scheduling Coordinator's Submission to Self-Provide an Ancillary Service is qualified as specified in Section 8.6, the Scheduling Coordinator must submit an Energy Bid that covers the self-provided capacity 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. Except as provided below, the Self-Schedule for Energy need not include a Self-Schedule for Energy from the resource that will be self-providing the Ancillary Service. If a Scheduling Coordinator is self-providing an Ancillary Service from a Fast Start Unit, no Self-Schedule for Energy for that resource is required. If a Scheduling Coordinator proposes to self-provide Spinning Reserve, the Scheduling Coordinator is obligated to submit a Self-Schedule for Energy for that particular resource, unless as discussed above the particular resource is a Fast Start Unit. When submitting Ancillary Service Bids in the Real-Time Market, 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. Scheduling Coordinators submitting Self-Schedule Hourly Blocks for Ancillary Services Bids for the Real-Time Market must also submit an Energy Bid for the associated Ancillary Services Bid under the same Resource ID, otherwise the bid validation rules in Section 30.7.6.1 will apply to cover any portion of the Ancillary Services Bid not accompanied by an Energy Bid. As described in Section 33.7, if the resource submits a Self-Scheduled Hourly

Block, the CAISO will only use the Ancillary Services Bid in the RTM optimization and will not use the associated Energy Bid for the same Resource ID to schedule Energy from the Non-Dynamic System Resource in the RTM. Scheduling Coordinators must also comply with the bidding rules associated with the must offer requirements for Ancillary Services specified in Section 40.6.

* * *

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 Economic 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 RTM; that is, to the extent an Export Bid or Import Economic Bid or Self-Schedule specify different quantities, only that matching quantity will clear the CAISO Markets.

* * *

30.6.2 E-Tag Rules and Treatment of Intertie Schedules

In addition to complying with all generally applicable E-Tagging requirements, Scheduling Coordinators must submit their E-tags consistent with the requirements specified in this Section 30.6.2. If a Scheduling Coordinator receives an intra-hour Schedule change, then the Scheduling Coordinator must, by twenty minutes before the start of the FMM interval to which the Schedule change applies, ensure that an updated energy profile reflects the change. Where feasible, the ISO automatically will update Energy profiles on E-tags for Energy Schedules that change from HASP to the FMM within a Trading Hour. However, it is ultimately the responsibility of the Scheduling Coordinator to ensure that the E-tag Energy profile reflects the delivered quantity. The changed energy profile will apply for the balance of the operating hour unless it is subsequently changed by a further updated energy profile.

30.6.2.1 Self-Scheduled Hourly Blocks

By twenty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag in support of Self-Scheduled Hourly Blocks. The transmission profile must be ~~greater than or~~ equal to the Energy profile, and the Energy profile must equal the Self-Scheduled Hourly Block. The CAISO may modify the Energy profile due to Reliability related curtailments.

30.6.2.2 Variable Energy Resource Self-Schedule

By twenty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag in support of a Variable Energy Resource Self-Schedule. The transmission profile must be greater than or equal to the Energy profile, and the Energy profile must equal the Variable Energy Resource Self-Schedule. The CAISO may modify the Energy profile due to Reliability related curtailments.

30.6.2.3 Economic Hourly Block Bid

By twenty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag in support of an Economic Hourly Block Bid. The transmission profile must be ~~greater than or~~ equal to the Energy profile, and the Energy profile must equal the Economic Hourly Block Bid as awarded through HASP. The CAISO may modify the Energy profile due to Reliability related curtailments.

30.6.2.4 Economic Hourly Block Bid with Intra-Hour Option

By twenty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag in support of an Economic Hourly Block Bid. The transmission profile must be greater than or equal to the Energy profile, and the Energy profile must equal the Economic Hourly Block Bid as awarded through HASP. The CAISO may modify the Energy profile due to Reliability related curtailments. In the case of an intra-hour redispatch from the FMM, the CAISO may increment or decrement the Energy profile to correspond to the intra-hour redispatch once during the hour.

30.6.2.5 FMM Economic Bid

By twenty minutes prior to the applicable Trading Hour, the Scheduling Coordinator must submit an E-Tag in support of a FMM Economic Bid. The transmission profile must be greater than or

equal to the maximum bid-in capacity for the Trading Hour, and the Energy profile must equal the MWs awarded for the first FMM interval of the Operating Hour.

~~If the Scheduling Coordinator intends to limit its participation in the FMM to the quantity in the HASP advisory energy schedule (including zero), the Scheduling Coordinator may update its transmission profile to the maximum amount it wants to make available to the FMM prior to the start of the binding FMM optimization, which is no earlier than thirty-seven and a half minutes before the applicable Trading Hour.~~ If the Scheduling Coordinator does not have a transmission profile greater than or equal to its advisory Energy schedule, the resource cannot be scheduled for Energy in the FMM for amounts greater than what is listed in the transmission profile. Cleared FMM Economic Bids are eligible for Bid Cost Recovery as specified in Section 11.

Comment [A3]: See comments in overview.

* * *

30.7.1 Scheduling Coordinator Access

Each Scheduling Coordinator will be provided access to the CAISO's secure communication system to submit, modify and cancel Bids prior to the close of both the DAM and RTM, as specified in Section 30.5.1. The CAISO shall provide information regarding submitted Bids including, but not be limited to, the following: (i) notification of acceptance; (ii) notification of validation; (iii) notification of rejection; (iv) notification of status; (v) notification of submission error(s); and (vi) default modification or generation of Bids as further provided below, if any, on behalf of Scheduling Coordinators.

30.7.3.6.3 Position Limits

For each Convergence Bidding Entity, the CAISO will reject all Virtual Bids submitted by its Scheduling Coordinator at any Eligible PNode, Eligible Aggregated PNode (other than a Default LAP or Trading Hub), or Intertie that exceed the position limits specified in this Section 30.7.3.6.3. If the Scheduling Coordinator uses multiple SCIDs on behalf of a Convergence Bidding Entity, the position limits will apply to the sum of those Virtual Bids submitted at the Eligible PNode, Eligible Aggregated PNode (other than a Default LAP or Trading Hub), or Intertie. The CAISO will perform all position limit calculations based on the highest Virtual Bid segment MW point submitted in the

Virtual Bid Curve. The CAISO will not net Virtual Supply Bids and Virtual Demand Bids in performing the position limit calculations. The affected Scheduling Coordinator will be provided notice that position limits have been violated. If the Scheduling Coordinator does not resubmit Virtual Bids within the position limits, the CAISO will reject Virtual Bids for all hours at each Eligible PNode, Eligible Aggregated PNode (other than a Default LAP or Trading Hub), and Intertie where the position limits are violated. Position limits only apply to Eligible PNodes or Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs), and Interties.

* * *

30.7.3.6.3.2 Position Limits at Interties

For an Intertie, the locational limits will be equal to a percentage of the Operating Transfer Capability of the Intertie. The percentages used to calculate the position limits of each Convergence Bidding Entity at Interties will be the following percentages of the published locational limits**:**

a) Position limits of zero (0) percent will apply during the time period beginning as of the effective date of this tariff provision through the last day of the twelfth month following the effective date of this section 30.7.3.6.3.2.

b) Position limits of five (5) percent will apply during the time period beginning as of the first day of the thirteenth month following the effective date of this tariff provision through the last day of the twentieth month following the effective date of this tariff provision.

c) Position limits of twenty-five (25) percent will apply during the time period beginning on the first day of the twenty-first month following the effective date of this tariff provision through the last day of the twenty-fourth month following the effective date of this tariff provision.

d) Position limits of fifty (50) percent will apply during the time period beginning on the first day of the twenty-~~fourth~~ fifth month following the effective date of this tariff provision through the last day of the twenty-eighth month following the effective date of this tariff provision.

e) Position limits will cease to apply beginning on the first day of the twenty-ninth day following the effective date of this tariff provision.

The CAISO will enforce the locational limits for Interties at Bid submission and at Market Close for Virtual Bids. The CAISO will utilize the 9:00 AM Operating Transfer Capability for Bids submitted after 9:00 AM until the close of the Day-Ahead Market for the next Trading Day.

* * *

30.7.4 RTM Validation

RTM Bids will include the same validation process implemented in the DAM except that the CAISO will not validate the Bid before and again after the Master File Data update. RTM Bids are only validated based on the current Master File Data on the relevant Trading Day.

* * *

30.7.6 Validation And Treatment Of Ancillary Services Bids

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, Proxy Demand Resources, 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, the following rules will apply: (1): if no Energy Self-Schedule is submitted to support a Submission to Self-Provide an Ancillary Service for Regulation, the Submission to Self-Provide an Ancillary Service will be invalidated: (2) if no Energy Supply Bid is submitted to cover the awarded or Self- Provided Ancillary Services for Spinning Reserve or Non-Spinning Reserve by the Market Close of the RTM, the CAISO will generate or extend an Energy Supply 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 RTM and IFM. If an AS Bid or Submission to Self-Provide an AS is submitted in the Real-Time Market for Spinning Reserve or Non-Spinning Reserve without an accompanying Energy Supply Bid at all, the AS Bid or Submission to Self-Provide an Ancillary Service will be erased. If an AS Bid is submitted in the Real-Time Market for Spinning Reserve and Non-Spinning Reserve with only a partial Energy Supply Bid for the AS capacity, the CAISO will generate an Energy Supply Bid for the uncovered portions. If a Submission to Self-Provide an Ancillary Service is submitted in the Real-Time Market for Spinning Reserve and Non-Spinning Reserve with only a partial Energy Supply Bid for the AS capacity bid in, the CAISO will not generate or extend an Energy Supply 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.

Notwithstanding any of the provisions of Section 30.7.6.1 set forth above, the CAISO will not insert or extend any Bid for Regulation Up or Regulation Down for a Use-Limited Resource of a Load Following MSS Operator. The CAISO will not insert a Spinning Reserve and Non-Spinning Reserve Ancillary Service Bid at $0 in the Real-Time Market for any certified Operating Reserve capacity of a resource unless that resource submits an Energy Supply Bid but fails to submit an Ancillary Service Bid in the Real-Time Market.

30.7.6.2 Treatment of Ancillary Services Bids

When Scheduling Coordinators bid into the Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve markets, they may submit Bids for the same capacity into as many of these markets as desired at the same time by providing the appropriate Bid information to the CAISO. The CAISO optimization will evaluate AS Bids simultaneously with Energy Bids. A Scheduling Coordinator may specify that its Bid applies only the markets it desires. A Scheduling Coordinator shall also have the ability to specify different capacity prices for the Spinning Reserve, Non-Spinning Reserve, and Regulation markets. A Scheduling Coordinator providing one or more Regulation Up, Regulation Down, Spinning Reserve or Non-Spinning Reserve services may not change the identification of the Generating Units or Proxy Demand Resources offered in the Day-Ahead Market or in the Real-Time Market for such services unless specifically approved by the CAISO (except with respect to System Units, if any, in which case Scheduling Coordinators are required to identify and disclose the resource specific information for all Generating Units, Participating Loads, and Proxy Demand Resources constituting the System Unit for which Bids and Submissions to Self-Provide Ancillary Services are submitted into the CAISO's Day-Ahead Market and Real-Time Market).

The following principles will apply in the treatment of Ancillary Services Bids in the CAISO Markets:

(a) not differentiate between bidders for Ancillary Services and Energy other than through cost, price, effectiveness, and capability to provide the Ancillary Service or Energy, and the required locational mix of Ancillary Services;

(b) select the bidders with most cost effective Bids for Ancillary Service capacity which meet its technical requirements, including location and operating capability to minimize the costs to users of the CAISO Controlled Grid;

(c) evaluate the Day-Ahead Bids over the twenty-four (24) Settlement Periods of the following Trading Day along with Energy, taking into account Transmission Constraints and AS Regional Limits;

(d) evaluate Import Bids along with Bids from internal resources (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area);

(e) establish Real-Time Ancillary Service Awards through FMM from imports and resources internal to the CAISO Balancing Authority Area (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area) at fifteen (15) minutes intervals to the hour of operation; and

(f) procure sufficient Ancillary Services in the Day-Ahead and Real-Time Markets to meet its forecasted requirements.

* * *

30.8 Bids On Out-Of-Service Paths At Scheduling Points Prohibited

Scheduling Coordinators shall not submit any Bids, including Virtual Bids, or ETC Self-Schedules at Scheduling Points using a transmission path for any Settlement Period for which the Total Transfer Capability for that path is zero (0) MW. The CAISO shall reject Bids or ETC Self-Schedules submitted at Scheduling Points where the Total Transfer Capability on the transmission path is zero (0) MW. If the Total Transfer Capability of a transmission path at the relevant Scheduling Point is reduced to zero (0) after Day-Ahead Schedules have been issued, then, if time permits, the CAISO shall direct the responsible Scheduling Coordinators to reduce all MWh associated with the Bids on such zero-rated transmission paths to zero (0) in the RTM. As

necessary to comply with Applicable Reliability Criteria, the CAISO shall reduce any non-zero (0) RTM Bids across zero-rated transmission paths to zero after the Market Close for the RTM.

30.9 Virtual Bids

Virtual Bids are Energy Bids that may be submitted only in the Day-Ahead Market, at Eligible PNodes, including PNodes located at an Intertie where virtual bidding is permitted, or Eligible Aggregated PNodes, including Aggregated PNodes located at an Intertie, where virtual bidding is permitted, by Scheduling Coordinators representing Convergence Bidding Entities. Virtual Bids are either Virtual Supply Bids or Virtual Demand Bids. A Virtual Bid submitted in the Day-Ahead Market and cleared in the IFM represents a commitment to liquidate a Day-Ahead award in the Real-Time Market at the price determined for the applicable Eligible PNode or Eligible Aggregated PNode as set forth in Section 11.3. For each SCID associated with a Convergence Bidding Entity, there may be only one Virtual Supply Bid and one Virtual Demand Bid per each Eligible PNode or Eligible Aggregated PNode in the Day-Ahead Market. The minimum size of a segment of a Virtual Bid is one (1) MW.

* * ***31.8**

Within the IFM optimization, the CAISO enforces a constraint at each Intertie Scheduling Point such that Physical and virtual imports net of physical and virtual exports must be less than or equal to the scheduling limit at the Scheduling Point in the applicable direction. The Shadow Price of this IFM constraint is incorporated into the pricing run LMPs for both physical and virtual awards. Within the RUC process, the CAISO enforces a constraint at each Intertie Scheduling Point such that physical imports net of physical exports must be less than or equal to the scheduling limit at the Scheduling Point in the applicable direction. This RUC constraint determines what Day-Ahead Schedules can have an E-Tag submitted Day-Ahead. Day-Ahead Schedules which are precluded from submitting an E-Tag Day-Ahead on this basis are exempt from the charges described in Section 11.32.

* * *

31.3.1.1 Integrated Forward Market Output

The IFM produces: (1) a set of hourly Day-Ahead Schedules, AS Awards, and AS Schedules for all participating Scheduling Coordinators that cover each Trading Hour of the next Trading Day; and (2) the hourly LMPs for Energy and the ASMPs for Ancillary Services to be used for settlement of the IFM. For a Multi-Stage Generating Resource, the IFM produces a Day-Ahead Schedule for no more than one MSG Configuration per Trading Hour. In addition, the IFM will produce the MSG Transition and the MSG Configuration indicators for the Multi-Stage Generating Resource, which would establish the expected MSG Configuration in which the Multi-Stage Generating Resource will operate. During a transition, the committed MSG Configuration is considered to be the "from" MSG Configuration. The CAISO will publish the LMPs at each PNode as calculated in the IFM. In determining Day-Ahead Schedules, AS Awards, and AS Schedules the IFM optimization will minimize total Bid Costs based on submitted and mitigated Bids while respecting the operating characteristics of resources, the operating limits of transmission facilities, and a set of scheduling priorities that are described in Section 31.4. In performing its optimization, the IFM first tries to complete its required functions utilizing Effective Economic Bids without adjusting Self-Schedules, and skips Ineffective Economic Bids and adjusts Self-Schedules only if it is not possible to balance Supply and Demand and manage Congestion in an operationally prudent manner with available Effective Economic Bids. The process and criteria by which the IFM adjusts Self-Schedules and other Non-priced Quantities are described in Sections 27.4.3, 31.3.1.3 and 31.4. The Day-Ahead Schedules are binding commitments, including the commitment to Start-Up, if necessary, to comply with the Day-Ahead Schedules. The CAISO will not issue separate Start-Up Instructions for Day-Ahead commitments. A resource's status, however, can be modified as a result of additional market processes occurring in the RTM.

* * *

31.5.3 RUC Procurement Target

The procurement target for RUC in any given Trading Hour will be determined based on the next day's hourly CAISO Forecast of CAISO Demand less the Energy scheduled in the Day-Ahead Schedule, and accounting for other factors, as appropriate, such as Demand Forecast error and

estimated incremental RTM Bids including those from Participating Intermittent Resources. The adjustments listed in Sections 31.5.3.1 to 31.5.3.6 will be made to the CAISO Forecast of CAISO Demand to account for the conditions as provided therein. Adjustments may be made on a RUC Zone basis to ensure that RUC results in adequate local capacity procurement. The RUC procurement target-setting procedure is designed to meet the requirements of reliable grid operation without unnecessary over-procurement of RUC Capacity or over-commitment of resources. Additional detail on the process for setting the RUC procurement target is specified in the Business Practice Manuals.

* * *

31.5.3.5 Real-Time Expected Incremental Supply Self-Schedule Adjustment

In order to avoid over procurement of RUC, the CAISO shall, using a similar-day approach, estimate the RTM Self-Schedules for resources that usually submit RTM Self-Schedules that are greater than their Day-Ahead Schedules. The CAISO Operator may set the length of the Self-Schedule moving average window. Initially this moving average window shall be set by default to seven (7) days; in which case the weekday estimate is based on the average of five (5) most recent weekdays and the weekend estimate is based on the average of the two (2) most recent weekend days. To the extent weather conditions differ significantly from the historical days, additional adjustment may be necessary. After determining the estimate of Real-Time Self-Schedules, using a similar day forecasting approach, the CAISO adjusts the CAISO Forecast of CAISO Demand of a RUC Zone based on the forecasted quantity changes in Supply as a result of Self-Schedules submitted in the RTM. This adjustment for forecasted Real-Time Self-Schedules may result in positive or negative adjustments. Demand adjustments to the CAISO Forecast of CAISO Demand result when there is a net forecast decrease in Real-Time Self-Schedule Supply relative to the Day-Ahead Schedule Supply. Supply adjustments to the individual resources occur when there is a net forecast increase in Real-Time Self-Schedule Supply relative to the Day-Ahead Schedule Supply of the individual resource.

* * *

31.6.3 Conditions Permitting CAISO To Abort Day-Ahead Market

If, despite the variation of any time requirement or the omission of any step, the CAISO either fails to receive sufficient Bids or fails to clear the Day-Ahead Market, the CAISO may abort the Day-Ahead Market and require all Bids to be submitted in the RTM

* * *

.

* * *

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 processes that occur both before the Trading Hour and during the Trading Hour.

The CAISO conducts the following RTM processes related to inputs that are used in further RTM processes: 1) accepts Economic Bids and Self-Schedules for the Real-Time Market up to seventy-five minutes prior to the applicable Trading Hour, 2) validates Economic Bids and Self-Schedules submitted to the RTM, 3) performs the MPM procedure with respect to the Bids that are submitted to the RTM.

The CAISO conducts the following RTM processes that provide a Schedule (either advisory or financially binding) but with a settlement price to be determined through subsequent market processes: 1) accepting Self-Schedule Hourly Blocks for Energy and Ancillary Services, 2) accepting VER Self-Schedules for Energy, 3) optimizing Economic Hourly Block Bids for Energy and Ancillary Services, 4) optimizing Economic Hourly Block Bids with Intra-Hour Option for Energy and providing an hourly schedule that can be changed at most once in the Trading Hour,

and 5) providing purely advisory FMM Energy schedules and Ancillary Services awards and binding unit commitment for all other resources participating in the RTM. These five processes taken together constitute the HASP.

The CAISO conducts the following RTM processes that provide a financially binding Schedule and a financially binding settlement price: 1) the Fifteen-Minute Market (FMM), 2) the Short-Term Unit Commitment (STUC), and 3) the Real-Time Dispatch (RTD).

The FMM runs every fifteen (15) minutes and utilizes the SCUC optimization to commit Fast Start and some Short Start Units and to procure any needed AS on a fifteen-minute basis. In any given Trading Hour, the FMM may commit resources in the four to seven subsequent fifteen-minute intervals, depending on when during the hour the run occurs. Not all resources committed in a given Short-Term Unit Commitment (STUC) or FMM 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.

STUC runs once per hour at approximately 47.5 minutes before the applicable Trading 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 and Proxy Demand Resource, 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. In any given Trading Hour, the STUC may commit resources for the third fifteen-minute interval of the current Trading Hour and extending into the next four (4) Trading Hours.

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 Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 used in the RTM optimization include current estimates of real-time unscheduled flow at the Interties. In any given five-minute interval, the RTD optimization looks ahead over multiple five-minute intervals, but the CAISO issues Dispatch Instructions only for the next target five-

minute interval. The HASP, FMM, STUC and RTD processes of the RTM use the same Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 used in the DAM ~~and the HASP~~, subject to any necessary updates of the Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 pursuant to changes in grid conditions after the DAM has run. In the case of Multi-Stage Generating Resources, the RTM procedures will optimize Transition Costs in addition to the Start-Up and Minimum Load Costs. If a Scheduling Coordinator submits a Self-Schedule or a Submission to Self-Provide Ancillary Services for a given MSG Configuration in a given Trading Hour, all of the RTM processes will consider the Start-Up Cost, Minimum Load Cost, and Transition Cost associated with any Economic Bids for other MSG Configurations as incremental costs between the other MSG Configurations and the self-scheduled MSG Configuration. In such cases, incremental costs are the additional costs incurred to transition or operate in an MSG Configuration in addition to the costs associated with the self-scheduled MSG Configuration.

34.1 Inputs To The Real-Time Market

34.1.1 Day-Ahead Market Results as Inputs to the Real-Time Market

The RTM utilizes results produced by the DAM for each Trading Hour of the Trading Day, including the combined commitments contained in the Day-Ahead Schedules, Day Ahead AS Awards, and RUC Awards. Although the RTM utilizes such results as an input to the RTM and the transactions associated with those DAM results are settled based on the relevant DAM prices, such transactions are not deemed performed until the Real-Time. Virtual Bids and Virtual Awards are not submitted to the Real-Time Market, although Virtual Bids and Virtual Awards are settled based on prices from the FMM. These results, plus the short-term Demand Forecast, Real-Time Energy Bids, Real-Time Ancillary Service Bids, updated Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6, State Estimator output, resource outage and de-rate information constitute the inputs to the RTM processes.

34.1.2 Submission Of Bids For The RTM

Scheduling Coordinators may submit Bids, including Self-Schedules, for Supply that will be used for the RTM processes. Bids can be: (1) an Economic Bid for a Schedule in the FMM and RTM;

(2) a Self-Schedule for acceptance to the FMM and RTM; (3) a Self-Schedule Hourly Block; (4) a Variable Energy Resource Self-Schedule; (5) an Economic Hourly Block Bid; or (6) an Economic Hourly Block Bid with Intra-Hour Option. Scheduling Coordinators may submit such Economic Bids and Self-Schedules starting from the time Day-Ahead Schedules are 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 or any portion of the RTM. Scheduling Coordinators may submit Bids, including Self-Schedules, for exports at Scheduling Points in the RTM~~, provided that the Bid is otherwise submitted in a valid manner~~. The rules for submitted Bids specified in Section 30 apply to Bids submitted to the RTM.

34.1.3 Real-Time Validation of Schedules and Bids

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~~insert a Generated Bid in the event of a volumetric shortfall in an entity's bids relative to its obligations associated with a ~~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~~ for use in the RTM. Schedules and Bids submitted to ~~HASP and~~ the RTM to supply Energy and Ancillary Services will be considered in the various ~~HASP and~~ RTM processes, including the MPM process, the HASP optimization, the STUC, the FMM and the RTD.

34.1.4 Mitigating the Bid Sets Used in the RTM Optimization Processes

After the Market Close of the RTM, after the CAISO has validated the Bids pursuant to Section 30.7 and Section 34.1.2.2, and prior to conducting any other RTM processes, the CAISO conducts a MPM process. The results are used in the RTM optimization processes. Bids on behalf of Demand Response Resources, Participating Load, and Non-Generator Resources are considered in the MPM process but are not subject to Bid mitigation. The MPM process

produces results for each fifteen (15) minute interval of the Trading Hour and thus may produce up to four mitigated Bids for any given resource for the Trading Hour. The determination as to whether a Bid is mitigated is made based on the non-competitive Congestion component of each LMP for each fifteen (15) minute interval of the applicable Trading Hour, using the methodology set forth in Sections 31.2.2 and 31.2.3 above.

If a Bid is mitigated in the MPM process for the first fifteen (15) minute interval for a Trading Hour, the mitigated Bid will be utilized for all market applications for that first fifteen (15) minute interval. If a Bid is not mitigated in the first fifteen (15) minute interval, it is subject to mitigation in subsequent fifteen (15) minute intervals of the Trading Hour as determined in the MPM runs for the subsequent intervals and is otherwise subject to Bid mitigation. For each Trading Hour, any Bid mitigated in a prior fifteen (15) minute interval of that Trading Hour will continue to be mitigated in subsequent intervals of that Trading Hour and may be further mitigated as determined in the MPM runs for any subsequent fifteen (15) minute interval. A single mitigated Bid for the entire Trading Hour is calculated using the minimum Bid price of the four mitigated Bid curves at each Bid quantity level.

For RMR Units, RMR Proxy Bids resulting from the MPM process will be utilized in all RTM optimization processes for each Trading Hour. For a Condition 1 RMR Unit, the use of RMR Proxy Bids is determined based on the non-competitive Congestion component of each LMP for each fifteen (15) minute interval of the applicable Trading Hour, using the methodology set forth in Section 31.2.2 above. If a Condition 2 RMR Unit is issued a Manual RMR Dispatch by the CAISO, then RMR Proxy Bids for all of the unit's Maximum Net Dependable Capacity will be considered in the MPM process. For both Condition 1 and Condition 2 RMR Units, when mitigation is triggered, a single RMR Proxy Bid for the entire Trading Hour is calculated using the same methodology described above for non-RMR Units. For a Condition 1 RMR Unit that has submitted Bids and has not been issued a Manual RMR Dispatch, to the extent that the non-competitive Congestion component of an LMP calculated in the MPM process is greater than zero, and that MPM process dispatches a Condition 1 RMR Unit at a level such that some portion of its market Bid exceeds the Competitive LMP at the RMR Unit's Location, the resource will be

flagged as an RMR dispatch if it is dispatched at a level higher than the dispatch level determined by the Competitive LMP. Both Condition 1 and Condition 2 RMR Units may be issued manual RMR dispatches at any time to address local reliability needs or to resolve non-competitive constraints.

34.1.5 Eligible Intermittent Resources Forecast

For Eligible Intermittent Resources that have elected to use the resource's own forecast as specified in Section 4, the responsible Scheduling Coordinator must submit to the CAISO their forecast to the ISO for the binding interval at 37.5 minutes prior to flow (the start of the market optimization for the binding interval). If no forecast is provided, the CAISO will use the resource's direct telemetry MW output for dispatch. The ISO will use the forecast data received 37.5 minutes prior to start of the applicable FMM optimization run.

For Participating Intermittent Resources that have elected Protective Measures, ninety (90) minutes prior the applicable Trading Hour the responsible Scheduling Coordinator must submit to the Real-time Market an hourly Self-Schedule of MWhs that is equal to the MWhs specified in the independent forecast provided under the Participating Intermittent Resource Program.

34.2 The HASP – Schedules Without Prices

The following RTM processes constitute the HASP: 1) accepting Self-Schedule Hourly Blocks for Energy and Ancillary Services, 2) accepting VER Self-Schedules for Energy, 3) optimizing Economic Hourly Block Bids for Energy and Ancillary Services, 4) optimizing Economic Hourly Block Bids with Intra-Hour Option for Energy and providing an hourly schedule that can be changed at most once in the Trading Hour, and 5) providing purely advisory FMM Energy schedules and Ancillary Services awards and binding unit commitment for all other resources participating in the RTM. No resource will be settled using a price generated through the HASP.

34.2.1 The HASP Optimization

After the Market Close for the RTM for the relevant Trading Hour, the RTM Bids have been validated, and the RTM Bids have been mitigated and the MPM process has been performed, the CAISO then conducts the HASP optimization.

The HASP, like the other runs of the RTM, utilizes the same SCUC optimization and Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 as the IFM, with the Base Market Model adjusted as described in Sections 27.5.1 and 27.5.6 updated to reflect changes in system conditions as appropriate, to ensure that RTM Intertie Energy Schedules and Ancillary Services Awards 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 process. The HASP optimization also factors in forecasted unscheduled flow at the Interties. The HASP optimization does not produce Settlement prices for Energy or Ancillary Services. The Energy and Ancillary Services are Settled based on LMPs resulting from FMM and RTD and ASMPs from FMM.

Comment [A4]: See comment in overview.

34.2.2 Treatment of Self-Schedules in HASP

The HASP optimization does not adjust submitted Self-Schedules or Self-Provided Hourly Blocks, or Self-Scheduled Variable Energy Resources 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 to accommodate operational restrictions. Once accepted, HASP Intertie Self-Schedules or Self-Provision are considered as Self-Schedules or Self-Provision in each of the four FMM intervals. For Variable Energy Resource Self-Schedules, the CAISO uses the Self-Schedule in the HASP optimization and the Scheduling Coordinator can update the Self-Schedule based on the most current Energy forecast, if it registers in Master File to submit its own forecast. The HASP produces advisory MWh schedules for each of the four fifteen-minute intervals for FMM Economic Bids cleared in HASP, which can vary from the MWhs schedules cleared in the Fifteen Minute Market. 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. Scheduling Coordinators representing Participating Intermittent Resources whose output is being used to satisfy a resource adequacy requirement must submit Variable Energy Resource 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.

34.2.3 Ancillary Services in the HASP and FMM

All Operating Reserves procured in RTM are Contingency Only Operating Reserves, as described in Section 30.5.2.6. Scheduling Coordinators submitting Ancillary Services Bids for Non-Dynamic System Resources in the RTM must also submit an Energy Bid under the same Resource ID for the associated Ancillary Services Bid. For these Non-Dynamic System Resources, the CAISO will only use the Ancillary Services Bid in the HASP optimization and will not Schedule Energy in HASP, FMM, or RTD from the Energy Bid provided under the same Resource ID as the Ancillary Services Bid. The CAISO may dispatch Energy from the Contingency Only Operating Reserves awarded to Non-Dynamic System Resources in HASP through the Real-Time Contingency Dispatch as described in Section 34.3.2.

34.2.4 HASP Results

The CAISO publishes the results of the HASP processes no later than forty-five (45) minutes prior to the Trading Hour.

34.2.5 Cessation of the HASP

If, despite the variation of any time requirement or omission of any step, the CAISO is unable to operate any or all of the HASP processes, the CAISO may abort the HASP and perform all remaining RTM processes.

34.3 Fifteen-Minute Market

The FMM uses SCUC and is run every fifteen (15) minutes to: (1) make commitment decisions for Fast Start and Short Start Units having Start-Up Times within the applicable time periods described below in this section; (2) determine financially binding FMM Schedules and corresponding LMPs; (3) determine financially and operationally binding Ancillary Services

Awards and corresponding ASMPs for the next fifteen-minute interval; () determine LAP LMPs that are the basis for settling Demand; and (5) receive and process all Variable Energy Resources forecasts (as selected by CAISO) and establish the Upper Economic Limit for the resource with an Economic Bid or Self-Schedule for the FMM. The FMM optimization may factor in forecasted unscheduled flow at the Interties.

Comment [A5]: See comments in overview

Comment [A6]: See comment in overview under 34.2.1.

In any FMM interval (which consists of fifteen minutes) that falls within a time period in which a Multi-Stage Generating Resource is transitioning from one MSG Configuration to another MSG Configuration, the CAISO: (1) will not award any incremental Ancillary Services; (2) will disqualify any Day-Ahead Ancillary Services Awards; (3) will disqualify Day-Ahead qualified Submissions to Self-Provide Ancillary Services Award, and (4) will disqualify Submissions to Self-Provide Ancillary Services in RTM. For Multi-Stage Generating Resources the FMM will issue a binding Transition Instruction separately from the binding Start-Up or Shut Down instructions.

The FMM will clear against the CAISO Forecast of CAISO Demand. The FMM issues Energy Schedules and Ancillary Services Awards by twenty-two and a half minutes prior to the binding fifteen-minute interval.

The FMM can also be run with the Contingency Flag activated, in which case the FMM can commit Contingency Only Operating Reserves. If FMM is run without the Contingency Flag activated, it cannot commit Contingency Only Operating Reserves. FMM is run at the following time intervals: (1) at approximately 67.5 minutes prior to the next Trading Hour, in conjunction with the HASP run, for T-30 minutes to T+60 minutes; (2) at approximately 7.5 minutes into the current hour for T-15 minutes to T+60 minutes; (3) at approximately 22.5 minutes into the current hour for T to T+60 minutes; and (4) at approximately 37.5 minutes into the current hour for T+15 to T+60 minutes where T is the beginning of the next Trade Hour. The HASP is a special FMM run that is performed at approximately 67.5 minutes ~~before each~~prior to the next Trading Hour and has the additional responsibility of pre-dispatching Energy and awarding Ancillary Services for HASP Block Intertie Schedules. A Day-Ahead Schedule or RUC Schedule for an MSG Configuration that is later impacted by the resource's derate or outages, will be reconsidered in the FMM process taking into consideration the impacts of the derate or outage on the available

MSG Configurations. Each particular FMM market optimization produces binding settlement prices for Energy and AS for the first FMM interval approximately twenty-two and a half (22.5) minutes before the first FMM interval in the FMM horizon but the optimization considers the advisory results from subsequent market intervals within the FMM horizon. Hourly Intertie Schedules and Hourly AS Awards are settled in accordance with Section ~~11.4~~11.5.9 and 11.10.1.2, respectively. In the event that a ~~FMM~~ RTM run fails, the CAISO reverts to the advisory results for the same interval from the previous ~~FMM~~ RTM market run.

34.3.1 Commitment Of Fast Start And Short Start Units

The FMM produces binding and advisory Start-Up and Shut-Down Dispatch Instructions for Fast Start and Short Start Units that have Start-Up Times that would allow the resource to be committed prior to the end of the relevant time period of the FMM run as described in Section 34.3. A Start-Up Dispatch Instruction is considered binding in any given FMM run if the Start-Up Time of the resource is such that there would not be sufficient time for a subsequent FMM run to Start-Up the resource. A Start-Up Instruction is considered advisory if it is not binding, such that the resource could achieve its target Start-Up Time as determined in the current FMM run in a subsequent FMM run based on its Start-Up Time. A Shut-Down Instruction is considered binding if the resource could achieve the target Shut-Down Time as determined in the current FMM in a subsequent FMM run. A Shut-Down Dispatch Instruction is considered advisory if the resource Shut-Down Instruction is not binding such that the resource could achieve its target Shut-Down time as determined in the current FMM run in a subsequent FMM run. A binding Dispatch Instruction that results in a change in Commitment Status will be issued, in accordance with Section 6.3, after review and acceptance of the Start-Up Instruction by the CAISO Operator. An advisory Dispatch Instruction changing the Commitment Status of a resource may be modified by the CAISO Operator to a binding Dispatch Instruction and communicated in accordance with Section 6.3 after review and acceptance by the CAISO Operator. Only binding and not advisory Dispatch Instructions will be issued by the CAISO. For Multi-Stage Generating Resources the CAISO will also issue binding Transition Instructions when the Multi-Stage Generating Resource must change from one MSG Configuration to another. A Transition Instruction is considered

binding in any given FMM run if the Transition Time for the Multi-Stage Generating Resource is such that there would not be sufficient time for a subsequent FMM run to transition the resource.

34.3.2 Real-Time Ancillary Services Procurement

If the CAISO determines that additional Ancillary Services are required, other than those procured in the IFM and~~,~~ HASP, the FMM will procure Ancillary Services on a fifteen (15) minute basis as necessary to meet reliability requirements and will determine Real-Time Ancillary Service interval ASMPs for such AS for the next Commitment Period. All Operating Reserves procured in the RTM are considered Contingency Only Operating Reserves. Any Ancillary Service awarded in FMM will be taken as fixed for the three (3) five (5) minute RTD intervals of its target fifteen (15) minute interval. In the FMM, all resources certified and capable of providing Operating Reserves that have submitted Real-Time Energy Bids shall also submit applicable Spinning or Non-Spinning Reserves Bids, respectively, depending on whether the resource is online or offline. The CAISO will utilize the FMM to procure Operating Reserves to restore its Operating Reserve requirements in cases when: (1) Operating Reserves awarded in IFM~~, HASP~~ or ~~FMM~~ RTM have been dispatched to provide Energy, (2) resource(s) awarded to provide Operating Reserves in the IFM~~, HASP~~ or ~~FMM~~ RTM are no longer capable of providing such awarded Operating Reserves, or (3) the Operator determines that additional Operating Reserves are necessary to maintain Operating Reserves within NERC and WECC reliability standards, and any requirements of the NRC. The CAISO will utilize the FMM to procure additional Regulation capacity in Real-Time in cases when: (1) resource(s) awarded to provide Regulation in the IFM~~,~~ ~~HASP~~ or ~~FMM~~ RTM are no longer capable of providing such awarded Regulation, or (2) the Operator determines that additional Regulation is necessary to maintain sufficient control consistent with NERC and WECC reliability standards, and any requirements of the NRC and Good Utility Practice. The FMM will produce fifteen (15) minute ASMPs for the four (4) binding fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute ASMPs are then used for the Settlement of the fifteen (15) minute AS Awards. The FMM run will also produce fifteen (15) minute Shadow Prices for each of the Interties for the four (4) fifteen (15) minute intervals for the applicable Trading Hour. These fifteen (15) minute Shadow Prices are

then used to charge for Intertie Real-Time AS Award providers for Congestion on the Interties. FMM AS Awards are settled in accordance with 11.10.1.3.

34.4 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 34.9, 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. If the CAISO awards a Non-Dynamic System Resource Ancillary Services in the IFM, HASP, or FMM and issues a Dispatch Instruction in the middle of the Trading Hour for Energy associated with its Ancillary Services (Operating Reserve) capacity, the CAISO will Dispatch the Non-Dynamic System Resource to operate at a constant level until the end of the Trading Hour. If the CAISO dispatches a Non-Dynamic System Resource such that the binding interval of the Dispatch is in the next Trading Hour, the CAISO will dispatch Energy from the Non-Dynamic System Resource at a constant level until the end of the next Trading Hour. The dispatched Energy will not exceed the awarded Operating Reserve capacity for the next Trading Hour and will be at a constant level for the entire next Trading Hour. 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 (3) modes of the RTD are described in Sections 34.3.1 to 34.3.3.

34.4.1 Real-Time Economic Dispatch

RTED mode of operation for RTD normally runs every five (5) minutes starting at approximately 7.5 minutes prior to the start of the next Dispatch Interval and produces binding Dispatch Instructions for Energy for the next Dispatch Interval and advisory Dispatch Instructions for multiple future Dispatch Intervals through at least the next Trading Hour. After being reviewed by

the CAISO Operator, only binding Dispatch Instructions are communicated for the next Dispatch Interval in accordance with Section 6.3. RTED will produce a Dispatch Interval LMP for each PNode for the Dispatch Interval associated with the binding Dispatch Instructions. The RTED Dispatch target is the middle of the interval between five (5) minutes boundary points. For Variable Energy Resources that forecast with 15-minute granularity, the CAISO will divide the 15-minute forecast by 3 and return this value as the RTD instructed energy. For Variable Energy Resources that forecast with 5 minute granularity, the ISO will use the 5-minute forecast available prior to the start of the RTD optimization to determine the instructed energy of the resource. RTD will return the 5-minute forecast value as the instructed energy for the binding RTD interval.

34.4.2 Real-Time Contingency Dispatch

34.4.2.1 RTCD Mode

RTCD mode of operation for RTD is run in response to a significant Contingency event, such that waiting until the next normal RTD run is not adequate and/or Operating Reserves identified as Contingency Only need to be activated in response to the event. The CAISO Operator may activate Operating Reserves identified as Contingency Only either on a resource specific-basis or for all such resources. When activating Contingency Only reserves in RTCD, the original Energy Bids associated with the resources providing Operating Reserve will be used for the RTCD. RTCD uses SCED to produce an optimized set of binding Dispatch Instructions for one (1) or more ten-minute Dispatch Intervals instead of a normal five-minute Dispatch Interval. Resources must respond to RTCD Dispatch Instructions as soon as possible. After being reviewed by the CAISO Operator, only binding Dispatch Instructions are communicated for the next Dispatch Interval in accordance with Section 6.3. When activating a RTCD and returning to normal RTED run after a RTCD run, five-minute Dispatch Interval LMPs will be produced for each PNode based on the last available price from either the RTCD or normal RTED run relative to a five-minute target Dispatch Interval.

34.4.2.2 RTDD Mode

RTDD is a special mode of the RTCD available to the CAISO Operator when 300 MW or more of capacity is needed to respond to a significant Contingency event. RTDD will not use SCED.

Instead, RTDD will give Dispatch priority to Energy Bids from Operating Reserve capacity over Energy Bids from non-Operating Reserve capacity. RTDD will dispatch the Operating Reserve capacity in merit order and will then dispatch the non-Operating Reserve capacity in merit order based on available MW within the capacity's ten-minute ramping capability. As with the RTCD mode, in the RTDD mode, the CAISO Operator may activate Operating Reserves identified as Contingency Only either on a resource-specific basis or for all such resources. Resources must respond to RTDD Dispatch Instructions as soon as possible. During each ten-minute Dispatch Interval in which RTDD is employed, the Energy Bid of the highest-priced resource dispatched under RTDD will be used to set the Market Clearing Price on a system-wide basis for all resources dispatched under RTDD. The Market Clearing Price will not reflect Transmission Losses or Transmission Constraints.

34.4.3 Real-Time Manual Dispatch

RTMD mode of operation for RTD is a merit-order run activated upon CAISO Operator request as a backup process in case the normal RTED process fails to converge. The RTMD run will provide the CAISO Operator a list of resources and quantity of MW available for Dispatch in merit-order based on Operational Ramp Rate but otherwise ignores Transmission Losses and Transmission Constraints. The CAISO Operator may dispatch resources from the list by identifying the quantity of Imbalance Energy that is required for the system and/or directly selecting resources from the merit order taking into consideration actual operating conditions. After Dispatches have been selected, reviewed and accepted by the CAISO Operator, Dispatch Instructions will be communicated in accordance with Section 6.3. While the RTMD mode is being used for Dispatch a uniform five-minute MCP will be produced for all PNodes based on the merit order Dispatch. Until RTMD is actually run and RTMD-based Dispatch Instructions are issued after RTED fails to converge, all five-minute Dispatch Interval LMPs will be set to the last LMP at each Node produced by the last RTED run that converged.

34.5 Short-Term Unit Commitment

At the top of each Trading Hour, immediately after the FMM run is completed the CAISO performs an approximately five (5) hour Short-Term Unit Commitment (STUC) run using SCUC

and the CAISO Forecast of CAISO Demand to commit Medium Start Units and Short Start Units with Start-Up Times greater than the time period covered by the FMM described in Section 34.3. The STUC looks ahead over a period of at least three (3) hours beyond the Trading Hour for which the FMM optimization was run, and will utilize Bids available from other CAISO Markets for that Trading Hour for these additional hours. The CAISO revises these replicated Bids each time the hourly STUC is run, to utilize the most recently available Bids. A Start-Up Instruction produced by STUC is considered binding if the resource could not achieve the target Start-Up Time as determined in the current STUC run in a subsequent FMMor STUC run as a result of the Start-Up Time of the resource. A Start-Up Instruction produced by STUC is considered advisory if it is not binding, such that the resource could achieve its target start time as determined in the current FMM run in a subsequent FMM or STUC run based on its Start-Up Time. A binding Dispatch Instruction produced by STUC that results in a change in Commitment Status will be issued, in accordance with Section 6.3, after review and acceptance of the Start-Up Instruction by the CAISO Operator. The STUC will only decommit a resource to the extent that resource's physical characteristics allow it to be cycled in the same approximately five (5) hour look-ahead time period for which it was previously committed. STUC does not produce Locational Marginal Prices for Settlement. A Day-Ahead Schedule or RUC Schedule for an MSG Configuration that is later impacted by the resource's derate or outages, will be reconsidered in the STUC process taking into consideration the impacts of the derate or outage on the available MSG Configurations.

34.6 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 (4) 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 applicable forward-looking time

period 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 RTDD and 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. For Multi-Stage Generating Resources the determination of the point of reference is further affected by the MSG Configuration and the information contained in the Transition Matrix;

(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 forward-looking time period, 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 forward-looking time period 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, considering the applicable MSG Configuration;

(7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads and Proxy Demand Resources, over the forward-looking time period for the RTM based on submitted Bids, Start-Up Costs and Minimum Load Costs, Pumping Costs and Pump Shut-Down Costs, as appropriate for the resource, or for Multi-Stage Generating Resource as appropriate for the applicable MSG Configuration, 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 applicable time periods of the various CAISO Markets Processes that comprise the RTM;

(9) The RTM optimization may result in resources being shut down consistent with their Bids and operating characteristics provided that: (a) the resource does not need to be on-line to provide Energy, (b) the resource is able to start up within the applicable time periods of the processes that comprise the RTM, (c) the Generating Unit is not providing Regulation or Spinning Reserve, and (d) 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;

(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;

(11) For Multi-Stage Generating Resources the CAISO will issue Dispatch Instructions by Resource ID and Configuration ID;

(12) The CAISO may issue Transition Instructions to instruct resources to transition from one MSG Configuration to another over the forward-looking time period for the RTM based on submitted Bids, Transition Costs and Minimum Load Costs, as appropriate for the MSG Configurations involved in the MSG Transition, consistent with Transition Matrix and operating characteristics of these MSG Configurations. The RTM optimization will factor in limitations on Minimum Run Time and Minimum Down Time defined for each MSG configuration and Minimum Run Time and Minimum Down Time at the Generating Unit or Dynamic Resource-Specific System Resource.

34.7 Dispatch of Dispatch to Units, Participating Loads, and PDR

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, Proxy Demand Resources, 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;

(d) the operation of voltage control equipment applied on Generating Units as described in this CAISO Tariff;

(e) MSS Load following instructions provided to the CAISO, which the CAISO incorporates to create their Dispatch Instructions;

(f) necessary to respond to a System Emergency or imminent emergency; or

(g) Transition Instructions.

34.8 Utilization Of The Energy Bids

The CAISO uses Energy Bids for the following purposes: (i) satisfying Real-Time Energy needs; (ii) mitigating Congestion; (iii) maintaining aggregate Regulation reserve capability in Real-Time; (iv) allowing recovery of Operating Reserves utilized in Real-Time operations; (v) procuring Voltage Support required from resources beyond their power factor ranges in Real-Time; (vi) establishing LMPs; (vii) as the basis for Bid Cost Recovery; and (viii) to the extent a Real-Time Energy Bid Curve is submitted starting at minimum operating level for a Short Start Unit that is scheduled to be on-line, the RTM may Dispatch such a resource down to its minimum operating level and may issue a Shut-Down Instruction to the resource based on its Minimum Load Energy costs.

34.9 Dispatch Of Energy From Ancillary Services

The CAISO may issue Dispatch Instructions to Participating Generators, Participating Loads, Proxy Demand Resources, (via communication with the Scheduling Coordinators of Demand Response Providers) 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, Proxy Demand Resources, 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 NERC and WECC reliability standards, including any requirements of the NRC. 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 34.4.2, 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 NERC and WECC reliability standards, including any requirements of the NRC. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy NERC and WECC reliability standards, including any requirements of the NRC, the CAISO shall restore the Operating Reserves to the extent necessary to meet NERC and WECC reliability standards, including any requirements of the NRC 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.

34.10 Exceptional Dispatch

The CAISO may issue Exceptional Dispatches for the circumstances described in this Section 34.10, which may require the issuance of forced Shut-Downs, forced Start-Ups, or forced MSG Transitions 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 34.10, the CAISO shall consider the effectiveness of the resource along with Start-Up Costs, Transition 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. In accordance with Good Utility Practice, the CAISO shall make CPM designations of Eligible Capacity for an Exceptional Dispatch by applying the following additional criteria in the order listed:

(1) the effectiveness of the Eligible Capacity at meeting the designation criteria specified in Section 43.2;

(2) the capacity costs associated with the Eligible Capacity;

(3) the quantity of a resource's available Eligible Capacity, based on a resource's PMin, relative to the remaining amount of capacity needed;

(4) the operating characteristics of the resource, such as dispatchability, Ramp Rate, and load-following capability; and

(5) whether the resource is subject to restrictions as a Use-Limited Resource.

In applying these selection criteria, the goal of the CAISO will be to issue Exceptional Dispatches on a least-cost basis to resources that will be effective in meeting the reliability needs underlying the Exceptional Dispatches. In making this determination, the CAISO will apply the first criterion to identify the effective Eligible Capacity by considering the effectiveness of the resources at meeting the designation criteria for the Exceptional Dispatch and at resolving the underlying reliability need. The CAISO will apply the second criterion by considering the cost of the effective Eligible Capacity. The CAISO will endeavor to Exceptionally Dispatch a resource at the CPM Capacity price determined in accordance with Section 43.6.1 before selecting a resource with a higher unit-specific CPM Capacity price specified under Section 43.6.2. The CAISO will endeavor to Exceptionally Dispatch resources that have specified a capacity price before designating resources that have not specified a CPM Capacity price under Section 43.6.2.1. The CAISO will apply the third criterion by considering the quantity of a resource's Eligible Capacity. The CAISO will endeavor to select a resource that has a PMin at or below the capacity that is needed to meet the reliability need before selecting a resource that has a PMin that would result in over-procurement. The CAISO will apply the fourth criterion by considering specific operating characteristics of a resource, such as dispatchability, ramp rate, and load-following capability to the extent that such characteristics are an important factor in resolving the reliability need. The CAISO will apply the fifth criterion by considering whether a resource is use-limited and whether that status may restrict its ability to be available to the CAISO in the Day-Ahead Market and Real-Time Market throughout the period for which it is being procured. To the extent that use-limited

resources are capable of performing the required service for the duration of the Exceptional Dispatch, the CAISO will not unduly discriminate in favor of non-Use Limited resources when applying the selection criteria. Imbalance Energy delivered or consumed pursuant to the various types of Exceptional Dispatch is settled according to the provisions in Section 11.5.6.

34.10.1 System Reliability Exceptional Dispatches

The CAISO may issue a manual Exceptional Dispatch for Generating Units, System Units, Participating Loads, Proxy Demand Resources, 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 received a HASP Block Intertie Schedule.

34.10.2 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 periodic testing of Generating Units, including 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 RTM; (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.

34.10.3 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 34.10.3 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.

34.10.4 Reporting Requirements

On the fifteenth day of each month, the CAISO shall file with the Commission and post to the CAISO Website an initial report concerning the Exceptional Dispatches that occurred in the month two months prior to the month in which the report is filed. The report shall identify the frequency, volume, costs, causes, and degree of mitigation of Exceptional Dispatches during such period to the extent such data are available. On the thirtieth day of the month following the month in which the initial report is filed, the CAISO shall file with the Commission and post to the CAISO Website a revised and updated report for the same period.

34.11 CAISO Market Adjustment To Non-Priced Quantities In The RTM

All Self-Schedules are respected by the SCED and SCUC to the maximum extent possible and are protected from curtailment in the Congestion Management process to the extent that there are effective Economic Bids that can relieve Congestion. If all Effective Economic Bids for the

RTM are exhausted, all Self-Schedules between the Minimum Load and the lowest Energy level of the first Energy Bid point will be subject to uneconomic adjustments based on assigned scheduling priorities. This functionality of the optimization software is implemented through the setting of scheduling parameters as described in Section 27.4.3 and specified in Section 27.4.3.1 and the BPMs. Through this process, imports and exports may be reduced to zero, Demand may be reduced to zero, and Generation may be reduced to a lower operating limit (or Regulation Limit) (or to a lower Regulation Limit plus any qualified Regulation Down Award or Self-Provided Ancillary Services, if applicable). Any Self-Schedules below the Minimum Load level are treated as fixed Self-Schedules and are not subject to uneconomic adjustments for Congestion Management but may be subject to decommitment via an Exceptional Dispatch if necessary as a last resort to relieve Congestion that could not otherwise be managed.

34.11.1 Increasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for increasing Supply as reflected from higher to lower priority are as follows:

(a) Non-Participating Load reduction, exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports, or Self-Schedules for exports at Scheduling Points in RTM served by Generation from non-Resource Adequacy Capacity or from non-RUC Capacity;

(b) Self-Schedules for exports at Scheduling Points in RTM not offered by Generation from non-Resource Adequacy Capacity or not offered by Generation from non-RUC Capacity, except those exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports as set forth in Section 34.11.1(a); and

(c) Contingency Only Operating Reserve if activated by Operator to provide Energy (as indicated by the Contingency Flag and the Contingency condition);

34.11.2 Decreasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for decreasing Supply as reflected from higher to lower priority are as follows:

(a) Non-Participating Load increase;

(b) Reliability Must Run (RMR) Schedule (Day-Ahead manual pre-dispatch or Manual RMR Dispatches or Dispatches that are flagged as RMR Dispatches following the MPM-RRD process);

(c) Transmission Ownership Right (TOR) Self-Schedule;

(d) Existing Rights (ETC) Self-Schedule;

(ef) Regulatory Must-Run and Regulatory Must-Take (RMT) Self-Schedule;

(fe) Participating Load increase;

(gh) Day-Ahead Supply Schedule; and

(hi) Self-Schedule Hourly Block.

These dispatch priorities as defined in the RTM optimization may be superseded by operator actions and procedures as necessary to ensure reliable operations.

34.12 Means Of Dispatch Communication

The CAISO dispatches Regulation by AGC to Participating Generators and, for Dynamic System Resources, through dedicated communication links that satisfy the CAISO's standards for external imports of Regulation. The CAISO communicates all other Dispatch Instructions electronically, except that, at the CAISO's discretion, the CAISO may communicate Dispatch Instructions by telephone, or facsimile. Scheduling Coordinators shall confirm the Dispatch Instructions that are communicated orally by repeating them to the CAISO employee providing the Dispatch Instruction. Except in the case of deteriorating system conditions or an actual or threatened System Emergency, and except for Dispatch Instructions for Regulation, the CAISO sends all Dispatch Instructions to the Scheduling Coordinator. The recipient Scheduling

Coordinator shall immediately communicate the Dispatch Instruction to the operator of the resource. The CAISO may, with the prior permission of the applicable Scheduling Coordinator, communicate with and give Dispatch Instructions to the operators of the resource directly without having to communicate through their Scheduling Coordinator. The CAISO shall record the communications between the CAISO and Scheduling Coordinators relating to Dispatch Instructions in a manner that permits auditing of the Dispatch Instructions, and of the response of the resources, as applicable. In situations of deteriorating system conditions or System Emergency, the CAISO reserves the right to communicate directly with the resource(s) as required to ensure System Reliability. Scheduling Coordinators are required to advise the CAISO immediately of any change in resource availability that prevents the recipient of a Dispatch Instruction from performing in accordance with that Dispatch Instruction.

34.12.1 Response Required By Resources To Dispatch Instructions

Resources must:

(a) unless otherwise stated in the Dispatch Instruction, comply with a Dispatch Instruction immediately upon receipt;

(b) respond to all Dispatch Instructions in accordance with Good Utility Practice;

(c) meet voltage criteria in accordance with the provisions in the CAISO Tariff;

(d) meet any applicable Operational Ramp Rates;

(e) respond to Dispatch Instructions for Ancillary Services within the required time periods and (in the case of Participating Generators providing Regulation) respond to AGC from the EMS; and

(f) if a time frame is stated in a Dispatch Instruction, respond to a Dispatch Instruction within the stated time frame.

34.12.2 Failure To Conform To Dispatch Instructions

In the event that, in carrying out the Dispatch Instruction, an unforeseen problem arises (relating to plant operations or equipment, personnel or the public safety), the recipient of the Dispatch

Instruction must notify the CAISO or, in the case of a Generator, the relevant Scheduling Coordinator immediately. The relevant Scheduling Coordinator shall notify the CAISO of the problem immediately. If a resource is unavailable or incapable of responding to a Dispatch Instruction, or fails to respond to a Dispatch Instruction in accordance with its terms, the resource shall be considered to be non-conforming to the Dispatch Instruction unless the resource has notified the CAISO of an event that prevents it from performing its obligations within thirty (30) minutes of the onset of such event through a SLIC log entry. Notification of non-compliance via the Automated Dispatch System (ADS) will not supplant nor serve as the official notification mechanism to the CAISO. If the resource is considered to be non-conforming as described above, the Scheduling Coordinator for the resource concerned shall be subject to Uninstructed Imbalance Energy as specified in Section 11.5.2 and Uninstructed Deviation Penalties as specified in Section 11.23. This applies whether any Ancillary Services concerned are contracted or Self-Provided. For a Non-Dynamic System Resource Dispatch Instruction prior to the Trading Hour, the Scheduling Coordinator shall inform the CAISO of its ability to conform to a Dispatch Instruction via ADS. The Non-Dynamic System Resource has the option to accept, partially accept, or decline the Dispatch Instruction, but in any case must respond within the timeframe specified in a Business Practice Manual. The Non-Dynamic System Resource can change its response within the indicated timeframe. If a Non-Dynamic System Resource does not respond within the indicated timeframe, the Dispatch Instruction will be considered declined. A decline of such a Non-Dynamic System Resource for a Dispatch Instruction received at least forty (40) minutes prior to the Trading Hour will be subject to Uninstructed Deviation Penalties as specific in Section 11.23. A decline of such a Non-Dynamic System Resource for a Dispatch Instruction received less than forty (40) minutes prior to the Trading Hour will not be subject to Uninstructed Deviation Penalties. A Non-Dynamic System Resource that only partially accepts a Dispatch Instruction is subject to Uninstructed Deviation Penalties for the portion of the Dispatch Instruction that is declined.

When a resource demonstrates that it is not following Dispatch Instructions, the RTM will no longer assume that the resource will ramp from its current output level. The RTM assumes the

resource to be "non-compliant" if it is deviating its five (5)-minute Ramping capability for more than N intervals by a magnitude determined by the CAISO based on its determination that it is necessary to improve the calculation of the expected Imbalance Energy as further defined in the BPM. When a resource is identified as "non-compliant," RTM will set the Dispatch operating target for that resource equal to its actual output in the Market Clearing software such that the persistent error does not cause excessive AGC action and consequently require CAISO to take additional action to comply with reliability requirements. Such a resource will be considered to have returned to compliance when the resource's State Estimator or telemetry value (whichever is applicable) is within the above specified criteria. During the time when the resource is "non-compliant", the last applicable Dispatch target shall be communicated to the Scheduling Coordinator as the Dispatch operating target. The last applicable Dispatch target may be (i) the last Dispatch operating target within the current Trading Hour that was instructed prior to the resource becoming "non-compliant," or (ii) the Day-Ahead Schedule, or (iii) awarded Self-Schedule Hourly Blockdepending on whether the resource submitted a Bid and the length of time the resource was "non-compliant," or (iv) for a Dynamic System Resource or a Pseudo-Tie Generating Unit that is an Eligible Intermittent Resource, the most recently available telemetry for the actual output.

34.13 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.

34.14 Treatment Of Resource Adequacy Capacity In The RTM

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 IFM , HASP, 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 IFM, 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 Schedule. Resource Adequacy Resources that are not required to offer their Resource Adequacy Capacity in accordance with Section 40 may voluntarily submit Energy Bids or Ancillary Services Bids. Submitted Energy Bids shall be subject to the maximum and minimum Bid requirements and Mitigation Measures as set forth in Section 39.

34.15 Real-Time Activities In The Hour Prior To Settlement Period

34.14.1 Confirm Interchange Transaction Schedules (ITSs)

Also in the hour prior to the beginning of the Operating Hour the CAISO will:

(a) adjust Interchange transaction schedules (ITSs) as required under Existing Contracts in accordance with the procedures in the CAISO Tariff for the management of Existing Contracts;

(b) adjust ITSs as required by changes in transfer capability of transmission paths occurring after Market Close of the RTM; and

(c) agree on ITS changes with adjacent Balancing Authorities.

34.15.1 Confirm Interchange Transaction Schedules (ITSs)

Also in the hour prior to the beginning of the Operating Hour the CAISO will:

(a) adjust Interchange transaction schedules (ITSs) as required under Existing Contracts in accordance with the procedures in the CAISO Tariff for the management of Existing Contracts;

(b) adjust ITSs as required by changes in transfer capability of transmission paths occurring after Market Close of the RTM; and

(c) agree on ITS changes with adjacent Balancing Authorities.

34.16 Rules For Real-Time Dispatch Of Imbalance Energy Resources

34.16.1 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 will be used as determined based on the time it takes for the resource to cross its Forbidden Operating Region. A resource can only be ramped through a Forbidden Operating Region after being dispatched into a Forbidden Operation Region. The CAISO will not Dispatch a resource within its Forbidden Operating Regions in the Real-Time Market, except that the CAISO may Dispatch the resource through the Forbidden Operating Region in the direction that the resource entered the Forbidden Operating Region at the maximum applicable Ramp Rate over consecutive Dispatch Intervals. A resource with a Forbidden Operating Region cannot provide Ancillary Services in a particular fifteen (15) minute Dispatch Interval unless that resource can complete its transit through the relevant Forbidden Operating Region within that particular Dispatch Interval.

(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 FMM 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. For Multi-Stage Generating Resources these requirements shall be observed both for the Generating Unit or Dynamic Resource-Specific System Resource and MSG Configuration.

(f) Operating (Spinning and Non-Spinning) Reserve. The SCED shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.17.3.

(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 Block 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.

34.16.2 Calculation Of Dispatch Operating Points After Instructions

The RTED process shall calculate Dispatch Operating Points as follows:

(a) After FMM 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 FMM 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.

(c) After FMM issues a Transition Instruction: (1) for MSG Configurations where the operating ranges of the two MSG Configurations do not overlap, the RTD will move the Dispatch Operating Point of the resource immediately from the boundary of the "from" MSG Configuration to the boundary of the "to" MSG Configuration, as defined in the Master File or as modified via the CAISO's outages reporting mechanism, of a Multi-Stage Generating Resource; and (2) for MSG Configurations for which the operating ranges of the two MSG Configurations do overlap, RTD will move the Dispatch Operating Point of the resource within the overlapping operating range of the MSG Configuration until the MSG Transition is complete.

34.16.3 [NOT USED]

34.16.4 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 RTM 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.

34.16.5 Inter-Hour Resources Dispatch 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.

34.16.6 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 Ancillary Services In The Real-Time Market

34.17.1 [NOT USED]

34.17.2 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 34.17.3.2.

34.17.3 Ancillary Services Requirements For RTM Dispatch

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

34.17.3.1 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.

34.17.3.2 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 34.4 and 34.9.

(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 34.4 and 34.9; 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.

34.17.3.3 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 to the RTM or through procurement of additional reserves based on optimization of a resource's RTM Ancillary Service Bid and its Energy Bid.

34.17.3.4 Voltage Support

(a) Voltage Support provided from Generating Units shall meet the standards specified in this CAISO Tariff and Part E of Appendix K.

(b) The CAISO may Dispatch Generating Units to increase or decrease MVar output within power factor limits established pursuant to Section 8.2.3.3 (or within other limits specified by the CAISO in any exemption

granted pursuant to Section 8.2.3.3) at no cost to the CAISO when required for System Reliability.

(c) The CAISO 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 the CAISO Tariff.

(d) If Voltage Support is required in addition to that provided pursuant to Section 34.17.3.4 (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.

(e) The CAISO will monitor voltage levels at Interconnections to maintain them in accordance with the applicable inter-Balancing Authority Area agreements.

34.18 Dispatch Information And Instructions

34.18.1 Dispatch Information To Be Supplied By The CAISO

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

34.18.2 Dispatch Information To Be Supplied By SC

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 Sections 34.11.1 and 34.11.2. 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.

34.18.3 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.

34.18.4 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.

34.18.5 Dispatch Information To Be Supplied By Balancing Authorities

The CAISO and each adjacent Balancing Authority shall keep each other informed of any change or potential change in the status of the Interconnection and any changes in the Interconnection's TTC. The CAISO and each adjacent Balancing Authority shall keep each other informed of

situations such as adverse weather conditions, fires, etc., that could affect the reliability of any Interconnection.

The CAISO and each adjacent Balancing Authority shall follow all applicable NERC and WECC scheduling procedures. This will include checking the Interconnection schedules for the next Settlement Period prior to the start of the Energy ramp going into that hour. The CAISO and each adjacent Balancing Authority shall check and agree on actual MWh net Interchange after the hour for the previous Settlement Period. One Balancing Authority Area shall change its actual number to reflect that of the other Balancing Authority Area in accordance with WECC standard procedures.

The CAISO and each adjacent Balancing Authority shall exchange MW, MVar, terminal and bus voltage data with each other on a four second update basis. MWh data for the previous hour shall be exchanged once per hour. All MW and MWh data for both the CAISO Balancing Authority Area and the adjacent Balancing Authority Areas must originate from the same metering equipment. All provisions in Sections 4.6.1.1(i) and 4.6.1.1 (ii) refer to information and data obtained from metering used for Balancing Authority Area operations and not metering used for billing and Settlement.

34.19 [NOT USED]

34.20 Pricing Imbalance Energy

34.20.1 General Principles

Instructed and Uninstructed Imbalance Energy shall be paid or charged the applicable FMM or RTD 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, Participating Loads, and Proxy Demand Resources dispatched by the CAISO to increase or reduce Demand or Energy output in each Dispatch Interval as provided in Section 34.20.2.1. 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.

34.20.2 Determining Real-Time LMPs

34.20.2.1 Dispatch Interval Real-Time LMPs

34.20.2.2 Computation

For each Dispatch Interval, the CAISO will compute updated Imbalance Energy needs and will Dispatch Generating Units, System Units, Dynamic System Resources, Participating Load, and Proxy Demand Resources 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.

34.20.2.3 Eligibility to Set the Real-Time LMP

All Generating Units, Participating Loads, Proxy Demand Resources, 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 Proxy Demand Resource, 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 applicable time periods that

comprise 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.

34.20.2.4 [NOT USED]

* * *

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, 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.

* * *

37.3.1.1 Expected Conduct

Comment [A7]: See comment in overview

Market Participants must submit Bids for Energy, RUC Capacity and Ancillary Services and Submissions to Self-Provide an Ancillary Service from resources that are reasonably expected to be available and capable of performing at the levels specified in the Bid, and to remain available and capable of so performing based on all information that is known to the Market Participant or should have been known to the Market Participant at the time of submission. RTM Intertie Schedules for import or export Energy are not subject to the foregoing requirement, but failure to

deliver on such RTM Intertie Schedules can be subject to referral by DMM under Section 11.1, Appendix P.

* * *

39.7 Local Market Power Mitigation For Energy Bids

Local Market Power Mitigation is based on the assessment and designation of Transmission Constraints as competitive or non-competitive pursuant to Section 39.7.2. The local market power mitigation processes are described in Section 31.2 for the DAM and Sections 34.1.2.3 and 34.3.3 for the RTM.

* * *

39.7.2.1 Timing of Assessments

For the DAM and RTM, the CAISO will make assessments and designations of whether Transmission Constraints are competitive or non-competitive as part of the MPM runs associated with the DAM and RTM, respectively. Only binding Transmission Constraints determined by the MPM process will be assessed in the applicable market.

39.7.2.2 Criteria

Subject to Section 39.7.3, for the DAM and RTM, a Transmission Constraint will be non-competitive only if the Transmission Constraint fails the dynamic competitive path assessment pursuant to this Section 39.7.2.2.

(a) Transmission Constraints for the DAM – As part of the MPM process associated with the DAM, the CAISO will designate a Transmission Constraint for the DAM as non-competitive when the fringe supply of counter-flow to the Transmission Constraint from all portfolios of suppliers that are not identified as potentially pivotal is less than the demand for counter-flow to the Transmission Constraint. For purposes of determining whether to designate a Transmission Constraint as non-competitive pursuant to this Section 39.7.2.2(a):

(i) Counter-flow to the Transmission Constraint means the delivery of Power from a resource to the system load distributed reference bus. If counter-flow to the Transmission Constraint is in the direction opposite to

the market flow of Power to the Transmission Constraint, the counter-flow to the Transmission Constraint is calculated as the shift factor multiplied by the resource's scheduled Power. Otherwise, counter-flow to the Transmission Constraint is zero.

(ii) Fringe supply of counter-flow to the Transmission Constraint means all available capacity from internal resources not controlled by the identified potentially pivotal suppliers and all internal Virtual Supply Awards not controlled by the identified potentially pivotal suppliers that provide counter-flow to the Transmission Constraint. Available capacity reflects the highest capacity of a resource's Energy Bid adjusted for Self-Provided Ancillary Services and derates.

(iii) Demand for counter-flow to the Transmission Constraint means all internal dispatched Supply and Virtual Supply Awards that provide counter-flow to the Transmission Constraint.

(iv) Potentially pivotal suppliers mean the three (3) portfolios of net sellers that control the largest quantity of counter-flow supply to the Transmission Constraint.

(v) Portfolio means the effective available internal generation capacity under the control of the Scheduling Coordinator and/or Affiliate determined pursuant to Section 4.5.1.1.12 and all effective internal Virtual Supply Awards of the Scheduling Coordinator and/or Affiliate. Effectiveness in supplying counter-flow is determined by scaling generation capacity and/or Virtual Supply Awards by the shift factor from that location to the Transmission Constraint being tested.

(vi) A portfolio of a net seller means any portfolio that is not a portfolio of a net buyer. A portfolio of a net buyer means a portfolio for which the average daily net value of Measured Demand minus Supply over a twelve (12) month period is positive. The average daily net value is

determined for each portfolio by subtracting, for each Trading Day, Supply from Measured Demand and then averaging the daily value for all Trading Days over the twelve (12) month period. The CAISO will calculate whether portfolios are portfolios of net buyers in the third month of each calendar quarter and the calculations will go into effect at the start of the next calendar quarter. The twelve (12) month period used in this calculation will be the most recent twelve (12) month period for which data is available. The specific mathematical formula used to perform this calculation will be set forth in a Business Practice Manual. Market Participants without physical resources will be deemed to be net sellers for purposes of this Section 39.7.2.2(a)(vi).

(vii) In determining which Scheduling Coordinators and/or Affiliates control the resources in the three (3) identified portfolios, the CAISO will include resources and Virtual Supply Awards directly associated with all Scheduling Coordinator ID Codes associated with the Scheduling Coordinators and/or Affiliates, as well as all resources that the Scheduling Coordinators and/or Affiliates control pursuant to Resource Control Agreements registered with the CAISO as set forth Section 4.5.1.1.13. Resources identified pursuant to Resource Control Agreements will only be assigned to the portfolio of the Scheduling Coordinator that has control of the resource or whose Affiliate has control of the resource pursuant to the Resource Control Agreements.

(b) Transmission Constraints for the RTM – As part of the MPM processes associated with the RTM, the CAISO will designate a Transmission Constraint for the RTM as non-competitive when the sum of the supply of counter-flow from all portfolios of potentially pivotal suppliers to the Transmission Constraint and the fringe supply of counter-flow to the Transmission Constraint from all portfolios of suppliers that are not identified as potentially pivotal is less than the demand for

counter-flow to the Transmission Constraint. For purposes of determining whether to designate a Transmission Constraint as non-competitive pursuant to this Section 39.7.2.2(b):

(i) Counter-flow to the Transmission Constraint has the meaning set forth in Section 39.7.2.2(a)(i).

(ii) Supply of counter-flow from all portfolios of potentially pivotal suppliers to the Transmission Constraint means the minimum available capacity from internal resources controlled by the identified potentially pivotal suppliers that provide counter-flow to the Transmission Constraint. The minimum available capacity for the current market interval will reflect the greatest amount of capacity that can be physically withheld. The minimum available capacity is the lowest output level the resource could achieve in the current market interval given its dispatch in the last market interval and limiting factors including Minimum Load, Ramp Rate, Self-Provided Ancillary Services, Ancillary Service Awards (in the Real-Time Market only), and derates.

(iii) Potentially pivotal suppliers mean the three (3) portfolios of net sellers that control the largest quantity of counter-flow supply to the Transmission Constraint that can be withheld. Counter-flow supply to the Transmission Constraint that can be withheld reflects the difference between the highest capacity and the lowest capacity of a resource's Energy Bid (not taking into account the Ramp Rate of the resource), measured from the Dispatch Operating Point for the resource in the immediately preceding fifteen (15) minute FMM interval (taking into account the Ramp Rate of the resource), adjusted for Self-Provided Ancillary Services and derates in determining whether to designate a Transmission Constraint as non-competitive for the RTM, or adjusted for Ancillary Service Awards and derates in determining whether to

designate a Transmission Constraint as non-competitive for the RTM. In determining whether to designate a Transmission Constraint as non-competitive for the RTM, counter-flow supply to the Transmission Constraint that can be withheld also reflects the PMin of each Short Start Unit with a Start-Up Time of sixty (60) minutes or less that was off-line in the immediately preceding fifteen (15) minute interval of the FMM. In determining whether to designate a Transmission Constraint as non-competitive for the RTM, counter-flow supply to the Transmission Constraint that can be withheld also reflects the PMin of each Short Start Unit with a Start-Up Time of fifteen (15) minutes or less that was off-line in the immediately preceding fifteen (15) minute interval.

(iv) Portfolio means the effective available internal generation capacity under the control of the Scheduling Coordinator and/or Affiliate determined pursuant to Sections 4.5.1.1.12 and 39.7.2.2(a)(vii). Effectiveness in supplying counter-flow is determined by scaling generation capacity by the shift factor from that location to the Transmission Constraint being tested.

(v) A portfolio of a net seller has the meaning set forth in Section 39.7.2.2(a)(vi).

(vi) Fringe supply of counter-flow to the Transmission Constraint means all available capacity from internal resources not controlled by the identified potentially pivotal suppliers that provide counter-flow to the Transmission Constraint. Available capacity reflects the highest capacity of a resource's Energy Bid (not taking into account the Ramp Rate of the resource), measured from the Dispatch Operating Point for the resource in the immediately preceding fifteen (15) minute interval of the FMM (taking into account the Ramp Rate of the resource), adjusted for Self-Provided Ancillary Services and derates in determining whether to

designate a Transmission Constraint as non-competitive for the RTM, or adjusted for Ancillary Service Awards and derates in determining whether to designate a Transmission Constraint as non-competitive for the RTM.

(vii) Demand for counter-flow to the Transmission Constraint means all internal dispatched Supply that provides counter-flow to the Transmission Constraint.

* * *

39.7.3 Default Competitive Path Designations

The CAISO will maintain default competitive path designation sets for the Day-Ahead Market and for the Real-Time Market, which the CAISO will use in order to determine the competitiveness or non-competitiveness of Transmission Constraints under two circumstances: (1) in the event of a failure of the CAISO Markets software to perform an assessment of whether Transmission Constraints are competitive or non-competitive pursuant to Section 39.7.2; and (2) in order to determine whether Exceptional Dispatches are related to a non-competitive Transmission Constraint for purposes of mitigation of Exceptional Dispatches of resources under Section 39.10(1). Default competitive path designations will be determined pursuant to the methodology set forth in this Section 39.7.3 and will be updated no less frequently than once every seven (7) days. Until the CAISO has developed sufficient information to develop default competitive path designations, the CAISO will continue to utilize the most recent list of competitive path designations determined prior to the effective date of this tariff provision.

* * *

39.7.3.4 Methodology for Determining RTM Default Competitive Path Designations for Path 15 and Path 26 Transmission Constraints

The CAISO will designate the Path 15 Transmission Constraint or the Path 26 Transmission Constraint as competitive for purposes of determining default competitive path designations for the RTM unless both of the following conditions are met:

(1) Congestion occurred on the Transmission Constraint in ten (10) or more of the

hours for which the Transmission Constraint was tested for competitiveness pursuant to Section 39.7.2; and

(2) the Transmission Constraint was deemed competitive pursuant to Section 39.7.2 in fewer than seventy-five (75) percent of the instances in which the Transmission Constraint was binding when tested.

These calculations will be made utilizing data from the MPM for the Real-Time Market for the most recent sixty (60) Trading Days for which data is available. If the Transmission Constraint was binding during any 15-minute interval during an hour, then the Transmission Constraint will

be deemed to be binding for the entire hour. If the Transmission Constraint was determined to be non-competitive during any 15-minute interval during an hour, then the Transmission Constraint will be deemed to be non-competitive for the entire hour. The CAISO will designate the Path 15

Transmission Constraint or the Path 26 Transmission Constraint as competitive if the CAISO lacks sufficient data to determine whether the occurrences set forth in Sections 39.7.3.4(1) and 39.7.3.4(2) took place on the Transmission Constraint over the sixty (60) Trading Day period.

* * *

39.10.3 Eligibility For Supplemental Revenues

Except as provided in Section 39.10.4, a resource that is committed or dispatched under Exceptional Dispatch shall be eligible for supplemental revenues only during such times that the resource meets all of the following criteria:

(i) the resource has notified the CAISO, at least seven days prior to the calendar month in which the Exceptional Dispatch occurs, that the resource has chosen to receive supplemental revenues in lieu of an Exceptional Dispatch CPM designation under Section 43.1.5;

(ii) the resource has been mitigated under Section 39.10;

(iii) the resource is not under an RMR Contract, is not designated as CPM Capacity, and is not a Resource Adequacy Resource, unless the

resource is a Partial Resource Adequacy Resource or a partial CPM resource, and the Exceptional Dispatch requires non-RA Capacity or non-CPM Capacity, in which case only the capacity not committed as Resource Adequacy Capacity or CPM Capacity is eligible for supplemental revenues; and

(iv) the resource has a Bid in the IFM and RTM for the applicable Operating Day or Operating Hour in which the resource is committed or dispatched under Exceptional Dispatch.

* * *

40.5 Requirements Applying To Modified Reserve Sharing LSEs Only

40.5.1 Day Ahead Scheduling And Bidding Requirements

(1) Scheduling Coordinators on behalf of Modified Reserve Sharing LSEs serving Load within the CAISO Balancing Authority Area for whom they submit Demand Bids shall submit into the IFM Bids or Self-Schedules for Demand equal to one hundred (100) percent and for Supply equal to one hundred and fifteen (115) percent of the hourly Demand Forecasts for each Modified Reserve Sharing LSE it represents for each Trading Hour for the next Trading Day. Subject to Section 40.5.5, the resources included in a Self-Schedule or a Bid in each Trading Hour to satisfy one hundred and fifteen (115) percent of the Modified Reserve Sharing LSE's hourly Demand Forecasts will be deemed Resource Adequacy Resources and (a) shall be comprised of those resources listed in the Modified Reserve Sharing LSE's monthly Resource Adequacy Plan and (b) shall include all Local Capacity Area Resources listed in the Modified Reserve Sharing LSE's annual Resource Adequacy Plan, if any, except to the extent the Local Capacity Area Resources, if any, are unavailable due to any Outages or reductions in capacity reported to the CAISO in accordance with this CAISO Tariff.

(i) Local Capacity Area Resources physically capable of operating must submit: (a) Economic Bids for Energy and/or Self- Schedules for all their Resource Adequacy Capacity and (b) Economic Bids for Ancillary Services and/or a Submission to Self-Provide Ancillary Services for all of their Resource Adequacy Capacity that is certified to provide Ancillary Services. For Local Resource Adequacy Capacity that is certified to provide Ancillary Services and is not covered by a Submission to Self-Provide Ancillary Services, the resource must submit Economic Bids for each Ancillary Service for which the resource is certified. For Resource Adequacy Capacity subject to this requirement for which no Economic Energy Bid or Self-Schedule has been submitted, the CAISO shall insert a Generated Bid in accordance with Section 40.6.8. For Resource Adequacy Capacity subject to this requirement for which no Economic Bids for Ancillary Services or Submissions to Self-Provide Ancillary Services have been submitted, the CAISO shall insert a Generated Bid in accordance with Section 40.6.8 for each Ancillary Service the resource is certified to provide. However, to the extent the Generating Unit providing Local Capacity Area Resource capacity constitutes a Use-Limited Resource under Section 40.6.4, the provisions of Section 40.6.4 will apply.

(ii) Resource Adequacy Resource must participate in the RUC to the extent that the resource has available Resource Adequacy Capacity that was offered into the IFM and is not reflected in an IFM Schedule. Resource Adequacy Capacity participating

in RUC will be optimized using zero dollar ($0/MW-hour) RUC Availability Bid.

(iii) Capacity from Resource Adequacy Resources selected in RUC will not be eligible to receive a RUC Availability Payment.

(iv) Through the IFM co-optimization process, the CAISO will utilize available Local Capacity Area Resource Adequacy Capacity to provide Energy or Ancillary Services in the most efficient manner to clear the Energy market, manage congestion and procure required Ancillary Services. In so doing the IFM will honor submitted Energy Self-Schedules of the Local Capacity Area Resource Adequacy Capacity of the Modified Reserve Sharing LSE unless the CAISO is unable to satisfy one hundred (100) percent of the Ancillary Services requirements. In such cases the CAISO may curtail all or a portion of a submitted Energy Self-Schedule to allow Ancillary Service-certified Local Capacity Area Resource Adequacy Capacity to be used to meet the Ancillary Service requirements. The CAISO will not curtail for the purpose of meeting Ancillary Service requirements a Self-Schedule of a resource internal to a Metered Subsystem that was submitted by the Scheduling Coordinator for that Metered Subsystem. If the IFM reduces the Energy Self-Schedule of Resource Adequacy Capacity to provide an Ancillary Service, the Ancillary Service Marginal Price for that Ancillary Service will be calculated in accordance with Section 27.1.2 using the Ancillary Service Bids submitted by the Scheduling Coordinator for the Resource Adequacy Resource or inserted by the CAISO pursuant to this Section 40.5.1, and using the resource's Generated Energy Bid to determine the

Resource Adequacy Resource's opportunity cost of Energy. If the Scheduling Coordinator for the Modified Reserve Sharing LSE's Resource Adequacy Resource believes that the opportunity cost of Energy based on the Resource Adequacy Resource's Generated Energy Bid is insufficient to compensate for the resource's actual opportunity cost, the Scheduling Coordinator may submit evidence justifying the increased amount to the CAISO and to the FERC no later than seven (7) days after the end of the month in which the submitted Energy Self-Schedule was reduced by the CAISO to provide an Ancillary Service. The CAISO will treat such information as confidential and will apply the procedures in Section 20.4 of this CAISO Tariff with regard to requests for disclosure of such information. The CAISO shall pay the higher opportunity costs after those amounts have been approved by FERC.

(2) Resource Adequacy Resources of Modified Reserve Sharing LSEs that do not clear in the IFM or are not committed in RUC shall have no further offer requirements in the RTM, except under System Emergencies as provided in this CAISO Tariff.

(3) Resource Adequacy Resources committed by the CAISO must maintain that commitment through Real-Time. In the event of a Forced Outage on a Resource Adequacy Resource committed in the Day-Ahead Market to provide Energy, the Scheduling Coordinator for the Modified Reserve Sharing LSE will have up to the next RTM bidding opportunity, plus one hour, to replace the lesser of: (i) the committed resource suffering the Forced Outage, (ii) the quantity of Energy committed in the Day-Ahead Market, or (iii) one hundred and seven (107) percent of the hourly forecast Demand.

* * *

40.5.4 Consequence Of Failure To Meet Scheduling Obligation

(1) If the Scheduling Coordinator for the Modified Reserve Sharing LSE fails to submit a Self-Schedule or submit Bids equal to 115% of its hourly Demand Forecasts for each Trading Hour for the next Trading Day in the IFM and RUC, the Scheduling Coordinator will be charged a capacity surcharge of three times the price of the relevant Day-Ahead Hourly LAP LMP in the amount of the shortfall. To the extent the Scheduling Coordinator for the Modified Reserve Sharing LSE schedules imports on one or more Scheduling Points in an aggregate megawatt amount greater than its aggregate import deliverability allocation under Section 40.4.6.2, the quantity of megawatts in excess of its import deliverability allocation will not count toward satisfying the Modified Reserve Sharing LSE's scheduling obligation, unless it clears the Day-Ahead Market.

(2) If the Scheduling Coordinator for the Modified Reserve Sharing LSE cannot fulfill its obligations under Section 40.5.1(3), the Scheduling Coordinator for the Modified Reserve Sharing LSE will be charged a capacity surcharge of two times the average of the six (6) Settlement Interval LAP prices for the hour in the amount of the shortfall. Energy scheduled in the RTM will not net against, or be used as a credit to correct, any failure to fulfill the Day-Ahead IFM hourly scheduling and RUC obligation in Section 40.5.1(1).

(3) Any Energy surcharge received by the CAISO pursuant to this Section 40.5.4 shall be allocated to Scheduling Coordinators representing other Load Serving Entities in proportion to each such Scheduling Coordinator's Measured Demand during the relevant Trading Hour(s) to

the aggregate CAISO Measured Demand during the relevant Trading Hour(s).

* * *

40.6.4.3 Bidding Requirements on Use-Limited Resources

40.6.4.3.1 Non-Hydro and Dispatchable Use-Limited Resources

Use-Limited Resources, other than those subject to the provisions of 40.6.4.3.2, must submit a Supply Bid or Self-Schedule for their Resource Adequacy Capacity in the Day-Ahead Market whenever the Use-Limited Resources are physically capable of operating in accordance with their operating criteria, including environmental or other regulatory requirements. Use-Limited Resources will also provide a daily Energy limit as part of their Day-Ahead Market offer to enable the CAISO to schedule them for the period in which they are capable of providing the Energy. To the extent that the daily Energy limit has been reached through Self-Schedules, no further action will be taken by the CAISO, unless rescheduling of the Energy is necessary for System

Reliability. Use-Limited Resources will attempt to reschedule the Energy in recognition of the System Reliability concern, to the extent that the change is possible without violating a Use- Limited Resource's operating criteria.

40.6.4.3.2 Hydro and Non-Dispatchable Use-Limited Resources

Hydroelectric Generating Units, Pumping Load, and Non-Dispatchable Use-Limited Resources shall submit Self-Schedules or Bids in the Day-Ahead Market for their expected available Energy

or their expected as-available Energy, as applicable, in the Day-Ahead Market and RTM. Such resources shall also revise their Self-Schedules or submit additional Bids in RTM based on the most current information available regarding expected Energy deliveries. Hydroelectric Generating Units, Pumping Load, and Non-Dispatchable Use-Limited Resources will not be subject to commitment in the RUC process. The CAISO will retain discretion as to whether a particular resource should be considered a Non-Dispatchable Use-Limited Resource, and this decision will be made in accordance with the provisions of Section 40.6.4.1.

40.6.4.3.3 Availability of Use-Limited Resources During System Emergencies

All Use-Limited Resources remain subject to Section 7.7.2.3 regarding System Emergencies to the extent the Use-Limited Resource is owned or controlled by a Participating Generator.

40.6.4.3.4 Availability of Intermittent Resources

Any Eligible Intermittent Resource that provides Resource Adequacy Capacity may, but is not required to, submit Bids in the Day-Ahead Market.

40.6.5 Additional Availability Requirements For System Resources

In the IFM, the multi-hour block constraints of a System Resource, other than a System Resource capable of submitting a Dynamic Schedule or a Resource-Specific System Resource, are

honored in the optimization. Such a resource that is also a Resource Adequacy Resource must be capable of hourly scheduling by the CAISO in RUC if it is not fully scheduled in the IFM. If such a Resource Adequacy Resource is scheduled in the RUC, the CAISO will schedule the resource in the RTM for each hour of the resource's RUC schedule without regard to the multi- hour block constraint that was submitted to the IFM. For an existing System Resource that provides Resource Adequacy Capacity through a call-option that expires prior to the close of the IFM, such a System Resource listed on a Resource Adequacy Plan must be reported to the CAISO for consideration in the Extremely Long-Start Commitment Process.

40.6.5.1 Additional Availability Requirements for Dynamic and Non-Dynamic Resource-Specific System Resources

A Dynamic or Non-Dynamic Resource-Specific System Resource that supplies Resource Adequacy Capacity, and is not otherwise a Use-Limited Resource under Section 40.6.4, will be subject to the requirements of Sections 40.6.1, 40.6.2 and either Section 40.6.3 as a Short Start Unit or Section 40.6.7 as a Long Start Unit based upon the Dynamic Resource-Specific System Resource's registered physical operating characteristics.

40.6.5.2 Dynamic Non-Resource-Specific System Resources

A Dynamic non-Resource-Specific System Resource that provides Resource Adequacy Capacity will be subject to the provisions of 40.6.1 and 40.6.2.

40.6.6 Requirements For Partial Resource Adequacy Resources

Only that output of a Partial Resource Adequacy Resource that is designated by a Scheduling Coordinator as Resource Adequacy Capacity in its monthly or annual Supply Plan shall have an availability obligation to the CAISO. Exports being supported by non-Resource Adequacy Capacity from a Partial Resource Adequacy Resource that becomes unavailable or unusable shall be considered as an export of non-Resource Adequacy Capacity based on the pro-rata allocation of derated capacity of the Partial Resource Adequacy Resource as follows:

(a) Resource Adequacy Capacity – [(Resource Adequacy Capacity/PMax Capacity of Resource Adequacy Resource) x MW Derate or Outage]; or

(b) [1- (Resource Adequacy Capacity/PMax Capacity of Resource Adequacy Resource)] x De-rated PMax].

40.6.7 Release Of Long Start Units

Long Start Units not committed in the Day-Ahead Market will be released from any further obligation to submit Self-Schedules or Bids for the relevant Operating Day. Scheduling Coordinators for Long Start Units are not precluded from self-committing the unit after the Day- Ahead Market and submitting a Self-Schedule for Wheeling-Out in the RTM, unless precluded by terms of their contracts.

40.6.8 Use Of Generated Bids

Prior to completion of the Day-Ahead Market, the CAISO will determine if Resource Adequacy Capacity subject to the requirements of Sections 40.5.1 or 40.6.1 and for which the CAISO has not received notification of an Outage has not been reflected in a Bid and will insert a Generated Bid for such capacity into the CAISO Day-Ahead Market. Prior to running the Real-Time Market, the CAISO will determine if Resource Adequacy Capacity subject to the requirements of Section

40.6.2 and for which the CAISO has not received notification of an Outage has not been reflected in a Bid and will insert a Generated Bid for such capacity into the Real-Time Market. If a Scheduling Coordinator for an RA Resource submits a partial bid for the resource's RA Capacity, the CAISO will insert a Generated Bid only for the remaining RA Capacity. 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 Real-Time Market and will insert a Generated Bid for any remaining dispatchable Resource Adequacy Capacity for which the CAISO has not received notification of an Outage. As provided in the Business Practice Manuals, a Generated Bid for Energy will be calculated and will include a greenhouse gas cost adder for a resource registered with the California Air Resources Board as having a greenhouse gas compliance obligation. A Generated Bid for Ancillary Services will equal zero dollars

($0/MW-hour). Notwithstanding any of the provisions of Section 40.6.8 set forth above, the CAISO will not insert any Bid in the Real-Time Market required under this Section 40 for a Resource Adequacy Resource that is a Use-Limited Resource unless the resource submits an Energy Bid and fails to submit an Ancillary Service Bid.

40.6.8.1 Generated Bids for NRS-RA Resources

Generated Bids to be submitted by the CAISO pursuant to Section 40.6.8 for non-Resource- Specific System Resources that provide Resource Adequacy capacity shall be calculated in accordance with this Section.

40.6.8.1.1 Calculation Options for Generated Bids

The Scheduling Coordinator for each non-Resource Specific System Resource that provides Resource Adequacy Capacity shall select the price taker option, LMP-based option, or negotiated price option as the methodology for calculating the Generated Bids to be submitted by the CAISO under Section 40.6.8 for both the DAM and RTMs. If no selection is made, the CAISO will apply the price taker option to calculate the Generated Bids. For the first ninety (90) days after a

resource becomes a non-Resource-Specific System Resource, the calculation of Generated Bids for Resource Adequacy capacity is limited to the price taker option or negotiated price option.

40.6.8.1.2 Price Taker Option

The price taker option is a Generated Bid of $0/MWh plus the CAISO's estimate of the applicable grid management charge per MWh based on the gross amount of MWh scheduled in the DAM and RTM.

40.6.8.1.3 LMP-Based Option

The LMP-based option calculates the Generated Bid as the weighted average of the lowest quartile of LMPs, at the Intertie point designated for the non-Resource-Specific System Resource's Resource Adequacy Capacity in the Supply Plan, during periods in which the resource was dispatched in the preceding ninety (90) days for which LMPs that have passed the price validation and correction process set forth in Section 35 are available. The weighted average will be calculated based on the quantities Dispatched within each segment of the Generated Bid curve. Each Bid segment created under the LMP-based option for Generated Bids will be subject to a feasibility test, as set forth in a Business Practice Manual, to determine whether there are a sufficient number of data points to allow for the calculation of an LMP-based Generated Bid. The feasibility test is designed to avoid excessive volatility of the Generated Bid
under the LMP-based option that could result when calculated based on a relatively small number of prices. If the Scheduling Coordinator for the non-Resource Specific System Resource elects the LMP-based method, it must additionally select either the price-taker method or the
negotiated-rate method as the alternative calculation method for the Generated Bids in the event that the feasibility test fails for the LMP-based method.

40.6.8.1.4 Negotiated Price Option

Under the negotiated price option, a Scheduling Coordinator shall submit a proposed Generated Bid along with supporting information and documentation as described in a

Business Practice Manual. Within ten (10) Business Days of receipt, the CAISO or an Independent Entity selected by the CAISO will provide a written response. If the CAISO or Independent Entity accepts the proposed Generated Bid, it will become effective within three (3) Business Days from the date of acceptance by the CAISO and remain in effect until: (1) the Generated Bid is modified by FERC; (2) the Generated Bid is modified by mutual agreement of the CAISO and the Scheduling Coordinator; or (3) the Generated Bid expires, is terminated or is modified pursuant to any agreed upon term or condition or pertinent FERC order.

If the CAISO or Independent Entity selected by the CAISO does not accept the proposed Generated Bid, the CAISO or Independent Entity selected by the CAISO and the Scheduling Coordinator shall enter a period of good faith negotiations that terminates sixty (60) days following the date of submission of a proposed Generated Bid by a Scheduling Coordinator. If at any time during this period, the CAISO or Independent Entity selected by the CAISO and the Scheduling Coordinator agree upon the Generated Bid, it will be become effective within three (3) Business Days of the date of agreement and remain in effect until: (1) the Generated Bid is modified by FERC; (2) the Generated Bid is modified by mutual agreement of the CAISO and the Scheduling Coordinator; or (3) the Generated Bid expires, is terminated or is modified pursuant to any agreed upon term or condition or pertinent FERC order.

If by the end of the sixty (60) day period the CAISO or Independent Entity selected by the CAISO and the Scheduling Coordinator fail to agree on the Generated Bid to be used under the negotiated price option, the Scheduling Coordinator has the right to file a proposed Generated

Bid with FERC pursuant to Section 205 of the Federal Power Act.

During the sixty (60) day period following the submission of a proposed negotiated Generated Bid by a Scheduling Coordinator, and pending FERC's acceptance in cases where the CAISO or Independent Entity selected by the CAISO fail to agree on the Generated Bid for use under the negotiated price option and the Scheduling Coordinator filed a proposed Generated Bid with FERC pursuant to Section 205 of the Federal Power Act, the Scheduling Coordinator has the option of electing to use any of the other options available pursuant to this Section.

The CAISO shall make an informational filing with FERC of any Generated Bids negotiated pursuant to this Section no later than seven (7) days after the end of the month in which the Generated Bids were established.

40.6.8.1.5 Partial Bids

If a Scheduling Coordinator for a non-Resource-Specific System Resource that provides

Resource Adequacy Capacity submits a bid for a MW quantity less than the Resource Adequacy Capacity identified in the resource's Supply Plan, the CAISO will insert a Generated Bid only for the remaining Resource Adequacy Capacity by extending the last segment of the resource's bid curve to the full quantity (MWh) of the Resource Adequacy obligation.

40.6.8.1.6 Subset-of-Hours Contracts

The CAISO will submit Generated Bids for non-Resource-Specific System Resources that provide Resource Adequacy Capacity subject to a Subset-of-Hours Contract during only those hours in which the resource is contractually obligated to make the Resource Adequacy Capacity available and the CAISO has not received either notification of an Outage or a Bid for such capacity. If the Scheduling Coordinator for the non-Resource Specific System Resource submits a Bid for part of the Resource Adequacy Capacity subject to a Subset-of-Hours Contract for any hour the resource is contractually obligated to provide the Resource Adequacy Capacity, the CAISO will insert a Generated Bid only for the remaining Resource Adequacy Capacity. Non- Resource-Specific System Resources that provide Resource Adequacy Capacity subject to a Subset-of-Hours Contract must meet the technical interface specifications and submit contractual information as required by a Business Practice Manual.

40.6.9 Grandfathered Firm Liquidated Damages Contracts Requirements

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 RTM 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 RTM for purposes of curtailment under this Section, except as consistent with Good Utility Practice.

40.6.12 Participating Loads and Proxy Demand Resources

Participating Loads or Proxy Demand Resources that are included in a Resource Adequacy Plan and Supply Plan, if the Scheduling Coordinator for the Participating Loads or Proxy Demand Resources is not the same as that for the Load Serving Entity, will be administered by the CAISO in accordance with the terms and conditions established by the CPUC or the Local Regulatory Authority.

* * *

41.5 RMR Dispatch

41.5.1 Day-Ahead And RTM RMR Dispatch

RMR Dispatches will be determined in accordance with the RMR Contract, the MPM process addressed in Sections 31 and 33 and through manual RMR Dispatch Notices to meet Applicable Reliability Criteria.

The CAISO will notify Scheduling Coordinators for RMR Units of the amount and time of Energy requirements from specific RMR Units in the Trading Day prior to or at the same time as the Day- Ahead Schedules and AS and RUC Awards are published, to the extent that the CAISO is aware of such requirements, through an RMR Dispatch Notice or flagged RMR Dispatch in the IFM Day- Ahead Schedule. The CAISO may also issue RMR Dispatch Notices after Market

Close of the DAM and through Dispatch Instructions flagged as RMR Dispatches in the Real-Time Market.

The Energy to be delivered for each Trading Hour pursuant to the RMR Dispatch Notice an RMR Dispatch in the IFM or Real-Time shall be referred to as the RMR Energy. Scheduling Coordinators may submit Bids in the DAM or the RTM for RMR Units operating under Condition 1 of the RMR Contract in accordance with the bidding rules applicable to non-RMR Units. A Bid submitted in the DAM or the RTM for a Condition 1 RMR Unit shall be deemed to be a notice of intent to substitute a market transaction for the amount of MWh specified in each Bid for each Trading Hour pursuant to Section 5.2 of the RMR Contract. In the event the CAISO issues an

RMR Dispatch Notice or an RMR Dispatch in the IFM or Real-Time Market for any Trading Hour, any MWh quantities cleared through the MPM shall be considered as a market transaction in accordance with the RMR Contract. RMR Units operating as Condition 2 RMR Units may not submit Bids until and unless the CAISO issues an RMR Dispatch Notice or issues an RMR Dispatch in the IFM, in which case a Condition 2 RMR Unit shall submit Bids in accordance with the RMR Contract in the next available market for the Trading Hours specified in the RMR Dispatch Notice or Day-Ahead Schedule.

41.5.2 RMR Payments

RMR Units operating as Condition 1 RMR Units or Condition 2 RMR Units that receive an RMR Dispatch Notice will be paid in accordance with the RMR Contract.

41.5.3 RMR Units And Ancillary Services Requirements

The CAISO may call upon RMR Units in any amounts that the CAISO has determined is necessary at any time after the issuance of Day-Ahead Schedules for the Trading Day if: (i) the CAISO determines that it requires more of an Ancillary Service than it has been able to procure, except that the CAISO shall not be required to accept Ancillary Services Bids that exceed the price caps specified in Section 39 or any other FERC-imposed price caps; and (ii) the CAISO has notified Scheduling Coordinators of the circumstances existing in this Section 41.5.3, and after such notice, the CAISO determines that a bid insufficiency condition in

accordance with the RMR Contract exists in the RTM and the CAISO requires more of an Ancillary Service. The CAISO must provide the notice specified in sub paragraph (ii) of this Section 41.5.3 as soon as possible after the CAISO determines that additional Ancillary Services are needed for which Bids are not available. The CAISO may only determine that a Bid insufficiency exists after the Market Close of the RTM, unless an earlier determination is required in order to accommodate the RMR Unit's operating constraints. For the purposes of this Section 41.5.3, a Bid insufficiency exists in RTM if, and only if: (i) Bids in the RTM for the particular Ancillary Service that can be used to satisfy that particular Ancillary Services requirement that remain after first procuring the megawatts of the Ancillary Service that the CAISO had notified Scheduling Coordinators it would procure in the HASP ("remaining Ancillary Services requirement") represent, in the aggregate, less than two times such remaining Ancillary Services requirement; or (ii) there are less than two unaffiliated bidders to provide such remaining Ancillary Services requirement. If the CAISO determines that a Bid insufficiency condition exists as described in this Section 41.5.3, the CAISO may nonetheless accept available Bids if it determines in its sole discretion that the prices specified in the Bids and the Energy Bid Curves created by the Bids indicate that the Scheduling Coordinators were not attempting to exercise market power.

* * *

Appendix A

Master Definition Supplement

* * *

- Ancillary Service Schedule Or AS Schedule

The notification by the CAISO indicating that a Submission to Self-Provide an Ancillary Service has been selected to provide such service in the DAM or RTM.

* * *

- Bid

Either (1) an offer for the Supply or Demand of Energy or Ancillary Services, including Self-Schedules, submitted by Scheduling Coordinators for specific resources, conveyed through

several components that apply differently to the different types of service offered to or demanded from any of the CAISO Markets or (2) a Virtual Bid.

* * *

- Bid Cost Recovery (BCR) Eligible Resources

Those resources eligible to participate in the Bid Cost Recovery as specified in Section 11.8, which include Generating Units, System Units, System Resources with RTM Economic bids, Participating Loads, and Proxy Demand Resources. A System Resource that has a Schedule that results from Bids submitted in violation of Section 30.5.5 shall not be a Bid Cost Recovery Eligible Resource for any Settlement Interval that occurs during the time period covered by the Schedule that results from Bids submitted in violation of Section 30.5.5. Accepted Self-Schedule Hourly Blocks, cleared Economic Hourly Block Bids, and cleared Economic Hourly Block Bids with Intra-Hour Option are not eligible to participate in Bid Cost Recovery in the Real-Time Market.

* * *

- CAISO Markets

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

- CAISO Markets Processes

The MPM, IFM, RUC, STUC, HASP, FMM and RTD.

* * *

- RTD Derate Energy

Extra-marginal RTD IIE, exclusive of FMM IIE, Standard Ramping Energy, Ramping Energy Deviation, Residual Imbalance Energy, MSS Load Following Energy, and RTD Minimum Load Energy produced or consumed due to Minimum Load overrates or PMax derates. RTD Derate Energy is produced above the higher of the FMM Schedule or the registered Minimum Load, and below the lower of the overrated Minimum Load and the Dispatch Operating Point, or consumed below the lower of the FMM Schedule, and above the higher of the derated PMax or the Dispatch Operating Point. There could be two RTD Derate Energy slices, one for the Minimum Load overrate, and one for the PMax derate. RTD Derate Energy does not overlap with FMM IIE,

Standard Ramping Energy, Ramping Energy Deviation, Residual Imbalance Energy, RTD Minimum Load Energy, RTD Exceptional Dispatch Energy, or RTD Optimal Energy, but it may overlap with Day-Ahead Scheduled Energy and MSS Load Following Energy. RTDDerate Energy is settled as described in Section 11.5.1, and it is not included in BCR as described in Section 11.8.4.

* * *

- Eligible Intermittent Resource

A Variable Energy Resource that is a Generating Unit or Dynamic System Resource subject to a Participating Generator Agreement, Net Scheduled PGA, Dynamic Scheduling Agreement for Scheduling Coordinators, or Pseudo-Tie Participating Generator Agreement.

* * *

- Exceptional Dispatch

A Dispatch Instruction issued for the purposes specified in Section 34.10. Energy from Exceptional Dispatches shall not set any FMM or RTD LMP.

* * *

- RTD **Exceptional Dispatch Energy**

Extra-marginal RTD IIE, exclusive of FMM IIE, Standard Ramping Energy, Ramping Energy Deviation, Residual Imbalance Energy, MSS Load Following Energy, RTD Minimum Load Energy, and RTD Derate Energy, produced or consumed due to RTD Exceptional Dispatch Instructions that are binding in the relevant Dispatch Interval. Without MSS Load following, RTD Exceptional Dispatch Energy is produced above the LMP index and below the lower of the Dispatch Operating Point or the RTD Exceptional Dispatch Instruction, or consumed below the LMP index and above the higher of the Dispatch Operating Point or the RTD Exceptional Dispatch Instruction. The LMP index is the capacity in the relevant Energy Bid that corresponds to a Bid price equal to the relevant LMP. RTD Exceptional Dispatch Energy does not overlap with FMM IIE, Standard Ramping Energy, Ramping Energy Deviation, Residual Imbalance Energy, RTD Minimum Load Energy, RTD Derate Energy, or RTD Optimal Energy, but it may overlap with Day-Ahead Scheduled Energy and MSS Load Following Energy. RTD Exceptional Dispatch

Energy is settled as described in Section 11.5.6, and it is not included in BCR as described in Section 11.8.4.

* * *

- 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 for the applicable Trading Day. Expected Energy is calculated for Generating Units, System Resources, Resource-Specific System Resources, Participating Loads, and Proxy Demand Resources. 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 FMM or RTD LMP for each Dispatch Interval of the target Trading Hour, and any Exceptional Dispatch Instructions. Energy from Non-Dynamic System Resources is converted into FMM. Expected Energy is used as the basis for Settlements.

* * *

- Fast Start Unit

A Generating Unit that has a Start-Up Time less than two hours and can be committed in the FMM and STUC.

* * *

- Fifteen Minute Market (FMM)

A Real-Time market procedure conducted throughout the Operating Day in fifteen-minute increments prior to the RTD, to clear Bids for Energy and Ancillary Services from imports and exports, internal Supply and CAISO Forecast of CAISO Demand, as further specified in Section 34.3.

* * *

- FMM Derate Energy

Extra-marginal FMM IIE, exclusive of FMM Minimum Load Energy produced or consumed due to

Minimum Load overrates or PMax derates. FMM Derate Energy is produced above the higher of the Day-Ahead Schedule or the registered Minimum Load and below the lower of the overrated Minimum Load and the FMM Schedule, or consumed below the Day-Ahead Schedule and above the higher of the derated PMax or the FMM Schedule. There could be two FMM Derate Energy slices, one for the Minimum Load overrate, and one for the PMax derate. FMM Derate Energy does not overlap with FMM Minimum Load Energy, FMM Exceptional Dispatch Energy, or FMM Optimal Energy, but it may overlap with Day-Ahead Scheduled Energy and MSS Load Following Energy. FMM Derate Energy is settled as described in Section 11.5.1, and it is not included in BCR as described in Section 11.8.4.

- **FMM Exceptional Dispatch Energy**

Extra-marginal FMM IIE, exclusive of FMM Minimum Load Energy, and FMM Derate Energy, produced or consumed due to FMM Exceptional Dispatch Instructions that are binding in the relevant Dispatch Interval. Without MSS Load following, FMM Exceptional Dispatch Energy is produced above the LMP index and below the lower of the FMM Schedule or the FMM Exceptional Dispatch Instruction, or consumed below the LMP index and above the higher of the FMM Schedule or the FMM Exceptional Dispatch Instruction. The LMP index is the capacity in the relevant Energy Bid that corresponds to a Bid price equal to the relevant LMP. FMM Exceptional Dispatch Energy does not overlap with FMM Minimum Load Energy, FMM Derate Energy, or FMM Optimal Energy, but it may overlap with Day-Ahead Scheduled Energy, RTD Optimal Energy, and MSS Load Following Energy. FMM Exceptional Dispatch Energy is settled as described in Section 11.5.6, and it is not included in BCR as described in Section 11.8.4.

* * *

- FMM IIE Settlement Amount

The payment due a Scheduling Coordinator for positive FMM Instructed Imbalance Energy or the charge assessed on a Scheduling Coordinator for negative FMM Instructed Imbalance Energy, as calculated pursuant to Section 11.5.1.1

- FMM Instructed Imbalance Energy (FMM IIE)

The portion of Imbalance Energy resulting from Day-Ahead Schedules and FMM Schedules

determined pursuant to Section 11.5.1.

- FMM Minimum Load Energy

FMM IIE produced due to the Minimum Load of a Generating Unit that is committed in the RUC or the FMM 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 FMM for Load following by an MSS Operator, the FMM Minimum Load Energy is accounted as MSS Load Following Energy instead. FMM Minimum Load Energy is FMM IIE above the Day-Ahead Schedule (or zero if there is no Day-Ahead Schedule of Energy) and below the registered Minimum Load. FMM Minimum Load Energy does not overlap with any other Expected Energy type. FMM 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. FMM IIE that is consumed when a resource that is scheduled in the DAM is shut down in the FMM is accounted as FMM Optimal Energy and not as FMM Minimum Load Energy.

- FMM MSS Price

1) The Hourly LAP price for the MSS when the MSS internal metered Demand exceeds the MSS internal measured Generation; or 2) the weighted average of the FMM LMPs for all applicable PNodes within the relevant MSS when MSS internal measured Generation exceeds MSS internal Measured Demand where weighting factors for computing the weighted average are based on the measured Energy of all Generation at the corresponding PNodes.

- FMM Non-Overlapping Optimal Energy

The portions of FMM Optimal Energy that are not FMM Overlapping Optimal Energy, which are indexed against the relevant Energy Bid and sliced by Energy Bid price.

- FMM Optimal Energy

Any remaining FMM IIE after accounting for all other FMM IIE subtypes. FMM Optimal Energy does not overlap with FMM Minimum Load Energy, FMM Derate Energy, and FMM Exceptional Dispatch Energy, but it may overlap with Day-Ahead Scheduled Energy, and MSS Load Following Energy. FMM Optimal Energy is indexed against the relevant Energy Bid and sliced by service type, depending on the AS capacity allocation on the Energy Bid. FMM Optimal Energy is

also divided into FMM Overlapping Optimal Energy and FMM Non-Overlapping Optimal Energy. Any FMM Optimal Energy slice below or above the Energy Bid has no associated Energy Bid price, and it is not included in BCR as described in Section 11.5.

- FMM Overlapping Optimal Energy

The portion of FMM Optimal Energy that overlaps with MSS Load Following Energy.

- FMM Schedule

The binding output of the FMM resulting from Bids submitted to the RTM. The portion of a HASP Block Intertie Schedule that becomes financially binding shall constitute a FMM Schedule.

* * *

- Forced Outage

An Outage for which sufficient notice cannot be given to allow the Outage to be factored into the Day-Ahead Market or RTM bidding processes.

* * *

- HASP Advisory Schedule

The output of the HASP that is not a HASP Block Intertie Schedule.

- RTM Congestion Credit

A credit provided to Scheduling Coordinators to offset any RTM Congestions Charges that would otherwise be applied to the valid and balanced portions of any ETC or TOR Self-Schedules in the Real-Time Market as provided in Section 11.5.7.

- FMM AS Award

An award for an import of Ancillary Services established through the Fifteen Minute Market.

- RTM 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 to the RTM, Inter-SC Trades of Ancillary Services, and Inter-SC Trades of IFM Load Uplift Obligations.

-

- **HASP Block Intertie Schedule**

The output of the HASP resulting from accepted Self-Schedule Hourly Blocks for Energy and Ancillary Services and awarded Economic Hourly Block Bids (but excluding an Economic Hourly Block Bid with Intra-Hour option). HASP Block Intertie Schedules, as modified after accepted, are settled at the applicable FMM LMP and FMM ASMPs. HASP Block Intertie Schedules are advisory only in that they may be curtailed by the CAISO for Reliability reasons. Otherwise, the MWH quantity of a HASP Block Intertie Schedule is financially binding.

* * *

- FMM Scheduled Energy

IIE from a Non-Dynamic System Resource, exclusive of Real-Time Pumping Energy and Real-Time Minimum Load Energy, produced or consumed due to hourly scheduling in the HASP. HASP Scheduled Energy is produced above the higher of the Day-Ahead Schedule or the Minimum Load, and below the HASP Intertie Schedule, or consumed below the Day-Ahead Schedule and above the HASP Intertie Schedule. In the latter case, HASP Scheduled Energy overlaps with Day-Ahead Scheduled Energy; HASP Scheduled Energy does not overlap with Real-Time Pumping Energy or Real-Time Minimum Load Energy, but it may overlap with other IIE subtypes. HASP Scheduled Energy is indexed against the relevant Energy Bid and sliced by service type, depending on the Ancillary Services capacity allocation on the Energy Bid, and by Energy Bid price. HASP Scheduled Energy slices are settled as described in Section 11.4, and they are included in BCR as reflected in Section 11.8.4; provided that if any HASP Scheduled Energy slice below or above the Energy Bid has no associated Energy Bid price, it is not included in BCR as described in Section 11.8.4. For Non-Dynamic System Resources that are designated as MSS Load following resources, HASP Scheduled Energy is considered as MSS Load Following Energy.

* * *

Hour-Ahead Scheduling Process (HASP)

The process conducted by the CAISO beginning at seventy-five minutes prior to the Trading Hour through which the CAISO conducts the activities specified in Section 34.2. .

* * *

- RTD Imbalance Energy

The deviation of Supply or Demand from FMM Schedule, positive or negative, as measured by metered Generation, metered Load, or Real-Time Interchange Schedules. RTD Imbalance Energy is composed of RTD Instructed Imbalance Energy and Uninstructed Imbalance Energy.

- RTD IIE Settlement Amount

The payment due a Scheduling Coordinator for positive RTD Instructed Imbalance Energy or the charge assessed on a Scheduling Coordinator for negative RTD Instructed Imbalance Energy, as calculated pursuant to Section 11.5.1.2.

* * *

- RTD Instructed Imbalance Energy (RTD IIE)

The portion of Imbalance Energy resulting from Dispatch Instructions and FMM Schedules.

* * *

- Market Clearing

The act of conducting any of the process used by the CAISO to determine LMPs, Day-Ahead Schedules, RUC Awards or AS Awards, HASP Intertie Block Schedules, ~~FFM~~ HASP Block AS Awards, FMM Schedules and Dispatch Instructions based on Supply Bids and Demand Bids or CAISO Demand Forecast.

* * *

- Market Close

The time after which the CAISO is no longer accepting Bids for its CAISO Markets which: 1) for the DAM is 10:00 A.M. Pacific Time of the Day-Ahead; and 2) for RTM is approximately seventy-five minutes prior to the Operating Hour.

* * *

- MSS Load Following Energy

RTD IIE, exclusive of Standard Ramping Energy, Ramping Energy Deviation, and Residual Imbalance Energy, produced or consumed due to Load following by an MSS. MSS Load Following Energy is the RTD IIE that corresponds to the algebraic Qualified Load Following

Instruction, relative to the Day-Ahead Schedule. MSS Load Following Energy does not coexist with FMM Optimal Energy, and it does not overlap with Standard Ramping Energy, Ramping Energy Deviation, or Residual Imbalance Energy, but it may overlap with Day-Ahead Scheduled Energy, RTD Derate Energy, RTD Exceptional Dispatch Energy, RTD Optimal Energy. MSS Load Following Energy is settled as provided in Section 11.5.1, and it is not included in BCR as described in Section 11.8.4.

* * *

- Net Procurement

The awarded amount (MW) of a given Ancillary Service in the Day-Ahead and Real-Time Markets, minus the amount of that Ancillary Service associated with payments rescinded pursuant to any of the provisions of Section 8.10.2.

* * *

- Non-priced Quantity

As set forth in Section 27.4.3, a quantitative value in a CAISO Market that may be adjusted by the SCUC or SCED in the CAISO market optimizations but that does not have an associated bid price submitted by a Scheduling Coordinator. The Non-priced Quantities that may be so adjusted are: Energy Self-Schedules, Transmission Constraints, market energy balance constraints, Ancillary Service requirements, conditionally qualified and conditionally unqualified Ancillary Service self-provision, limits in RUC on minimum load energy, quick start capacity and minimum generation, Day-Ahead Energy Schedules resulting from the IFM, and estimated FMM Self-Schedules used in RUC.

* * *

- RTD Non-Overlapping Optimal Energy

The portions of RTD Optimal Energy that are not RTD Overlapping Optimal Energy, which are indexed against the relevant Energy Bid and sliced by Energy Bid price.

* * *

- Operational Adjustment

The difference between the Energy scheduled in the Balancing Authority Area check-out process for Scheduling Points and the FMM Schedule for Non-Dynamic System Resources.

* * *

- RTD Optimal Energy

Any remaining RTD IIE after accounting for all other RTD IIE subtypes. RTD Optimal Energy does not overlap with FMM Optimal Energy Standard Ramping Energy, Ramping Energy Deviation, Residual Imbalance Energy, RTD Minimum Load Energy, RTD Derate Energy, and RTD Exceptional Dispatch Energy, but it may overlap with Day-Ahead Scheduled Energy, and MSS Load Following Energy. RTD Optimal Energy is indexed against the relevant Energy Bid and sliced by service type, depending on the AS capacity allocation on the Energy Bid. Optimal Energy is also divided into RTD Overlapping Optimal Energy and RTD Non-Overlapping Optimal Energy. Any RTD Optimal Energy slice below or above the Energy Bid has no associated Energy Bid price, and it is not included in BCR as described in Section 11.5.1.1.

* * *

- RTD Overlapping Optimal Energy

The portion of RTD Optimal Energy that overlaps with MSS Load Following Energy.

* * *

- Persistent Deviation Metric

A threshold metric used to evaluate a resource's change in output between Settlement Intervals relative to the change in Dispatch by the CAISO between Settlement Intervals. The Persistent Deviation Metric is applied by Settlement Interval and is applied for the twenty-four -minute Settlement Intervals that comprise the previous two Trading Hours. Thus, the evaluation window is a rolling two hours, incrementing in hourly Settlement Intervals. The Persistent Deviation Metric for each Settlement Interval (t) is measured as the ratio of: (1) Metered Energy in the prior Settlement Interval (t-1), less the Metered Energy in the given Settlement Interval (t); and (2) Metered Energy in the prior Settlement Interval (t-1), less the Expected Energy in the given Settlement Interval (t), and less the Regulation Energy in the given Settlement Interval (t).

* * *

- Protective Measures

The temporary Settlement treatment delineated in Section 11.12.1 that is provided to Participating Intermittent Resources that qualify to receive such treatment under Section 4.8.1 and that complete their election to receive such treatment no later than thirty (30) days after the effective date of Section 4.8.1

* * *

- Real-Time Congestion Offset

For each Settlement Period of the RTM, the CAISO shall calculate the Real-Time Congestion Offset as the difference of 1) the sum of the products of the total of the Demand Imbalance Energy and Virtual Supply liquidated as demand in the RTM and the RTM MCC at the relevant Location; and 2) the sum of the products of the total of the Supply Imbalance Energy and Virtual Demand liquidated as supply in the RTM, and the RTM MCC at the relevant Location; including also the sum of RTM Congestion Charges for Intertie Ancillary Services Awards, and excluding the RTM Congestion Credit for ETCs and TORs calculated as provided in Section 11.5.7.1. The Real-Time Congestion Offset is allocated as provided in Section 11.5.4.2.

* * *

- Real-Time Market (RTM)

The spot market conducted by the CAISO using SCUC and SCED in the Real-Time which includes the HASP, FMM, 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 RTM divided by the number of Settlement Intervals in a Trading Hour, as further provided in Section 11.8.4.1.4.

* * *

- RTD Minimum Load Energy

RTD 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 RTD Minimum Load Energy is accounted as MSS Load Following Energy instead. RTD Minimum Load Energy is RTD IIE above the Day-Ahead Schedule (or zero if there is no Day-Ahead Schedule of Energy) and below the registered Minimum Load. RTD Minimum Load Energy does not overlap with any other Expected Energy type. RTD 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. RTD IIE that is consumed when a resource that is scheduled in the DAM is shut down in the RTM is accounted as RTD Optimal Energy and not as RTD Minimum Load Energy.

* * *

- RTD Pumping Energy

RTD 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 Dispatch, including pump shut-down. RTD Pumping Energy does not overlap with any other RTD Expected Energy type. RTD 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.

* * *

*** * ***

- RTD MSS Price

1) The RTD LAP price for the MSS when the MSS internal metered Demand exceeds the MSS internal measured Generation; or 2) the weighted average of the RTDLMPs for all applicable PNodes within the relevant MSS when MSS internal measured Generation exceeds MSS internal

Measured Demand where weighting factors for computing the weighted average are based on the measured Energy of all Generation at the corresponding PNodes.

* * *

* * *

* * *

- Schedule

A Day-Ahead Schedule, a FMM Schedule.

*** * ***

- Security Constrained Unit Commitment (SCUC)

An algorithm performed by a computer program over multiple hours that determines the Commitment Status and Day-Ahead Schedules, AS Awards, RUC Awards, Hourly Intertie Block Schedules, FMM Schedules and Dispatch Instructions for selected resources and minimizes production costs (Start-Up, Minimum Load and Energy Bid Costs in IFM, and RTM; Start-Up, Minimum Load and RUC Availability Bid Costs) while respecting the physical operating characteristics of selected resources and Transmission Constraints.

* * *

- Self-Provided Ancillary Services

A Submission to Self-Provide Ancillary Services in the Day-Ahead Market or Real-Time Market that has been accepted by the CAISO. Acceptance will occur prior to Ancillary Service Bid evaluation in the relevant market and indicates that the CAISO has determined the submission is feasible with regard to resource operating characteristics and regional constraints and is qualified to provide the Ancillary Service in the market for which it was submitted. Self-Provided Ancillary Services consist of self-provided Regulation Up reserves, self-provided Regulation Down reserves, self provided Spinning Reserves, and self-provided Non-Spinning Reserves.

* * *

- Set Point

Scheduled operating level for each Generating Unit or other resource scheduled to run in the FMM Schedule and FMM Award.

* * *

- Settlement Interval

The five-minute time period over which the CAISO settles cost compensation amounts or deviations in Generation and Demand in RTM.

* * *

- Spinning Reserve Cost

The revenues paid to the suppliers of the total awarded Spinning Reserve capacity in the Day-Ahead Market 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.

* * *

* * *

- Uninstructed Imbalance Energy (UIE)

The portion of Imbalance Energy that is not RTD Instructed Imbalance Energy.

* * *

- Variable Energy Resource

A device for the production of electricity that is characterized by an Energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator.

*** * ***

- Alert, Warning Or Emergency (AWE) Notice

A CAISO operations communication issued to Market Participants and the public, under circumstances and in a form specified in CAISO Operating Procedures, when the operating requirements of the CAISO Controlled Grid are marginal because of Demand exceeding forecast, loss of major Generation sources, or loss of transmission capacity that has curtailed imports into

the CAISO Balancing Authority Area, or if insufficient Bids for the Supply of Energy and Ancillary Services have been submitted in the RTM for the CAISO Balancing Authority Area.

* * *

- Ancillary Service Award Or AS Award

The notification by the CAISO indicating that a Bid to supply an Ancillary Service has been selected to provide such service in the DAM or RTM.

* * *

- Ancillary Service Schedule Or AS Schedule

The notification by the CAISO indicating that a Submission to Self-Provide an Ancillary Service has been selected to provide such service in the DAM or RTM.

* * *

- Commitment Interval

The fifteen minute period of time for which the CAISO commits resources or procures Ancillary Services through the FMM.

* * *

- Decline Monthly Charge – Exports

A charge that applies to the aggregate of a Scheduling Coordinator's HASP Block Intertie Schedules for Energy exports that are not delivered in a Trading Month, as determined pursuant to Section 11.31.1.

- Decline Monthly Charge – Imports

A charge that applies to the aggregate of a Scheduling Coordinator's HASP Block Intertie Schedules for Energy imports that are not delivered in a Trading Month, as determined pursuant to Section 11.31.1.

- Decline Potential Charge – Exports

A potential charge that is calculated for any HASP Block Intertie Schedule for an Energy export when the HASP Block Intertie Schedule is not delivered for any reason, which potential charge and its applicability are determined pursuant to Section 11.31.

- Decline Potential Charge – Imports

A potential charge that is calculated for any HASP Block Intertie Schedule for an Energy import when the HASP Block Intertie Schedule is not delivered for any reason, which potential charge and its applicability are determined pursuant to Section 11.31.

- Decline Threshold Percentage – Imports/Exports

The rate at which Scheduling Coordinators may fail to deliver imports or exports in accordance with HASP Block Intertie Schedules without incurring Decline Monthly Charges – Imports or Decline Monthly Charges – Exports, as measured by the respective percentages of HASP Block Intertie Schedules for import or export MWh quantities that the Scheduling Coordinator does not deliver during a Trading Month. The Decline Threshold Percentage – Imports/Exports is ten percent (10%).

- Decline Threshold Quantity – Imports/Exports

The MWh quantity of HASP Block Intertie Schedules for imports or exports of Energy that a Scheduling Coordinator may fail to deliver during a Trading Month without incurring Decline Monthly Charges – Imports or Decline Monthly Charges – Exports. The Decline Threshold Quantity – Imports/Exports is 300 MWh.

* * *

- Inter-SC Trade Period

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

* * *

- Market Power Mitigation - RRD

The two-optimization run process conducted in both the Day-Ahead Market and the RTM that determines the need for the CAISO to employ market power mitigation measures or Dispatch RMR Units.

* * *

- Non-Spinning Reserve Cost

The revenues paid to the suppliers of the total awarded Non-Spinning Reserve capacity in the Day-Ahead Market and Real-Time Market, minus, (ii) the payments rescinded due to either the failure to conform to CAISO Dispatch Instructions or the unavailability of the Non-Spinning Reserves under Section 8.10.8.

* * *

- RTM MCL Credit For Eligible TOR Self-Schedules

A credit provided to Scheduling Coordinators pursuant to Section 17.3.3 to offset any RTM 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 11.5.7.2.

* * *

- Tolerance Band

The permitted area of variation for performance requirements of resources used for various purposes as further provided in the CAISO Tariff. The Tolerance Band is expressed in terms of Energy (MWh) for Generating Units, System Units and imports from Dynamic System Resources for each Settlement Interval and equals the greater of the absolute value of: (1) five (5) MW divided by the number of Settlement Intervals per Settlement Period or (2) three (3) percent of the relevant Generating Unit's, Dynamic System Resource's or System Unit's maximum output (PMax), as registered in the Master File, divided by the number of Settlement Intervals per Settlement Period. The maximum output (PMax) of a Dynamic System Resource will be established by agreement between the CAISO and the Scheduling Coordinator representing the Dynamic System Resource on an individual case basis, taking into account the number and size of the generating resources, or allocated portions of generating resources, that comprise the Dynamic System Resource.

The Tolerance Band is expressed in terms of Energy (MWh) for Participating Loads for each Settlement Interval and equals the greater of the absolute value of: (1) five (5) MW divided by the number of Settlement Intervals per Settlement Period or (2) three (3) percent of the applicable Intertie Schedule or CAISO Dispatch amount divided by the number of Settlement Intervals per Settlement Period.

The Tolerance Band shall not be applied to Non-Dynamic System Resources.

* * *

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 (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.

B. The System Marginal Energy Cost Component of LMP

The SMEC shall be the same for each location throughout the system. SMEC is the sensitivity of the power balance constraint at the optimal solution. The power balance constraint ensures that the physical law of conservation of Energy (the sum of Generation and imports equals the sum of Demand, including exports and Transmission Losses) is accounted for in the network solution. For the designated reference location the CAISO will utilize a distributed Load Reference Bus for which constituent PNodes are weighted using the Reference Bus distribution factors. The Load distributed Reference Bus distribution factors are based on the Load Distribution Factors at each PNode that represents cleared Load in the Integrated Forward Market or forecast Load for MPM, RUC and RTM. In the Integrated Forward Market, in the event that the market is not able to clear based on the use of a distributed load Reference Bus, the CAISO will use a distributed generation Reference Bus for which the constituent nodes and the weights are determined economically within the running of the Integrated Forward Market based on available economic bids. In the event that the CAISO employs a distributed generation Reference Bus, it will notify Market Participants of which Integrated Forward Market runs required the use of this backstop mechanism. A distributed Load Reference Bus will be used for RUC and RTM regardless of whether a distributed Generation Reference Bus were used in the corresponding Integrated Forward Market run. Once the Reference Bus is selected, the System Marginal Energy Cost is the cost of economically providing the next increment of Energy at the distributed Reference Bus, based on submitted Bids.

* * *

Appendix E

Submitted Ancillary Services Data Verification

Verification of Submitted Data for Ancillary Services

The CAISO shall use the following procedures for verifying the Bid information submitted by Scheduling Coordinators for Ancillary Services.

1. Bid File and Schedule Format. The CAISO shall verify that the Bids conform to the format specified for the type of Ancillary Service Bid submitted. If the Bid file does not conform to specifications, it shall be annotated by the CAISO to indicate the location of the errors, and returned to the Scheduling Coordinator for corrections. Any changes made by a Scheduling Coordinator shall require a new submittal of Bid information, and all validity checks shall be performed on the re-submitted Bid.

2. Generation Bids.

2.1. Quantity Data. The CAISO shall verify that no Scheduling Coordinator is submitting a Bid quantity for Regulation, Spinning Reserve, or Non-Spinning Reserve which exceeds available capacity for Regulation and Operating Reserves on the Generating Units, Loads and resources scheduled for that Settlement Period.

2.2 Location Data. The CAISO shall verify that the Location data corresponds to the CAISO Controlled Grid Interconnection data.

2.3. Operating Capability. The CAISO shall verify that the operating capability data corresponds to the CAISO Controlled Grid Interconnection data for each Generating Unit, Load or other resource for which a Scheduling Coordinator is submitting an Ancillary Service Bid.

3. [Not Used]

4. Notification of Validity or Invalidity of Ancillary Services Bids. The CAISO shall, as soon as reasonably practical following the receipt of competitive Bids or Self-Provided Ancillary Service Self-Schedules, send to the Scheduling Coordinator who submitted the Bid the following information:

(a) acknowledgment of receipt of the competitive Bid or Self-Provided Ancillary Service Self-Schedule;

(b) notification that the Bid has been accepted or rejected for non-compliance with the rules specified in this Appendix. If a Bid is rejected, such notification shall contain an explanation of why the Bid was not accepted;

(c) a copy of the Bid or Self-Schedule as processed by the CAISO.

In response to an invalid Bid, the Scheduling Coordinator shall be given a period of time to respond to the notification. The Scheduling Coordinator shall respond by resubmitting a corrected Bid. If the Scheduling Coordinator does not respond to the notification within the required time frame, the CAISO shall proceed without that Scheduling Coordinator's Bid.

5. Treatment of Missing Values.

5.1 Missing Location Values. Any Bid submitted without a Location Code shall be deemed to have a zero Bid quantity for that Settlement Period.

5.2 Missing Quantity Values. Any Bid submitted without a quantity value shall be deemed to have a zero Bid quantity for Ancillary Service capacity for that Settlement Period.

5.3 Missing Price Values. Any Bid submitted with non-zero quantity value, but with a missing price value, shall be rejected.

6. Treatment of Equal Price Bids. The CAISO shall allow these Scheduling Coordinators to resubmit, at their own discretion, their Bid no later than two (2) hours the same day the original Bid was submitted. In the event identical prices still exist following resubmission of Bids, the CAISO shall determine the merit order for each Ancillary Service by considering applicable constraint information for each Generating Unit, Load or other resource, and optimize overall costs for the Trading Day. If equal Bids still remain, the CAISO shall proportion participation in the Day-Ahead Schedule or HASP or FMM Schedule (as the case may be) amongst the bidding Generating Units, Loads and resources with identical Bids to the extent permitted by operating constraints and in a manner deemed appropriate by the CAISO.

7. Receipt of Bids. The CAISO shall maintain an audit trail relating to the receipt of Bids and the processing of those Bids.

* * *

Appendix G

Pro Forma Reliability Must-Run Contract

MUST-RUN SERVICE AGREEMENT

* * *

DEFINITIONS

Terms, when used with initial capitalization in this Agreement and the attached schedules shall have the meanings set out below. The singular shall include the plural and vice versa. "Includes" or "including" shall mean "including without limitation." References to a section, article or schedule shall mean a section, article or schedule of this Agreement, unless another agreement or instrument is specified. Unless the context otherwise requires, references to any law shall be deemed references to such law as amended, replaced or restated from time to time. Unless the context otherwise requires, any reference to a "person" includes any individual, partnership, firm, company, corporation, joint venture, trust, association, organization or other entity, in each case whether or not having separate legal identity. References to "Owner" or "CAISO" shall, unless the context otherwise requires, mean Owner and CAISO respectively and their permitted assigns and successors. References to sections or provisions of the CAISO Tariff include any succeeding sections or provisions of the CAISO Tariff.

"Adjusted RMR Invoice" is defined in Section 9.1(b).

"ADR" means alternative dispute resolution pursuant to Section 11.1 and Schedule K.

"Agreement" means this Must-Run Service Agreement, including schedules, as amended from time to time.

"Ancillary Services" means those ancillary services identified in Schedule E.

"Applicable UDC Tariff" means the applicable retail tariff(s), of the utility distribution company in whose service territory the Unit is located, under which the Unit is eligible to purchase power to meet its auxiliary power requirements, whether or not the Unit actually purchases auxiliary power under the tariff(s). The Applicable UDC Tariff for the Facility is set out on Schedule A.

"Availability" means, in relation to a Unit, the maximum quantity of Energy or Ancillary Services, measured at the Delivery Point, the Unit is capable of producing at any given time assuming adequate time to ramp the Unit to that maximum quantity. For hydroelectric Units, Availability measures the extent to which the Unit is capable of producing Energy or providing Ancillary Services, given sufficient usable water to produce Energy or provide Ancillary Services. The Availability of a Unit is measured in MW.

"Availability Deficiency Factor" is calculated as set forth in Section 8.5.

"Availability Payment" means the payment to Owner described in Section 8.1 for Condition 1 and 8.2 for Condition 2.

"Availability Test" means a test of a Unit's Availability requested by CAISO or Owner pursuant to Section 4.9(a).

"Bid Sufficiency Test" means the test described in Section 4.1(c).

"Billable MWh" is defined in Section 8.3(a).

"**Billing Month"** is defined in Section 9.1(b).

"Black Start" means the ability of a Unit to start without an external source of electricity or the process of doing so.

"Business Day" means any of Monday through Friday, excluding any day which is a Federal bank holiday.

"CAISO Availability Notice" means a notice given by CAISO to Owner modifying the Availability of the Unit under Section 4.9 (a)(vi) or Section 5.4 (b).

"CAISO Controlled Grid" is defined in Appendix A to the CAISO Tariff.

"CAISO Invoice" is defined in Section 9.1(b).

"CAISO's Repair Share" is defined in Section 7.5 (g).

"CAISO Settlements Calendar" is defined in Section 9.1(b).

"CAISO Tariff" means the California Independent System Operator Tariff on file with FERC and in effect from time to time.

"Calculation Hour" is defined in Section 8.3(c)(i)(A).

"California Agency" means the agency or agencies responsible for representing the State of California in FERC proceedings involving the rates, terms and conditions of service under this Agreement.

"Capital Item" means an addition or modification to, change in or repair, replacement or renewal of plant, equipment or facilities used by Owner to fulfill Owner's obligations under this Agreement. A Capital Item does not include Repairs to such plant, equipment or facilities. A Capital Item does not include an Upgrade, unless recovery of costs of the Upgrade has been approved by CAISO. For purposes of this Agreement, Capital Items are "retirement units" or other items the costs of which are properly capitalized in accordance with the FERC Uniform System of Accounts, 18 C.F.R. Part 101.

"Closed" is defined in Section 2.5.

"Collateral" is defined in Section 9.7.

"Comparable RMR Unit" is defined in Section 4.7 (f).

"Competitive Constraints Run" is defined in Appendix A to the CAISO Tariff.

"Condition 1" means the terms of this Agreement applicable to a Unit providing service under Condition 1 as described in Section 3.1.

"Condition 2" means the terms of this Agreement applicable to a Unit providing service under Condition 2 as described in Section 3.1.

"Confidential Information" is defined in Section 12.5.

"Contract Service Limits" for a given Unit means the Maximum Annual MWh, Maximum Annual Service Hours, Maximum Annual Start-ups, and, if applicable, the Maximum Monthly MWh as stated in Section 13 of Schedule A.

"Contract Year" means a calendar year; provided, however, that the initial Contract Year shall commence on the Effective Date and expire at the end of the calendar year in which the Effective Date occurred. If the Agreement terminates during a calendar year, the last Contract Year shall end on the termination date.

"Counted MWh" is defined in Section 5.3.

"Counted Service Hours" is defined in Section 5.3.

"Counted Start-ups" is defined in Section 5.3.

"Credit Carryforward" is defined in Section 9.1(e) and Section 9.1(f).

"Day Ahead Schedule" is defined in Appendix A to the CAISO Tariff.

"Deliver" means to deliver Energy into the CAISO Controlled Grid or Distribution Grid (at the Delivery Point or such other point as the Parties may otherwise agree) or to provide Ancillary Services (whether or not any Energy is Delivered as part of the Ancillary Service) pursuant to a Dispatch Notice (including deliveries for which a Dispatch Notice has been issued under Section 4.5 and deliveries in substitute Market Transactions under Section 5.2) and the terms "Delivered" and "Delivering" shall be construed accordingly.

"Delivered Ancillary Services" means the type and, if applicable, the MW of Ancillary Services Delivered by Owner.

"Delivered MWh" means the MWh of Energy Delivered by Owner and shall be equal to the sum of Billable MWh, Hybrid MWh, MWh deemed Delivered under Section 5.1 (f); and MWh Delivered from Substitute Units under Section 5.1 (c) or Section 5.1 (d).

"Delivery Point" means the point identified in Section 4 of Schedule A where Energy and Ancillary Services are to be Delivered.

"Direct Contract" means a contract between Owner and one or more identified persons for the sale of Energy or Ancillary Services other than under this Agreement, and shall in no event include a transaction in a market run by CAISO.

"Dispatch Notice" means a notice delivered by CAISO to Owner's Scheduling Coordinator on a daily, hourly or real-time basis requesting dispatch of one or more Unit(s) to provide Energy or Ancillary Services under this Agreement. Dispatch Notices include: (a) Day-Ahead Schedules and Real-Time Dispatches where the RMR Unit or Units are flagged as RMR Dispatches as a result of the Market-Power Mitigation and Reliability Requirements Determination processes pursuant to the CAISO Tariff, (b) Manual RMR Dispatch Notices, (c) notices deemed to have been given by CAISO for the Energy actually Delivered by a Unit that starts or increases Energy output as a result of a "system emergency" as defined in the CAISO Tariff whether the start or increase occurs automatically (for Units specified in Section 2 of Schedule A as having the ability to Start-up or ramp automatically) or pursuant to a standing written order of the CAISO, and (d) Test Dispatch Notices given by CAISO under Section 4.9 other than Test Dispatch Notices issued at Owner's request to test Availability or heat input of the Unit.

"Distribution Grid" means the radial lines, distribution lines and other facilities used to transmit or distribute Energy from the Facility other than the CAISO Controlled Grid.

"Due Date" means the date which is the 30th day after the date on which a Party submits an invoice to the other Party. Notwithstanding the above, the Due Dates for the Revised Estimated RMR Invoice, the Revised Adjusted RMR Invoice, and the CAISO Invoice shall be as specified in Section 9.1(b). If the 30th day, or other Due Date as specified in Section 9.1(b), is not a Business Day, the Due Date shall be the next Business Day.

"Effective Date" means the date this Agreement becomes effective pursuant to Section 2.1 thereof.

"Energy" means electrical energy.

"Estimated RMR Invoice" is defined in Section 9.1(b).

"Existing Contractual Limitation" means a contractual limitation on the Start-up or operation of a Unit existing prior to the date the Unit was designated as a Reliability Must-Run Unit. All Existing Contractual Limitations are described in Section 14 of Schedule A.

"Facility" means the electrical generating facility described in Schedule A. A hydroelectric facility may include one or more electric generating facilities which are hydraulically linked by a common water system.

"Facility Trust Account" is defined in Section 9.2.

"FERC" means the Federal Energy Regulatory Commission, any successor agency, or any other agency to whom authority under the Federal Power Act affecting this Agreement has been delegated.

"Final Invoice" is defined in Section 9.10(a).

"Financing Agreement" means agreements for financing the Facility or any portion of the Facility.

"Fixed Option Payment Factor" is set forth in Section 2 of Schedule B.

"Force Majeure Event" means any occurrence beyond the reasonable control of a Party which causes the Party to be unable to perform an obligation under this Agreement in whole or in part and which could not have been avoided by the exercise of Good Industry Practice. Force Majeure Event includes an act of God, war, civil disturbance, riot, strike or other labor dispute, acts or failures to act of Governmental Authority, fire, explosion, flood, earthquake, storm, drought, lightning and other natural catastrophes. A Force Majeure Event shall not include lack of finances or the price of fossil fuel.

"Forced Outage" means a reduction in Availability of a Unit for which sufficient notice is not given to allow the outage to be factored into CAISO's Day-Ahead Market or Real-Time Market.

* * *

Appendix I Station Power Protocol

1 General Conditions

1.1 Procurement

Station Power may be voluntarily self-supplied through On-Site Self-Supply or Remote Self-Supply. Third Party Supply may serve Station Power only to the extent permissible under the rules and regulations of the applicable Local Regulatory Authority.

1.2 Eligibility

1.2.1 Only Station Power Loads associated with Generating Units in the CAISO Balancing Authority Area that are part of an approved Station Power Portfolio may be self-supplied in accordance with this SPP. Each Generating Unit must be subject to a PGA, Net Scheduled PGA, or MSS Agreement. Any generating facility outside the CAISO Balancing Authority Area owned by the same entity is eligible to provide Remote Self-Supply to Station Power Loads, subject to the terms of this SPP. Generating Units wishing to self-supply Station Power, by means other than netting permitted under Section 10.1.3 of the CAISO Tariff, shall complete the application process specified in Section 2 of this SPP.

1.2.2 Station Power may be self-supplied by a single corporate entity, government agency, or joint powers agency or other legal entity organized under the laws of the State of California. A Station Power Portfolio may not include any facilities that are owned by the owner's corporate Affiliates. In the case of a joint powers agency, a Station Power Portfolio may not include facilities independently owned by one or more members or other legally distinct entities. If an entity owns a portion of a jointly owned Generating Unit, such ownership share may be included in a Station Power Portfolio up to the amount of the associated entitlement to Energy from the jointly-owned Generating Unit provided that: (i) the entity has the right to call upon that Energy for its own use; and (ii) the Energy entitlement is not characterized as a sale from the jointly owned Generating Unit to any of its joint owners.

1.2.3 Net Output from generating facilities outside the CAISO Balancing Authority Area may be included in a Station Power Portfolio and used as a source of Remote Self-Supply to serve Station Power of Generating Units in the CAISO Balancing Authority Area and part of the Station Power Portfolio, so long as the following conditions are fulfilled:

(a) Imports of Net Output must be submitted in Self-Schedules using a Resource ID specified by the CAISO;

(b) FMM Schedules using such Resource ID do not exceed the available Net Output of such generating facilities in any hour;

(c) Firm transmission service to a Scheduling Point that assures delivery into the CAISO Balancing Authority Area is secured; and

(d) Meter Data for generating facilities located outside the CAISO Balancing Authority Area shall be subject to CAISO audit to verify performance in accordance with these requirements.

* * *

Appendix M

Dynamic Scheduling Protocol (DSP)

1. DYNAMIC SCHEDULES OF IMPORTS TO THE CAISO BALANCING AUTHORITY AREA

1.1 CONSISTENCY WITH NERC/WECC POLICIES AND REQUIREMENTS

1.1.1 Scheduling and operation of Dynamic Schedule functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling, in accordance with Section 4.5.4.3 of the CAISO Tariff.

1.2 CONTRACTUAL RELATIONSHIPS

1.2.1 The Host Balancing Authority must execute an operating agreement with the CAISO particular to the operation of the functionality supporting dynamic imports of Energy, and/or Energy associated with non-Regulation Ancillary Services to the CAISO Balancing Authority Area.

1.2.2 The Scheduling Coordinator for the System Resource must execute a Dynamic Scheduling Agreement for Scheduling Coordinators with the CAISO governing the operation of the Dynamic Schedule functionality, which agreement will include a provision for its termination based on failure to comply with these standards.

1.2.3 The Scheduling Coordinator for the System Resource must have the necessary operational and contractual arrangements in place with the Host Balancing Authority to implement Section 1.3 and other provisions of this Appendix M. Such arrangements must include the Host Balancing Authority's ability to receive telemetry from the System Resource and to issue a Dynamic Schedule signal pertinent to that System Resource to the CAISO. Proof of such arrangements must be provided to the CAISO.

1.3 COMMUNICATIONS, TELEMETRY, AND OTHER TECHNICAL REQUIREMENTS

1.3.1 The communication and telemetry requirements set forth in the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, will apply to all Dynamic Schedules, except for (a) those dynamic functionalities established prior to the CAISO Operations Date, (b) the requirements that are specific solely to Regulation, and (c) the requirements set forth below.

1.3.2 A dedicated primary communications link and a backup communications link between the CAISO's EMS and the Host Balancing Authority Area EMS are required.

1.3.3 The primary circuit will be T1-class, or equivalent, utilizing the inter-control center communications protocol ("ICCP"). The backup communications link will be diversely routed between the Host Balancing Authority Area EMS and the CAISO Balancing Authority Area EMS on separate physical paths and devices, provided

that the CAISO may approve an alternative means of providing backup communications if the circumstances warrant.

1.3.4 A dedicated primary communications link and a backup communications link between the Host Balancing Authority Area EMS and any Intermediary Balancing Authority Area EMS are required, if requested by the Intermediary Balancing Authority Area.

1.3.5 The Balancing Authority Area hosting a Dynamic System Resource must have a mechanism implemented to override the associated dynamic signal.

1.3.6 The dynamic signal must be properly incorporated into all involved Balancing Authority Areas' ACE equations.

1.3.7 The System Resource must have communications links with the Host Balancing Authority Area consistent with this Appendix M.

1.4 LIMITS ON DYNAMIC IMPORTS

1.4.1 The CAISO reserves the right to establish limits applicable to the amount of any Ancillary Services and/or Energy imported into the CAISO Balancing Authority Area, whether delivered dynamically or statically. Such limits may be established based on any one, or a combination, of the following considerations: a percentage of, or a specific import limit applicable to, total CAISO Balancing Authority Area requirements; a percentage at, or a specific import limit applicable to, a particular Intertie or a Transmission Interface; a percentage of, or a specific import limit applicable to, total requirements in a specific Ancillary Service Region; or operating factors which may include, but are not limited to, operating Nomograms, Remedial Action Schemes, protection schemes, scheduling and curtailment procedures, or any potential single points of failure associated with the actual delivery process. The CAISO may implement a moratorium on the establishment of new Dynamic Schedules associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.

1.4.2 The CAISO may, at its discretion, either limit or forego procuring Ancillary Services at particular Balancing Authority Area Interties to ensure that Operating Reserves are adequately dispersed throughout the CAISO Balancing Authority Area as required by NERC and WECC reliability standards and any requirements of the NRC.

1.4.3 A Dynamic System Resource and its Dynamic Schedules must be permanently associated with a particular CAISO Intertie (the CAISO may, from time to time and at its discretion, allow for a change in such pre-established association of the Dynamic System Resource with a particular CAISO Intertie).

1.5 OPERATING AND SCHEDULING REQUIREMENTS

1.5.1 For any Operating Hour for which Ancillary Services (and associated Energy) is scheduled dynamically to the CAISO from the System Resource, firm transmission service must be reserved across the entire Dynamic Schedule transmission path external to the CAISO Balancing Authority Area. For any Operating Hour for which only Energy is scheduled dynamically to the CAISO

from the System Resource, transmission service must be reserved across the entire Dynamic Schedule transmission path external to the CAISO Balancing Authority Area, or must be available within the Operating Hour, sufficient to support the Schedule and Dispatch of the System Resource. In the event that the System Resource has not established a sufficient transmission reservation prior to the Operating Hour, and will not be able to use additional transmission within the Operating Hour, to support Dispatch up to its maximum available capacity, a derate must be reported in the CAISO's Outage management system to limit its Dispatch to its available transmission.

1.5.2 All Dynamic Schedules associated with Dynamic System Resources must be electronically tagged (by use of an E-Tag).

1.5.3 Formal inter-Balancing Authority Area Dynamic Schedules may be issued only by the Dynamic System Resource's Host Balancing Authority Area and must be routed through the EMSs of any Intermediary Balancing Authority Area, if requested by the Balancing Authority for the Intermediary Balancing Authority Area.

1.5.4 The CAISO will treat dynamically scheduled Energy as a resource contingent firm import. The CAISO will procure (or allow for self-provision of) Operating Reserves for Loads served by Dynamic System Resources as required by NERC and WECC reliability standards and any requirements of the NRC.

1.5.5 All Energy Interchange Schedules associated with dynamically scheduled imports of Spinning Reserve and Non-Spinning Reserve will be afforded similar treatment (i.e., resource contingent firm).

1.5.6 The dynamic signal must be integrated over time by the Host Balancing Authority Area for every Operating Hour.

1.5.7 Notwithstanding any Dispatches of the System Resource in accordance with the CAISO Tariff, the CAISO shall have the right to issue operating orders as defined in Section 37.2.1.1 of the CAISO Tariff to the System Resource either directly or through the Host Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such operating orders may be issued only within the range of the CAISO-accepted Energy and Ancillary Services, Bids for a given Operating Hour (or the applicable "sub-hour" interval).

1.5.8 If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0") except when in response to CAISO's Dispatch Instructions associated with accepted Ancillary Services or Energy Bids.

1.5.9 The Scheduling Coordinator for the Dynamic System Resource must have the ability to override the associated Dynamic Schedule in order to respond to the operating orders of the CAISO or the Host Balancing Authority.

1.5.10 Unless the Dynamic System Resource (1) is implemented as a directly-telemetered Load following functionality, (2) is base-loaded Regulatory Must-Take Generation, (3) responds to a CAISO intra-hour Dispatch Instruction, or (4) is an Eligible Intermittent Resource, the Dynamic Schedule representing such resource must follow WECC-approved practice of 20-minute ramps centered at

the top of the hour. The CAISO does not provide any special Settlements treatment nor offer any CAISO Tariff exemptions for dynamic Load following functionalities.

1.5.11 In Real-Time the Dynamic Schedule may not exceed the CAISO's Dispatch Operating Point. The Dispatch Operating Point represents not only the estimated Dynamic System Resource's Energy but also, in combination with any Ancillary Service Award that has not been dispatched as Energy, the transmission reservation on the associated CAISO Intertie.

1.5.12 Only one Dynamic System Resource may be associated with any one physical generating resource, unless the CAISO approves an implementation plan to establish multiple Dynamic System Resources for that generating resource.

1.5.13 If the Scheduling Coordinator for the Dynamic System Resource desires to participate in CAISO's Regulation market, all provisions of the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, shall apply.

1.6 CERTIFICATION, TESTING, AND PERFORMANCE MONITORING OF DYNAMIC IMPORTS OF ANCILLARY SERVICES

Scheduling Coordinators must be certified separately for each Ancillary Service. Scheduling Coordinators that wish to be certified for imports of Regulation shall be subject to certification under the Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, subject to verification of consistency with the requirements of this Appendix M.

1.6.1 The Scheduling Coordinator must request the certification of a System Resource to provide Ancillary Services for the CAISO Balancing Authority Area and cooperate, along with the Host Balancing Authority, in the testing of such System Resource in accordance with the CAISO Tariff and applicable CAISO Operating Procedures.

1.6.2 Only CAISO tested and certified System Resources will be allowed to bid and/or self-provide Ancillary Services into the CAISO Balancing Authority Area.

1.6.3 Dynamic Ancillary Services imports will be certified through testing, in accordance with the applicable CAISO Operating Procedures. All requests for certification of dynamic Ancillary Services imports will be reviewed and approved by the CAISO with respect to any technical limitations imposed by existing operational considerations, such as Remedial Action Schemes, operating Nomograms, and scheduling procedures. These reviews may impose certain Ancillary Services import limits in addition to those outlined in Section 1.4.1 of this Appendix M. Therefore, interested parties are advised and encouraged to contact the CAISO before they begin the process of the necessary systems design, preparation, and implementation for import of Ancillary Services to the CAISO Balancing Authority Area.

1.6.4 The CAISO will measure the performance of the Dynamic Schedule of Energy associated with an accepted Ancillary Services Bid against (1) the awarded range of Ancillary Service capacity; (2) the certified limits; and (3) the bid Ramp Rate, which shall be validated by the CAISO against the certified Ramp Rate.

1.6.5 The Scheduling Coordinator for the System Resource must notify the CAISO should any changes, modifications, or upgrades affecting control and/or performance of the System Resource be made. Upon such notification, the CAISO, at its discretion, may require that the System Resource be re-certified to import Ancillary Services into the CAISO Balancing Authority Area.

1.7 COMPLIANCE, LOSSES, AND FINANCIAL SETTLEMENTS

1.7.1 Energy delivered in association with Dynamic System Resources will be subject to all provisions of the CAISO's Imbalance Energy markets, including Uninstructed Deviation Penalties (UDP) (just as is the case with CAISO intra-Balancing Authority Area Generating Units of Participating Generators).

1.7.2 Dynamically scheduled and delivered Ancillary Services will be subject to the CAISO's compliance monitoring and remedies, just as any CAISO intra-Balancing Authority Area Generating Units of Participating Generators.

1.7.3 All Day-Ahead Market and RTM submitted Dynamic Schedules shall be subject to CAISO Congestion Management and as such may not exceed their transmission reservations in Real-Time (with the exception of intra-hour Dispatch Instructions of the Energy associated with accepted Ancillary Services Bids or Dispatch Instructions for Imbalance Energy).

Comment [A8]: See comments in overview.

1.7.4 All Dynamic Schedules and delivered Energy shall be subject to the standard CAISO Transmission Loss calculation as described in Section 27.5.1.1 and Appendix C of the CAISO Tariff.

1.7.5 Any transmission losses attributed to the Dynamic Schedule on transmission system(s) external to the CAISO Balancing Authority Area will be the responsibility of the owner(s)/operator(s) of the Dynamic System Resource.

1.7.6 A predetermined, mutually agreed, and achievable "PMax-like" fixed MW value will be established for every Dynamic System Resource to be used as the basis for the UDP calculation. Responsible Scheduling Coordinators will be able to report de-rates affecting the Dynamic System Resource via the CAISO's SLIC Outage reporting system.

1.7.7 Should there be any need or requirement, whether operational or procedural, for the CAISO to make Real-Time adjustments to the CAISO's inter-Balancing Authority Area Interchange Schedules (to include curtailments), Dynamic Schedules shall be treated in the same manner as similarly situated and/or effective static CAISO Interchange Schedules.

2. DYNAMIC SCHEDULES OF EXPORTS OF ENERGY FROM GENERATING UNITS IN THE CAISO BALANCING AUTHORITY AREA

2.1 CONSISTENCY WITH NERC/WECC POLICIES AND REQUIREMENTS

2.1.1 Scheduling and operation of Dynamic Schedule functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling, in accordance with Section 4.5.4.3 of the CAISO Tariff.

2.2 CONTRACTUAL RELATIONSHIPS

2.2.1 A Balancing Authority receiving a Dynamic Schedule of an export of Energy from a Generating Unit in the CAISO Balancing Authority Area must execute an operating agreement with the CAISO particular to the operation of the functionality supporting dynamic exports of Energy from the CAISO Balancing Authority Area.

2.2.2 The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must execute a Dynamic Scheduling Agreement for Scheduling Coordinators with the CAISO governing the operation of the Dynamic Schedule functionality, which agreement will include a provision for its termination based on failure to comply with these standards.

2.2.3 The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the necessary operational and contractual arrangements in place with the Balancing Authority receiving the export Dynamic Schedule to implement Section 2.3 and other provisions of this Appendix M. Such arrangements must include the Balancing Authority's ability to receive telemetry from the Generating Unit and to receive a Dynamic Schedule signal pertinent to that Generating Unit from the CAISO. Proof of such arrangements must be provided to the CAISO.

2.3 COMMUNICATIONS, TELEMETRY, AND OTHER TECHNICAL REQUIREMENTS

2.3.1 The communication and telemetry requirements set forth in the applicable CAISO Business Practice Manual will apply to a Generating Unit that is the source of the Energy for a Dynamic Schedule of exports of Energy, in addition to the requirements set forth in this Appendix M applicable to Dynamic Schedules of exports of Energy.

2.3.2 A dedicated primary communications link and a backup communications link between the CAISO's EMS and the EMS of the Balancing Authority Area receiving the Dynamic Schedule are required.

2.3.3 The primary circuit will be T1-class, or equivalent, utilizing the inter-control center communications protocol ("ICCP"). The backup communications link will be diversely routed between the EMS of the Balancing Authority Area receiving the Dynamic Schedule and the CAISO Balancing Authority Area EMS on separate physical paths and devices, provided that the CAISO may approve an alternative means of providing backup communications if the circumstances warrant.

2.3.4 A primary dedicated communications link and a backup communications link between the EMS of the Balancing Authority Area receiving the Dynamic Schedule and any Intermediary Balancing Authority Area EMS are required, if requested by the Intermediary Balancing Authority Area.

2.3.5 The CAISO shall have a mechanism implemented to override the associated dynamic signal for a Dynamic Schedule of an export of Energy from a Generating Unit.

2.3.6 The dynamic signal must be properly incorporated into all involved Balancing Authority Areas' ACE equations.

2.3.7 The Generating Unit must have communications links with the Balancing Authority Area receiving a Dynamic Schedule consistent with this Appendix M.

2.3.8 The dynamic signal must be properly incorporated into the CAISO's market systems.

2.4 LIMITS ON DYNAMIC EXPORTS

2.4.1 The CAISO reserves the right to establish limits applicable to the amount of any Energy exported from the CAISO Balancing Authority Area, whether delivered dynamically or statically. Such limits may be established based on any one, or a combination, of the following considerations: a percentage of, or a specific export limit applicable to, total CAISO Balancing Authority Area requirements; a percentage at, or a specific export limit applicable to, a particular Intertie or a Transmission Interface; a percentage of, or a specific export limit applicable to, total requirements in a specific Ancillary Service Region; or operating factors which may include, but are not limited to, operating Nomograms, Remedial Action Schemes, protection schemes, scheduling and curtailment procedures, or any potential single points of failure associated with the actual delivery process. The CAISO may implement a moratorium on the establishment of new Dynamic Schedules associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.

2.4.2 A Dynamic Schedule of an export of Energy from a Generating Unit in the CAISO Balancing Authority Area must be permanently associated with a particular CAISO Intertie (the CAISO may, from time to time and at its discretion, allow for a change in such pre-established association of the Generating Unit with a particular CAISO Intertie).

2.5 OPERATING AND SCHEDULING REQUIREMENTS

2.5.1 All Dynamic Schedules associated with exports of Energy from a Generating Unit must be electronically tagged (by use of an E-Tag).

2.5.2 Formal inter-Balancing Authority Area Dynamic Schedules of the export of Energy from a Generating Unit may be issued only by the CAISO as the Host Balancing Authority Area and must be routed through the EMSs of any Intermediary Balancing Authority Area, if requested by the Intermediary Balancing Authority Area.

2.5.3 The CAISO will treat dynamically scheduled exports of Energy from a Generating Unit Energy as a resource contingent firm export. The Balancing Authority receiving the Dynamic Schedule of the export of Energy from the CAISO Balancing Authority Area is responsible for Operating Reserves for loads served by such exports of Energy as required by NERC and WECC reliability standards and any requirements of the NRC.

2.5.4 The dynamic signal must be integrated over time by the CAISO for every Operating Hour.

2.5.5 Notwithstanding any Dispatches of the Generating Unit in accordance with the CAISO Tariff, the CAISO shall have the right to issue operating orders as defined

in Section 37.2.1.1 of the CAISO Tariff to the Generating Unit either directly or through the receiving Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such operating orders may be issued only within the range of the CAISO-accepted Energy Bids for a given Operating Hour (or the applicable "sub-hour" interval).

2.5.6 If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0").

2.5.7 The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the ability to override the associated Dynamic Schedule in order to respond to the operating orders of the CAISO or the Host Balancing Authority.

2.5.8 Unless the Dynamic Schedule of an export of Energy from a Generating Unit (1) is implemented as a directly-telemetered load following functionality, (2) is base-loaded Regulatory Must-Take Generation, (3) responds to an intra-hour dispatch instruction from the receiving Balancing Authority, or (4) is an Eligible Intermittent Resource, the Dynamic Schedule representing such resource must follow WECC-approved practice of 20-minute ramps centered at the top of the hour. The CAISO does not provide any special Settlements treatment nor offer any CAISO Tariff exemptions for dynamic load following functionalities.

2.5.9 In Real-Time the Dynamic Schedule may not exceed the CAISO's Dispatch Operating Point, which reflects the dynamic signal received by the CAISO from the Balancing Authority receiving the dynamically-scheduled Energy. The CAISO's Dispatch Operating Point represents not only the estimated Energy from the Generating Unit for export but also the transmission reservation on the associated CAISO Intertie.

2.5.10 Only one Dynamic Schedule may be associated with any one physical Generating Unit, unless the CAISO approves an implementation plan to establish multiple Dynamic Schedules for that Generating Unit.

2.6 COMPLIANCE, LOSSES, AND FINANCIAL SETTLEMENTS

2.6.1 Energy delivered in association with a Dynamic Schedule of an export of Energy from a Generating Unit will be subject to all provisions of the CAISO's Imbalance Energy markets, including Uninstructed Deviation Penalties (UDP) (just as is the case with CAISO intra-Balancing Authority Area Generating Units of Participating Generators).

2.6.2 All Day-Ahead Market and RTM submitted Dynamic Schedules shall be subject to CAISO Congestion Management and as such may not exceed their transmission reservations in Real-Time (with the exception of intra-hour Dispatch Instructions for Imbalance Energy issued by the CAISO and responses to the dynamic signal from the Balancing Authority receiving the Dynamic Schedule of the export of Energy).

2.6.3 All Dynamic Schedules and delivered Energy shall be subject to the standard CAISO Transmission Loss calculation as described in Section 27.5.1.1 and Appendix C of the CAISO Tariff.

2.6.4 Any transmission losses attributed to the Dynamic Schedule on transmission system(s) external to the CAISO Balancing Authority Area will be the responsibility of the owner(s)/operator(s) of the Generating Unit associated with a Dynamic Schedule of an export of Energy.

2.6.5 Should there be any need or requirement, whether operational or procedural, for the CAISO to make Real-Time adjustments to the CAISO's inter-Balancing Authority Area Interchange Schedules (to include curtailments), Dynamic Schedules shall be treated in the same manner as similarly situated and/or effective static CAISO Interchange Schedules.

* * *

Appendix N

Pseudo-Tie Protocol

* * *

1.2.2 Technical Requirements

1.2.2.1 All applicable communication and telemetry requirements of the WECC, the CAISO, and a Pseudo-Tie Generating Unit's Native Balancing Authority Area regarding generating units and inter-Balancing Authority Area Interties must be satisfied. These requirements include the requirements of Appendix M applicable to Dynamic Schedules of imports and the requirements of the CAISO Tariff applicable to Generating Units in the CAISO Balancing Authority Area.

1.2.2.2 Proper incorporation of the dynamic signal into all involved Balancing Authority Areas' ACE equations will be required.

1.2.2.3 If there is no Scheduled Generation in the DAM or Real-Time markets, a Pseudo-Tie Generating Unit shall not generate except when issued an Exceptional Dispatch or operating order as defined in Section 37.2.1.1 of the CAISO Tariff from the CAISO.

1.2.2.4 If a Participating Generator with a Pseudo-Tie Generating Unit desires to participate in the CAISO's Regulation market, all provisions of the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, shall apply.

1.2.2.5 Only one dynamic transfer signal may be associated with any Pseudo-Tie Generating Unit.

* * *

2.2.3 Business Requirements

2.2.3.1 For settlements, the Energy transferred dynamically from the Pseudo-Tie generating unit during an operating hour will be deemed delivered, for that operating hour.

2.2.3.2 All Energy from a Pseudo-Tie generating unit interchange shall be subject to the CAISO Tariff Transmission Loss construct and billed accordingly to the owner of the Pseudo-Tie generating unit or the designated Scheduling Coordinator for the Pseudo-Tie generating unit, including any applicable transmission loss obligation charges in cases where the CAISO and another Balancing Authority have agreed on an assessment to the CAISO of supplemental losses incurred for the Energy outside of the CAISO Balancing Authority Area.

2.2.3.3 The ISO shall assess the owner of a Pseudo-Tie generating unit or its designated Scheduling Coordinator all applicable market charges and Grid Management Charges in accordance with the CAISO Tariff.

2.2.3.4 In the event of a line outage and a subsequent request by the Balancing Authority for the Attaining Balancing Authority Area for emergency Wheeling service from the CAISO to maintain deliveries of power to the Attaining Balancing Authority Area from the Pseudo-Tie generating unit, all CAISO Tariff market and GMC charges applicable to the resulting use of CAISO transmission service shall be applied for the duration of these events, inclusive of any related FMM Schedules.

2.2.3.5 All Pseudo-Tie generating unit export schedules from the Attaining Balancing Authority Area shall be submitted by a certified Scheduling Coordinator into the CAISO Markets as coordinated import and export Wheeling Through Bids, at the designated pre-existing Intertie with the Attaining Balancing Authority Area associated with the Pseudo-Tie.

* * *

Revised draft Appendix Q ("Eligible Intermittent Resources Protocol") will be posted in a separate document.

* * *

Appendix EE

Large Generator Interconnection Agreement

for Interconnection Requests Processed under the Generator Interconnection and

Deliverability Allocation Procedures (Appendix CC of the CAISO Tariff)

* * *

TABLE OF CONTENTS

* * *

Article 1. Definitions

* * *

Variable Energy Resource shall mean a device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator.

Article 8. Communications

* * *

8.4 Provision of Data from a Variable Energy Resource. The Interconnection Customer whose Generating Facility is a Variable Energy Resource shall provide meteorological and forced outage data to the CAISO to the extent necessary for the CAISO's development and deployment of power production forecasts for that class of Variable Energy Resources. The Interconnection Customer with a Variable Energy Resource having wind as the energy source, at a minimum, will be required to provide the CAISO with site-specific meteorological data including: temperature, wind speed, wind direction, and atmospheric pressure. The Interconnection Customer with a Variable Energy Resource having solar as the energy source, at a minimum, will be required to provide the CAISO with site-specific meteorological data including: temperature, atmospheric pressure, and irradiance. The CAISO and Interconnection Customer whose Generating Facility is a Variable Energy Resource shall mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. The Interconnection Customer whose Generating Facility is a Variable Energy Resource also shall submit data to the CAISO regarding all forced outages to the extent necessary for the CAISO's development and deployment of power production forecasts for that class of Variable Energy Resources. The exact specifications of the meteorological and forced outage data to be provided by the Interconnection Customer to the CAISO, including the frequency and timing of data submittals, shall be made taking into account the size and configuration of the Variable Energy Resource, its characteristics, location, and its importance in maintaining generation resource adequacy and transmission system reliability in its area. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the CAISO. Such requirements for meteorological and forced outage data are set forth in Appendix C, Interconnection Details, of this LGIA as they may change from time to time.

* * *