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November 15, 2010

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

**Re: California Independent System Operator Corporation
Compliance Filing
Docket No. ER10-1559-__**

Dear Secretary Bose:

The California Independent System Operator (“ISO”)¹ submits this filing in compliance with the October 15, 2010, order of the Federal Energy Regulatory Commission (the “Commission”) in this proceeding.² In the October 15 Order, the Commission conditionally accepted the ISO’s tariff amendment to implement convergence bidding and directed the ISO to submit a compliance filing within 30 days.

I. Background

On November 20, 2009, the ISO submitted in Docket No. ER10-300-000 a filing that set forth the design policy for implementing convergence bidding in the ISO’s markets (“Convergence Bidding Design Filing”). The Commission, in an order issued February 18, 2010, approved the Convergence Bidding Design Filing in principle, with certain modifications.³

¹ The ISO is sometimes referred to as the CAISO. Capitalized terms not otherwise defined herein have the meanings set forth in the Master Definitions Supplement, Appendix A to the ISO tariff.

² *California Independent System Operator Corp.*, 133 FERC ¶ 61,039 (2010) (“October 15 Order”).

³ *California Independent System Operator Corp.*, 130 FERC ¶ 61,122 (2010) (“February 18 Order”).

On June 25, 2010, the ISO filed revisions to the ISO tariff in the instant proceeding to implement convergence bidding effective February 1, 2011, consistent with the directives in the February 18 Order (“Convergence Bidding Tariff Amendment”). A number of parties filed comments and protests regarding the tariff revisions, which the ISO addressed in an answer filed on August 2, 2010 (“August 2 ISO Answer”). In the October 15 Order, the Commission conditionally accepted the tariff revisions, subject to the ISO’s submittal of a compliance filing in accordance with the Commission’s directives.⁴

II. Proposed Tariff Revisions on Compliance⁵

A. Information Release

In the Convergence Bidding Tariff Amendment and the August 2 ISO Answer, the ISO provided additional information that would be released by the ISO in connection with the implementation of convergence bidding. Specifically, the ISO explained that it will release the net cleared quantities of virtual awards at each location at the close of the real-time market for the trading day, and will publish a daily market report that includes a summary of information regarding submitted and cleared physical quantities and virtual awards. The ISO stated that it did not propose any tariff changes to reflect this release of information because it believes the information is not confidential and its release is already permitted under the ISO tariff.⁶

The Commission, in the October 15 Order, directed the ISO to modify its tariff to describe the information it plans to release in connection with the implementation of convergence bidding.⁷

To comply with the Commission’s directive, the ISO proposes to add new sections 6.5.3.2.3 and 6.5.7 to the ISO tariff. Section 6.5.3.2.3 states that, after the results of the day-ahead market are published pursuant to section 6.5.3.2.2 of the ISO tariff, the ISO will publish on its Open Access Same-Time Information System (“OASIS”) a daily market report that includes a summary of information

⁴ As requested by the ISO, the Commission accepted the tariff revisions to implement convergence bidding effective February 1, 2011, and accepted the proposed *pro forma* convergence bidding entity agreement included in the Convergence Bidding Tariff Amendment effective October 18, 2010. October 15 Order at PP 19-21.

⁵ The section headings in Section II of this transmittal letter are the same as the section headings in the corresponding portions of the October 15 Order.

⁶ Transmittal Letter for Convergence Bidding Tariff Amendment at 44-45; August 2 ISO Answer at 38-39.

⁷ October 15 Order at P 90.

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regarding submitted and cleared physical quantities and virtual awards. Section 6.5.7 states that the ISO will post on OASIS the net cleared quantities of virtual awards at each Eligible PNode or Eligible Aggregated PNode by the close of the real-time market for each trading day.

B. CRRs

The ISO, in the Convergence Bidding Tariff Amendment, proposed section 11.2.4.6 of the ISO tariff to implement a settlement rule which will adjust the revenue from congestion revenue rights (“CRRs”) in the event that a convergence bidding entity that is also a CRR holder engages in convergence bidding behavior that may impact the value of its CRRs in the day-ahead market.⁸ The Commission found this CRR settlement rule to be reasonable in the February 18 Order.

As part of this settlement rule, the ISO proposed to establish a configurable threshold for determining whether congestion on a constraint was significantly impacted by the virtual awards to a scheduling coordinator representing a convergence bidding entity. In section 11.2.4.6(b), as proposed in the Convergence Bidding Tariff Amendment, this threshold would be set initially at 10 percent of the flow limit for each constraint and could be changed by the ISO as provided in the Business Practice Manual.⁹

In the October 15 Order, the Commission conditionally accepted section 11.2.4.6 as submitted by the ISO, subject to the requirement that the ISO file tariff language on compliance that clearly defines the threshold percentage value that will be used in assessing the impact that convergence bidding has on CRR revenue.¹⁰ The ISO will comply with this Commission directive by modifying section 11.2.4.6(b) to specify that the threshold percentage is ten percent of the flow limit for each constraint, and to delete the tariff language providing the ISO with the ability to adjust the threshold percentage without changes to the ISO

⁸ Transmittal Letter for Convergence Bidding Tariff Amendment at 18-20.

⁹ See August 2 ISO Answer at 10.

¹⁰ October 15 Order at PP 153, 157.

tariff.¹¹ As required by the October 15 Order, the ISO will file a tariff amendment if it seeks to modify the ten percent threshold percentage in the future.¹²

C. Suspension

In the Convergence Bidding Tariff Amendment, the ISO proposed several new tariff sections to implement the authority of the ISO to suspend or limit convergence bidding, as approved in principle in the February 18 Order. The tariff revisions included:

- Proposed section 39.11.2.1, which contained general provisions regarding the ISO's authority to suspend or limit the ability of individual scheduling coordinators to submit virtual bids;
- Proposed section 39.11.2.2(a), which would authorize the ISO to suspend or limit the ability of individual scheduling coordinators to submit virtual bids when that convergence bidding activity detrimentally affects system reliability or grid operations;
- Proposed section 39.11.2.2(b), which would authorize the ISO to suspend or limit convergence bidding when it causes or contributes to an unwarranted divergence in prices between the day-ahead market and the hour-ahead scheduling process ("HASP") or real-time market;
- Proposed section 39.11.2.2(c), which would authorize the ISO to suspend or limit convergence bidding when it causes or contributes to an unwarranted divergence in shadow prices between the day-ahead market and the HASP or real-time market;
- Proposed section 39.11.2.3, which set forth procedures applicable to the suspension or limitation of convergence bidding by individual scheduling coordinators, including procedures that the ISO will undertake and referrals of a suspension or limitation of convergence bidding to the Commission; and

¹¹ In addition, a tariff revision that the ISO committed to make in the August 2 ISO Answer and the Commission accepted in the October 15 Order was the deletion of the word "not" in the sentence in Section 11.2.4.6(b) that begins with the words "A decrease in the threshold percentage . . ." October 15 Order at P 251. As part of the tariff changes submitted to comply with the Commission's directives on the CRR settlement rule, the ISO is deleting this entire sentence.

¹² See October 15 Order at P 157.

- Proposed section 7.7.15.1(h), which would permit the ISO to suspend or limit the ability of all scheduling coordinators to submit virtual bids on behalf of convergence bidding entities at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes, in the event of a market disruption, to prevent a market disruption, or to minimize the extent of a market disruption.¹³

The Commission, in the October 15 Order, found sections 39.11.2.1 and 39.11.2.2(a) to be just and reasonable.¹⁴ However, the Commission stated that sections 39.11.2.2(b) and -(c) were not acceptable as filed, and therefore the Commission directed the ISO to revise those sections to include only objective criteria for suspension as a prerequisite for implementing them.¹⁵ Further, the Commission accepted the procedures set forth in section 39.11.2.3 with the exception of the ISO's proposal to refer a suspension or limitation of convergence bidding to the Commission. The Commission found the referral provisions to be unnecessary and directed the ISO to delete them from section 39.11.2.3.¹⁶ Lastly, the Commission accepted section 7.7.15.1(h) as filed.¹⁷

The ISO proposes to make several revisions to its tariff to comply with these Commission directives. First, after considering the Commission's finding that sections 39.11.2.2(b) and 39.11.2.2(c) are not acceptable as filed, and after considering the scope of the Commission-approved and existing tariff language, the ISO proposes to delete sections 39.11.2.2(b) and 39.11.2.2(c) from the ISO tariff rather than proposing to revise them. The ISO has determined that its authority to suspend or limit convergence bidding based on reliability concerns pursuant to sections 39.11.2.2(a) (which the ISO now proposes to move to new section 7.9, as discussed below) and section 7.7.15.1(h) provide sufficient suspension or limitation authority for the ISO. In instances where the ISO's Department of Market Monitoring ("DMM") has reason to believe that a market violation related to convergence bidding has occurred but the matter is beyond the scope of the ISO's suspension or limitation authority accepted by the Commission, the DMM will refer the matter to the Commission pursuant to the existing provisions of section 11 of Appendix P of the ISO tariff.

¹³ Transmittal Letter for Convergence Bidding Tariff Amendment at 21-27.

¹⁴ October 15 Order at P 182.

¹⁵ *Id.* at PP 183-91, 195.

¹⁶ *Id.* at PP 182, 190, 194.

¹⁷ *Id.* at P 193.

As noted above, the Commission did accept without condition or modification the ISO's authority to suspend or limit convergence bidding that detrimentally affects system reliability or grid operations. Because this authority relates to reliability and grid operations, rather than a potential market violation, the ISO proposes to move the language in sections 39.11.2.1 and 39.11.2.2(a) to section 7 of the ISO tariff, which concerns system operations under normal and emergency operating conditions. Specifically, the ISO proposes to include that language from section 39.11.2 in new section 7.9 of the ISO tariff, without any substantive modifications except for those revisions needed to satisfy the Commission's directives and to update internal tariff section number references and cross references.¹⁸ As required by the October 15 Order, the ISO has deleted from the former section 39.11.2.3 (now moved to section 7.9) the tariff language regarding referrals of a suspension or limitation of convergence bidding to the Commission.

D. AC Solution

Some parties argued in their comments in this proceeding that the Commission should direct the ISO to submit reports on its use of megawatt limits to ensure an alternating current ("AC") solution. In the August 2 ISO Answer, the ISO stated that there is no need to submit such reports. The ISO explained that it will post on OASIS all transmission flowgate constraints with the corresponding shadow prices, and the presence of a non-zero shadow price will indicate that a particular constraint was triggered due to an issue with the AC solution that could be related to that constraint or other nodal constraints.¹⁹

The Commission, in the October 15 Order, agreed with the ISO that it does not need to submit any reports regarding the AC solution. However, the Commission directed the ISO to provide the information described in the August 2 ISO Answer "to market participants through postings on OASIS, as the CAISO has stated it will do, and to revise its tariff to reflect this requirement."²⁰ To comply with this directive, the ISO proposes to add new section 6.5.8 to the ISO tariff. Section 6.5.8 states that the ISO will post on OASIS all transmission flowgate constraints with the corresponding shadow prices.

¹⁸ As stated above, the ISO's authority to suspend or limit the ability of all scheduling coordinators to submit virtual bids at specific Eligible PNodes or Aggregated Eligible PNodes, or at all Eligible PNodes or Aggregated Eligible PNodes, is governed by the Commission-approved provisions of Section 7.7.15.1(h), which are already contained in Section 7 of the ISO tariff.

¹⁹ August 2 ISO Answer at 25-26.

²⁰ October 15 Order at P 203.

E. Settlement

In the February 18 Order, the Commission accepted as reasonable the ISO's reasoning that, because convergence bidding is solely a financial transaction, cost causation principles suggest that only certain of the service charges under the ISO's grid management charge ("GMC") should apply to convergence bidding.²¹

In order to implement this approach, the ISO, in the Convergence Bidding Tariff Amendment, proposed to modify paragraph 9 of part A of schedule 1 of appendix F of the ISO tariff to set forth how the rate for the new "virtual award charge" will be calculated. One of the components of the rate calculation is "a percentage of the Forward Scheduling Charge and Market Usage – Forward Energy service categories based upon the total annual forecasted cleared supply and demand." In the October 15 Order, the Commission found that the general reference to "a percentage" is unclear and could be read as giving the ISO too much discretion in determining the rate. The Commission directed the ISO to revise that tariff language to remove the ambiguity.²²

The ISO has modified the tariff language to comply with the Commission's directive by replacing "a percentage" with the specific percentage level of nine percent. This is the percentage that the ISO determined should be used in the calculation of the virtual award charge rate through the 2011 budget and GMC stakeholder process.²³ This percentage was presented for stakeholder review and input in a series of public meetings.²⁴

²¹ February 18 Order at PP 111, 113.

²² October 15 Order at P 218.

²³ On November 2, 2010, the ISO submitted a tariff amendment to extend and modify the GMC in Docket No. ER11-2017 following ISO Board of Governors' approval at its September 9, 2010 meeting. The November 2 filing addressed the other findings of the 2011 budget and GMC stakeholder process. The November 2 filing noted that the rate detail concerning the virtual award charge would be included in the ISO's compliance filing in this proceeding, consistent with the Commission's directives in the October 15 Order.

²⁴ See ISO presentation entitled "GMC Stakeholder Process 2011-2012 (Apr. 21, 2010) at slides 10-11, available on the ISO's website at <http://www.caiso.com/2778/2778dcf5ef60.pdf>; ISO presentation entitled "2011 Budget – Stakeholder Call" at slide 5 (Aug. 19, 2010), available on the ISO's website at <http://www.caiso.com/27f5/27f5bd5c3060.pdf>; *Preliminary 2011 Budget and Grid Management Charge Rates* at Attachment D (Sept. 1, 2010), available on the ISO's website at <http://www.caiso.com/280d/280dd4391bb00.pdf>.

F. Bid Floor

The ISO, in response to comments submitted by a party, proposed in the August 2 ISO Answer to modify section 39.6.1.4 of the ISO tariff to clarify that virtual bids may not be less than the bid floor of -\$30/MWh.²⁵ The Commission directed the ISO to make that tariff change in the October 15 Order.²⁶ The ISO has modified section 39.6.1.4 accordingly.

G. Miscellaneous and Typographical Issues

In the August 2 ISO Answer, the ISO proposed to make a number of miscellaneous and typographical corrections to the convergence bidding tariff language in response to parties' comments and based on the ISO's own review.²⁷ The Commission, in the October 15 Order, accepted the ISO's proposed corrections and directed the ISO to file them on compliance.²⁸ Consistent with the proposals in the August 2 ISO Answer accepted by the Commission, the ISO has made revisions to the following tariff sections: 11.2.4.1; 11.4; 11.8.6.4; 11.8.6.4.1; 11.8.6.5.3.1; 11.8.6.6; 11.32; 12.8.2; 12.8.4; and 30.10.

Finally, in response to comments submitted by a party, the Commission directed the ISO in the October 15 Order to modify section 30.9 of the ISO tariff to make it clear that virtual bids can be submitted at interties.²⁹ As the ISO noted in its answer in this proceeding, section 30.9 states that virtual bids may be submitted at Eligible PNodes or Eligible Aggregated PNodes.³⁰ An Eligible PNode is defined in relevant part to include “[a] PNode *located at an Intertie* where virtual bidding is permitted,” and an Eligible Aggregated PNode is similarly defined in relevant part to include “[a]n Aggregated PNode *located at an Intertie* where virtual bidding is permitted.”³¹ Accordingly, the ISO argued that any change to section 30.9 was unnecessary. Nevertheless, to comply with the Commission’s directive in the October 15 Order, the ISO has modified section 30.9 to clarify that virtual bids may be submitted at Eligible PNodes, including

²⁵ August 2 ISO Answer at 48.

²⁶ October 15 Order at PP 220-21.

²⁷ August 2 ISO Answer at 41-48.

²⁸ October 15 Order at PP 247-52.

²⁹ *Id.* at P 253.

³⁰ August 2 ISO Answer at 3 n.7.

³¹ ISO tariff, Appendix A (emphasis added to both definitions).

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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 consistent with the relevant definitions.

III. Materials Provided in this Compliance Filing

In addition to this transmittal letter, this compliance filing includes the following attachments:

- | | |
|--------------|---|
| Attachment A | Clean ISO tariff sheets reflecting the revisions described in Section II of this transmittal letter and the tariff changes accepted in the October 15 Order ³² |
| Attachment B | Proposed tariff revisions in black-line and highlighted format ³³ |

³² Attachment A includes the tariff changes accepted in the October 15 Order because, prior to the submittal of this compliance filing, the ISO has not filed those Commission-approved tariff changes in compliance with the Commission's eTariff requirements. See *Electronic Tariff Filings*, Order No. 714, FERC Stats. & Regs. ¶ 31,276 (2008).

³³ Attachment B also includes, in black-line format but not highlighted, the tariff changes accepted in the October 15 Order. The only proposed tariff revisions contained in this compliance filing for which the ISO requests Commission approval are the revisions shown in black-line and highlighted format in Attachment B.

IV. Conclusion

The ISO requests that the Commission accept this filing as complying with the directives to revise the ISO tariff in the Commission's October 15 Order. Please contact the undersigned with any questions regarding this matter.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the above-referenced proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Washington, D.C. this 15th day of November, 2010.

/s/ Bradley R. Miliauskas
Bradley R. Miliauskas

Attachment A – Clean Tariff
Convergence Bidding Tariff Amendment Refile and Compliance
California Independent System Operator Corporation
Fifth Replacement FERC Electric Tariff

4.5.1 Scheduling Coordinator Certification

Only Scheduling Coordinators that the CAISO has certified as having met the requirements of this Section 4.5.1 may participate in the CAISO's Energy and Ancillary Services markets. Scheduling Coordinators offering Ancillary Services shall additionally meet the requirements of Section 8.

Each Scheduling Coordinator shall:

- (a) demonstrate to the CAISO's reasonable satisfaction that it is capable of performing the functions of a Scheduling Coordinator under this CAISO Tariff including (without limitation) the functions specified in Sections 4.5.3 and 4.5.4 as applicable;
- (b) identify each of the Eligible Customers (including itself if it trades for its own account) which it is authorized to represent as Scheduling Coordinator and confirm that the metering requirements under Section 10 are met in relation to each Eligible Customer that it represents under this CAISO Tariff;
- (c) identify each of the Convergence Bidding Entities that it is authorized to represent as Scheduling Coordinator;
- (d) confirm that each of the End-Use Customers it represents is eligible for service as a Direct Access End User;
- (e) confirm that none of the Wholesale Customers it represents is ineligible for wholesale transmission service pursuant to the provisions of FPA Section 212(h);
- (f) demonstrate to the CAISO's reasonable satisfaction that it meets the financial criteria set out in Section 12;
- (g) enter into a Scheduling Coordinator Agreement with the CAISO; and
- (h) provide NERC tagging data as applicable.

* * *

4.5.1.1.6.2 Scheduling Coordinator Applicant's Obligation for Contracts

A Scheduling Coordinator Applicant must certify that it is duly authorized to represent the Generators and Loads that are its Scheduling Coordinator Customers and must further certify that:

- (a) represented Generators have entered into Participating Generator Agreements or Qualifying Facility Participating Generator Agreements as provided in Appendices B.2 and B.3, respectively with the CAISO;
- (b) represented UDCs have entered into UDC Operating Agreements as provided in Appendix B.8 with the CAISO;
- (c) represented CAISO Metered Entities have entered into Meter Service Agreements for CAISO Metered Entities as provided in Appendix B.6 with the CAISO;
- (d) none of the Wholesale Customers it will represent are ineligible for wholesale transmission service pursuant to the provisions of the FPA Section 212(h); and
- (e) each End-Use Customer it will represent is eligible for service as a Direct Access End User pursuant to an established program approved by the California Public Utilities Commission or a Local Regulatory Authority.

A Scheduling Coordinator Applicant that seeks to serve as Scheduling Coordinator for one or more Convergence Bidding Entities must certify that it is duly authorized to represent those Convergence Bidding Entities and to submit and settle Virtual Bids on their behalf.

* * *

4.5.2 Eligible Customers and Convergence Bidding Entities

4.5.2.1 SCs Representing Eligible Customers

Each Scheduling Coordinator shall within ten (10) days of a request by the CAISO provide the CAISO with a list of the Eligible Customers that it represents at the date of the request.

4.5.2.2 SCs Representing Convergence Bidding Entities

Each Scheduling Coordinator that is or represents one or more Convergence Bidding Entities will provide the CAISO with a list of the Convergence Bidding Entities that it represents and the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids for each Convergence Bidding Entity, at least eleven (11) Business Days prior to the Scheduling Coordinator's initial submission of a Virtual Bid on behalf of any of those Convergence Bidding Entities. This list must satisfy the requirements of Section

4.14.2.3. In the event that the Scheduling Coordinator will represent additional Convergence Bidding Entities or modifies any of the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids on behalf of any Convergence Bidding Entity, the Scheduling Coordinator will provide the CAISO with an updated list of Convergence Bidding Entities and/or SCIDs at least eleven (11) Business Days prior to submitting a Virtual Bid involving a Convergence Bidding Entity and/or SCID not already included in the most recent list provided to the CAISO. The CAISO will incorporate the information provided pursuant to this Section 4.5.2.2 into the CAISO's official list of the Convergence Bidding Entities that Scheduling Coordinators represent and will incorporate the SCIDs that Scheduling Coordinators use to submit Virtual Bids on behalf of Convergence Bidding Entities into the Master File within eleven (11) Business Days after the CAISO determines that the information in each list or updated list provided by a Scheduling Coordinator or Convergence Bidding Entity is accurate and complete.

* * *

4.5.3.7 Annual and Monthly Forecasts

Submitting to the CAISO its forecasted monthly and annual peak Demand in the CAISO Balancing Authority Area and/or its forecasted monthly and annual Generation capacity, as applicable; the forecasts shall be submitted to the CAISO electronically on a monthly basis by noon of the 18th working day of the month and shall cover a period of twelve (12) months on a rolling basis. Scheduling Coordinators that represent only Convergence Bidding Entities will not be subject to the requirements of this Section

4.5.3.7.

* * *

4.5.3.12 Financial Responsibility

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

* * *

4.5.4 Operations Of A Scheduling Coordinator

4.5.4.1 Maintain Twenty-four (24) Hour Scheduling Centers

Each Scheduling Coordinator other than a Scheduling Coordinator that represents only Convergence Bidding Entities shall operate and maintain a twenty-four (24) hour, seven (7) days per week, scheduling center. Each Scheduling Coordinator shall designate a senior member of staff as its scheduling center manager who shall be responsible for operational communications with the CAISO and who shall have sufficient authority to commit and bind the Scheduling Coordinator.

* * *

4.14 Relationship Between the CAISO and CBEs

Only entities that satisfy all of the requirements specified in this Section 4.14 will be certified by the CAISO to be Convergence Bidding Entities and thus be authorized by the CAISO to submit Virtual Bids. A Convergence Bidding Entity may submit Virtual Bids only through a Scheduling Coordinator, which can be either the Convergence Bidding Entity itself or another entity that is a Scheduling Coordinator. A Convergence Bidding Entity may be represented by only one Scheduling Coordinator at any given time.

4.14.1 Procedure to Become a Convergence Bidding Entity

4.14.1.1 Convergence Bidding Entity Application

To become a Convergence Bidding Entity, a Convergence Bidding Entity applicant must submit a completed written application, as provided in the applicable form posted on the CAISO Website, to the CAISO by mail or in person.

4.14.1.2 CAISO Information

The CAISO will provide the following information, in its most current form, on the CAISO Website and, upon request by a Convergence Bidding Entity applicant, the CAISO will send the requested information by electronic mail:

- (a) the Convergence Bidding Entity application form; and
- (b) the CAISO Tariff and Business Practice Manuals.

4.14.1.3 Convergence Bidding Entity Applicant Submits Application

At least sixty (60) Business Days before the date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, the Convergence Bidding Entity applicant must return a completed application form.

4.14.1.4 Notice of Receipt

Within three (3) Business Days of receiving the application, the CAISO will send written notification to the Convergence Bidding Entity applicant that it has received the application.

4.14.1.5 CAISO Review of Application

Within ten (10) Business Days after receiving an application, the CAISO will notify the Convergence Bidding Entity applicant whether the Convergence Bidding Entity applicant has submitted all necessary information as set forth in Section 4.14.1.

4.14.1.5.1 Information Requirements

The Convergence Bidding Entity applicant must submit with its application:

- (a) the proposed date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, which may not be less than sixty (60) Business Days after the date the application was filed, unless waived by the CAISO;
- (b) an explanation of whether the Convergence Bidding Entity applicant is a Rated or Unrated Public/Private Corporation, a Rated or Unrated Governmental Entity, a Local Publicly Owned Electric Utility, or another type of entity, and a chart, or equivalent information, depicting the Convergence Bidding Entity applicant's corporate structure, including all parent companies of the Convergence Bidding Entity applicant, all subsidiaries of the Convergence Bidding Entity applicant, and all Affiliates of the Convergence Bidding Entity applicant that meet the requirements of Section 4.14.2.1; and
- (c) the name of the Scheduling Coordinator and SCID(s) that the Convergence Bidding Entity anticipates will be used for submitting Virtual Bids on behalf of the Convergence Bidding Entity.

Additional instructions for completing the foregoing requirements will be set forth in the applicable Business Practice Manual(s) posted on the CAISO Website.

4.14.1.6 Deficient Application

In the event that the CAISO determines that the application is deficient, the CAISO will send an electronic notification of the deficiency to the Convergence Bidding Entity applicant within ten (10) Business Days of receipt by the CAISO of the application explaining the deficiency and requesting additional information.

4.14.1.6.1 Additional Information

Once the CAISO requests additional information, the Convergence Bidding Entity applicant has five (5) Business Days, or such longer period as the CAISO may agree not to exceed five (5) additional Business Days, to provide the additional material requested by the CAISO.

4.14.1.6.2 No Response from Convergence Bidding Entity Applicant

If the Convergence Bidding Entity applicant does not submit additional information within five (5) Business Days or the longer period referred to in Section 4.14.1.6.1, the application may be rejected by the CAISO.

4.14.1.7 CAISO Approval or Rejection of an Application

4.14.1.7.1 Approval or Rejection Notification

- (a) If the CAISO approves the application, it will send a written notification of approval. In addition, the CAISO will provide an executable Convergence Bidding Entity Agreement.
- (b) If the CAISO rejects the application, the CAISO will send an electronic notification of rejection stating one or more of the following grounds:
 - (i) incomplete information; or
 - (ii) non-compliance with any other CAISO Tariff requirements.

Upon request, the CAISO will provide guidance as to how the Convergence Bidding Entity applicant can cure the grounds for the rejection.

4.14.1.7.2 Time for Processing Application

The CAISO will make a decision whether to accept or reject the application within ten (10) Business Days of receipt of the application. If more information is requested, the CAISO will make a final decision within ten (10) Business Days of the receipt of all outstanding or additional information requested.

4.14.1.8 Convergence Bidding Entity Applicant's Response

4.14.1.8.1 Convergence Bidding Entity Applicant's Acceptance

If the CAISO accepts the application, the Convergence Bidding Entity applicant must return the partially executed Convergence Bidding Entity Agreement previously provided by the CAISO.

4.14.1.8.2 Convergence Bidding Entity Applicant's Rejection

4.14.1.8.2.1 Resubmittal

If the CAISO rejects the application, the Convergence Bidding Entity applicant may resubmit its application at any time.

4.14.1.8.2.2 Appeal

The Convergence Bidding Entity applicant may also appeal the rejection of an application by the CAISO. An appeal must be submitted within twenty (20) Business Days following the CAISO's issuance of a notification of rejection.

4.14.1.9 Final Certification

The Convergence Bidding Entity applicant will become a Convergence Bidding Entity when:

- (a) its application has been accepted;
- (b) it has entered into a Convergence Bidding Entity Agreement and any other applicable agreements with the CAISO; and
- (c) it has fulfilled all requirements of Section 4.14.1.5.1.

The CAISO will not certify a Convergence Bidding Entity applicant as a Convergence Bidding Entity until the Convergence Bidding Entity applicant has completed all the above-referenced requirements to the CAISO's satisfaction, at least ten (10) Business Days before the commencement of service.

4.14.2 Convergence Bidding Entity's Ongoing Obligations

4.14.2.1 Affiliate Disclosure Requirements

Each Convergence Bidding Entity applicant will notify the CAISO of any Affiliate that is a Market Participant, any Affiliate that participates in an organized electricity market in North America, and any guarantor of any such Affiliate. Upon request, a Convergence Bidding Entity applicant will provide the CAISO with information on each such Affiliate, including information concerning the ownership structure

of such Affiliate and the business purpose of such Affiliate. These requirements will continue to apply after a Convergence Bidding Entity applicant becomes a Convergence Bidding Entity.

4.14.2.2 Obligation to Report a Change in Filed Information

Each Convergence Bidding Entity has an ongoing obligation to inform the CAISO of any changes to any of the information submitted by it to the CAISO as part of the application process, including but not limited to any changes to such information after the application is initially submitted, any changes to the additional information requested by the CAISO, and changes regarding its Affiliates that satisfy the requirements of Section 4.14.2.1, within five (5) Business Days of when each such change occurs. The applicable Business Practice Manual sets forth the procedures for changing the Convergence Bidding Entity's information.

4.14.2.3 Identification of SCIDs

Each Convergence Bidding Entity will provide the CAISO with a list of the SCIDs that the Scheduling Coordinator that represents the Convergence Bidding Entity will use to submit Virtual Bids for that Convergence Bidding Entity, at least eleven (11) Business Days prior to the Scheduling Coordinator's submission of a Virtual Bid on behalf of the Convergence Bidding Entity. If there is a subsequent change to the list of the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids on behalf of the Convergence Bidding Entity or the identity of the Scheduling Coordinator that represents the Convergence Bidding Entity, the Convergence Bidding Entity will provide the CAISO with an updated list of SCIDs that the Scheduling Coordinator that represents the Convergence Bidding Entity will use to submit Virtual Bids on behalf of the Convergence Bidding Entity, at least eleven (11) Business Days prior to the Scheduling Coordinator's submittal of a Virtual Bid involving a Convergence Bidding Entity and/or SCID not already included in the most recent list provided to the CAISO. The identification of the Scheduling Coordinator and list of SCIDs provided by the Convergence Bidding Entity and the list of SCIDs provided by the Scheduling Coordinator regarding that Convergence Bidding Entity pursuant to Section 4.5.2.2 must correspond. In the event these lists do not correspond, the CAISO will inform the applicable Scheduling Coordinator and Convergence Bidding Entity, and the parties will provide revised lists that correspond prior to the Scheduling Coordinator's submission of a Virtual Bid on behalf of that Convergence Bidding Entity. The CAISO will incorporate the information provided pursuant to this

Section 4.14.2.3 into the CAISO's official list of the Scheduling Coordinators that are eligible to submit Virtual Bids on behalf of Convergence Bidding Entities and the SCIDs used on their behalf will be incorporated into the Master File within eleven (11) Business Days after the CAISO determines that the information in each list, updated list, or revised list provided by a Scheduling Coordinator or Convergence Bidding Entity is accurate and complete.

4.14.2.4 Failure to Promptly Report a Material Change

If a Convergence Bidding Entity fails to inform the CAISO of a material change in its information provided to the CAISO, the CAISO may limit, suspend, or terminate the Convergence Bidding Entity's rights under the CAISO Tariff and terminate the Convergence Bidding Entity Agreement in accordance with the terms of Sections 4.14.3, 12, and 39.11.2. If the CAISO intends to terminate the Convergence Bidding Entity Agreement, it will file a notice of termination with FERC, if required by FERC rules, in accordance with the terms of the Convergence Bidding Entity Agreement. Such termination will be effective upon acceptance by FERC of a notice of termination, if required by FERC rules, or as otherwise permitted by FERC rules.

4.14.3 Termination of a Convergence Bidding Entity Agreement

- (a) A Convergence Bidding Entity Agreement may be terminated by the CAISO on written notice to the Convergence Bidding Entity in accordance with the terms of the Convergence Bidding Entity Agreement:
 - (i) if the Convergence Bidding Entity no longer meets the requirements for eligibility set out in Section 4.14 and fails to remedy the default within a period of seven (7) Business Days after the CAISO has given written notice of the default;
 - (ii) if the Scheduling Coordinator that represents the Convergence Bidding Entity fails to pay any sum under this CAISO Tariff and fails to remedy the default within a period of five (5) Business Days after the CAISO has given written notice of the default; or
 - (iii) if the Convergence Bidding Entity commits any other default under this CAISO Tariff or any of the Business Practice Manuals which, if capable

of being remedied, is not remedied within thirty (30) days after the CAISO has given it written notice of the default.

- (b) The Convergence Bidding Entity may terminate the Convergence Bidding Entity Agreement in accordance with the provisions of that agreement.
- (c) Upon termination of the Convergence Bidding Entity Agreement, the Scheduling Coordinator that represents the Convergence Bidding Entity will continue to be liable for any outstanding financial or other obligations incurred under the CAISO Tariff as a result of the Convergence Bidding Entity's status as a Convergence Bidding Entity.
- (d) The CAISO will, following termination of a Convergence Bidding Entity Agreement and within thirty (30) days of being satisfied that no sums remain owing by the Scheduling Coordinator that represents the Convergence Bidding Entity under the CAISO Tariff, return or release to the Scheduling Coordinator, as appropriate, any Financial Security support provided by such Scheduling Coordinator to the CAISO under Section 12.

* * *

6.5.2.3.6 Virtual Bid Reference Prices

The CAISO will publish Virtual Bid Reference Prices prior to the applicable reference period for the Virtual Bid Reference Prices.

* * *

6.5.3.2.3 After the results of the Day-Ahead Market are published pursuant to Section 6.5.3.2.2, the CAISO will publish on OASIS a daily market report that includes a summary of information regarding submitted and cleared physical quantities and Virtual Awards.

* * *

6.5.6 Market Bid Information

6.5.6.1 Public Market Information

6.5.6.1.1 180 Days After Trading Day

The following information shall be published on OASIS 180 days following the applicable Trading Day, with the exclusion of the information that is specific to Scheduling Coordinators:

- (a) AS market Bids;
- (b) Energy market Bids, including Virtual Bids separately identified as such; and
- (c) RUC market Bids.

* * *

6.5.8 Virtual Award Information

The CAISO will post on OASIS the net cleared quantities of Virtual Awards at each Eligible PNode or Eligible Aggregated PNode by the close of the Real-Time Market for each Trading Day.

6.5.9 Transmission Flowgate Constraint Information

The CAISO will post on OASIS all transmission flowgate Constraints with the corresponding Shadow Prices.

* * *

7.7.15 System Operations In The Event Of A Market Disruption

7.7.15.1 Actions in the Event of a Market Disruption, to Prevent a Market Disruption or to minimize the Extent of a Market Disruption

The CAISO may take one or more of the following actions in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption:

- (a) postpone the closure of the applicable CAISO Market;
- (b) remove Bids, including Self-Schedules, that have resulted in a Market Disruption previously;
- (c) close the applicable CAISO Market and manually copy Bids, including Self-Schedules, from the previous day or other applicable market period;
- (d) close the applicable CAISO Market and use submitted Bids, including Self-Schedules, to the extent possible;
- (e) cancel the applicable CAISO Market, in which case import/export schedules shall be determined by submittal of E-Tags;
- (f) utilize Administrative Prices to settle metered Supply and Demand;

- (g) utilize Exceptional Dispatch and issue operating orders for resources to be committed and dispatched to meet Demand; and
- (h) suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids on behalf of Convergence Bidding Entities at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes.

* * *

7.9 Suspension or Limitation of Virtual Bidding

7.9.1 Suspension or Limitation Generally

The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities for any of the reasons set forth in Section 7.9.2. The CAISO has the authority to suspend or to limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities regardless of whether the CAISO has evidence that the virtual bidding activities that led to the suspension or limitation were the result of actions purposely or knowingly taken by Scheduling Coordinators or Convergence Bidding Entities to cause the outcomes set forth in Section 7.9.2. The CAISO may exercise its suspension or limitation authority pursuant to this Section 7.9 at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes. The CAISO may suspend or limit Virtual Bids that have already been submitted, Virtual Bids that will be submitted in the future, or both. The CAISO's authority to suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes will be governed by the Market Disruption provisions of Section 7.7.15 of the CAISO Tariff and not this Section 7.9.

7.9.2 Reasons for Suspension or Limitation

The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids if the CAISO determines that virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities detrimentally affect System Reliability or grid operations. Virtual bidding activities can detrimentally affect System Reliability or grid operations if such activities

contribute to threatened or imminent reliability conditions, including but not limited to the following circumstances:

- (a) Submitted Virtual Bids create a substantial risk that the CAISO will be unable to obtain sufficient Energy and Ancillary Services to meet Real-Time Demand and Ancillary Service requirements in the CAISO Balancing Authority Area.
- (b) Submitted Virtual Bids render the CAISO Day-Ahead Market software unable to process Bids submitted into the Day-Ahead Market.
- (c) Submitted Virtual Bids render the CAISO unable to achieve an alternating current (AC) solution in the Day-Ahead Market for an extended period of time.

7.9.3 Procedures Regarding Suspension or Limitation

- (a) Whenever practicable, prior to suspending or limiting virtual bidding, the CAISO will notify affected Scheduling Coordinators and affected Convergence Bidding Entities that the CAISO intends to suspend or limit virtual bidding and will confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. In cases where taking such actions prior to suspending or limiting virtual bidding is not practicable, the CAISO will promptly notify the affected Scheduling Coordinators and affected Convergence Bidding Entities that the CAISO has suspended or limited virtual bidding, and will promptly confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. Within two (2) Business Days of the notice of suspension or limitation, the CAISO will provide the affected Scheduling Coordinators and affected Convergence Bidding Entities with information justifying the decision to suspend or limit virtual bidding.

- (b) Suspension or limitation of virtual bidding by the CAISO will remain in effect for ninety (90) days or any shorter time period determined by the CAISO. The CAISO will have the authority to discontinue the suspension or limitation of virtual bidding at any time it determines such suspension or limitation is no longer appropriate.

* * *

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) HASP charges and payments for Energy and Ancillary Services; (7) High Voltage Access Charges and TAC Transition Charges; (8) Wheeling Access Charges; (9) Voltage Support and Black Start charges; (10) Excess Cost Payments; (11) default interest charges; (12) CRR Charges and Payments, (13) Inter-SC Trades charges and payments; (14) neutrality adjustments; (15) FERC Annual Charges; (16) distribution of excess Marginal Losses; (17) Virtual Bid Submission Charges; (18) miscellaneous charges and payments; and (19) Participating Intermittent Resource Fees.

* * *

11.2.4.1 Calculation of the IFM Congestion Charge

For each Settlement Period of the IFM, the CAISO shall calculate the IFM Congestion Charge as the IFM MCC amount for all scheduled Demand and Virtual Supply Awards minus the IFM MCC amount for all scheduled Supply and Virtual Demand Awards. The IFM MCC amount for all scheduled Demand and Virtual Demand Awards is the sum of the products of the IFM MCC and the total of the MWh of Demand scheduled in the Day-Ahead Schedule and Virtual Supply Awards at all the applicable PNodes, Scheduling Points and Aggregated Pricing Nodes for the Settlement Period. The IFM MCC amount for all scheduled Supply and Virtual Demand Awards is the sum of the products of the IFM MCC and the total of the MWh of Supply scheduled in the Day-Ahead Schedule and the Virtual Supply Awards at all the applicable PNodes and Scheduling Points for the Settlement Period.

* * *

11.2.4.5 CRR Balancing Account

The CRR Balancing Account shall accumulate: (1) the seasonal and monthly CRR Auction revenue amounts that were converted into daily CRRBA values as described in Section 11.2.4.3, (2) any surplus revenue or shortfall generated from hourly CRR Settlements as described in Section 11.2.4.4, and (3) any adjustments of CRR revenue due to virtual bidding or Intertie scheduling practices as described in Section 11.2.4.6. Interest accruing due to the CRR Balancing Account shall be at the CAISO's received interest rate and shall be credited to each monthly CRRBA Accrued Interest Fund, which is then allocated to monthly Measured Demand excluding Measured Demand associated with valid and balanced ETC, TOR, or CVR self-schedule quantities for which IFM Congestion Credits and/or RTM Congestion Credits were provided in the same month.

* * *

11.2.4.6 Adjustment of CRR Revenue

The CAISO will adjust the revenue from the CRRs of a CRR Holder that is also a Convergence Bidding Entity, and will 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 has reduced a Day-Ahead import or export Schedule in the HASP as set forth in Section 11.32, whenever the virtual bidding activity on behalf of that entity or a reduction to a Day-Ahead import or export Schedule in the HASP has had a significant impact on the value of the CRRs in the DAM as determined in accordance with the following steps.

- (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 HASP 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 Constraint binding in the IFM, HASP, or RTD, 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 Constraint was significantly impacted by the Virtual Awards awarded to the Scheduling Coordinator that represents the CRR Holder. Congestion on the 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 Constraint. The threshold percentage is ten (10) percent of the flow limit for each 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 Constraint's impact on the Day-Ahead Market value of the CRR Holder's CRR portfolio with the Constraint's impact on the HASP or 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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 hourly average of the Dispatch Interval Real-Time LMPs at the Eligible PNode or Eligible Aggregated PNode multiplied by the MWhs of Virtual Supply Awards. The CAISO will charge each Scheduling Coordinator with Virtual Supply Awards at an Intertie an amount equal to the simple hourly average of the fifteen (15) minute HASP Intertie LMPs 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 hourly average of the Dispatch Interval Real-Time LMPs at the Eligible PNode or Eligible Aggregated PNode multiplied by the IFM MWhs of Virtual Demand Awards. The CAISO will pay each Scheduling Coordinator with Virtual Demand Awards at an Intertie an amount equal

to the simple hourly average of the fifteen (15) minute HASP Intertie LMPs multiplied by the Day-Ahead MWhs of Virtual Demand Awards.

* * *

11.4 HASP Settlement Of Scheduling Points

The CAISO shall settle both incremental and decremental Energy at the relevant Scheduling Points including Operational Adjustments for all Non-Dynamic System Resources based on the HASP Intertie LMP in accordance with Sections 11.4.1, 11.4.2, and 11.32. Energy dispatched using HASP Intertie Schedules is accounted as Instructed Imbalance Energy and its costs shall be included in the Real-Time Market Settlements in accordance with Section 11.5.

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 HASP and RTM Congestion Credit was provided as specified in Section 11.5.7, and excluding Demand associated with ETC, Converted Right, or TOR Self-Schedules for which an IFM Congestion Credit was provided as specified in Section 11.2.1.5; and (2) the Real-Time Marginal Cost of Losses Offset and allocate it to all Scheduling Coordinators based on Measured Demand, excluding Demand associated with TOR Self-Schedules for which a RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section 11.5.7.2 , and excluding Demand associated with 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 HASP and 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 HASP and 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 HASP and Real-Time Market in accordance with Section 11.3, less Real-Time Congestion Offset and less the Real-Time Marginal Cost of Losses Offset.

* * *

11.8 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, which is netted across the CAISO Markets.

In any Settlement Interval a resource is eligible for Bid Cost Recovery payments only if it is On, or in the case of a Participating Load or a Proxy Demand Resource, only if the resource has actually stopped or started consuming pursuant to the Dispatch Instruction. BCR Eligible Resources for different MSS Operators are supply resources listed in the applicable MSS Agreement. All Bid Costs shall be based on mitigated Bids as 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.

* * *

11.8.3 RUC Bid Cost Recovery Amount

For purposes of determining the RUC Unrecovered Bid Cost Uplift Payments as determined in Section 11.8.5 and for the purposes of allocating Net RUC Bid Cost Uplift as described in Section 11.8.6.5, the CAISO shall calculate the RUC Bid Cost Shortfall or the RUC Bid Cost Surplus as the algebraic difference between the RUC Bid Cost and the RUC Market Revenues for each Bid Cost Recovery Eligible Resource for each Settlement Interval. The RUC Bid Costs shall be calculated pursuant to Section 11.8.3.1 and the RUC Market Revenues shall be calculated pursuant to Section 11.8.3.2. Bid Cost Recovery costs related to Short Start Units committed in Real-Time as a result of awarded RUC Capacity will be included in RUC Compensation Costs.

* * *

11.8.6.3 Determination of Total Positive CAISO Markets Uplifts

Any negative IFM, RUC or Real-Time Market Bid Cost Uplifts are set to \$0 and any positive Net IFM Bid Cost Uplifts, RUC Bid Cost Uplifts, or Real-Time Market Bid Cost Uplifts are further reduced by the uplift ratio in Section 11.8.6.3(iii) to determine the Total CAISO Markets Uplift as follows;

- (i) The Total CAISO Markets Uplift is determined as the sum of the Net IFM Bid Cost Uplift, the Net RUC Bid Cost Uplift, and the Net Real-Time Market Bid Cost Uplift, for all Settlement Intervals in the IFM, RUC and Real-Time Market.

- (ii) The Total Positive CAISO Market Uplift, is determined as the sum of the positive IFM Bid Cost Uplift, positive RUC Bid Cost Uplift and positive Real-Time Market Bid Cost Uplift, for all Settlement Intervals in the IFM, RUC and Real-Time Market.
- (iii) The uplift ratio is equal to the Total CAISO Markets Uplift divided by the Total Positive CAISO Market Uplift.

11.8.6.4 Allocation of Net IFM Bid Cost Uplift

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

11.8.6.4.1 Allocation in the First Tier

The hourly Net IFM Bid Cost Uplift is allocated in the first tier as follows:

- (i) The hourly amount of Net IFM Bid Cost Uplift allocated to each Scheduling Coordinator is equal to the product of the IFM Bid Cost Uplift rate and the IFM uplift obligation for the Scheduling Coordinator.
- (ii) The IFM Bid Cost Uplift rate is equal to the Net IFM Bid Cost Uplift divided by the sum of the positive IFM Load Uplift Obligations for all Scheduling Coordinators and the IFM system-wide Virtual Demand Award uplift obligation, subject to the condition that the IFM Bid Cost Uplift rate cannot exceed the ratio of the hourly Net IFM Bid Cost Uplift for the Trading Hour divided by the maximum of (a) the sum of all hourly IFM Load Uplift Obligations for all Scheduling Coordinators in that Trading Hour or (b) the sum of all hourly Generation scheduled in the Day-Ahead Schedule and IFM upward AS Awards for all Scheduling Coordinators from CAISO-committed Bid Cost Recovery Eligible Resources in that Trading Hour.

- (iii) The IFM uplift obligation for each Scheduling Coordinator is equal to the sum of the IFM Load Uplift Obligation for the Scheduling Coordinator and any IFM Virtual Demand Award uplift obligation for the Scheduling Coordinator.
- (iv) The IFM Load Uplift Obligation for each Scheduling Coordinator, including Scheduling Coordinators for Metered Subsystems regardless of their MSS optional elections (net/gross Settlement, Load following, RUC opt-in/out), is equal to the positive difference between the total Demand scheduled in the Day-Ahead Schedule of that Scheduling Coordinator and the sum of scheduled Generation and scheduled imports from the Self-Schedules in the Day-Ahead Schedule of that Scheduling Coordinator, adjusted by any applicable Inter-SC Trades of IFM Load Uplift Obligations.
- (v) The IFM system-wide Virtual Demand Award uplift obligation is calculated for each hour in the IFM and is equal to maximum of zero (0) or the following quantity: the total system-wide Virtual Demand Awards from the IFM minus the total system-wide Virtual Supply Awards from the IFM, plus the minimum of zero (0) or the following quantity: the total amount of Scheduled Demand (which excludes Virtual Demand Awards), minus Measured Demand.
- (vi) For each Scheduling Coordinator with positive net Virtual Demand Awards, the IFM Virtual Demand Award uplift obligation is equal to the product of (a) the positive net Virtual Demand Awards for the Scheduling Coordinator divided by the sum of each Scheduling Coordinator's positive net Virtual Demand Award and (b) the IFM system-wide Virtual Demand Award uplift obligation. For each Scheduling Coordinator with negative net Virtual Demand Awards, the IFM Virtual Demand Award uplift obligation is zero (0).

11.8.6.4.2 Allocation in the Second Tier

In the second tier, Scheduling Coordinators, including Scheduling Coordinators for MSS Operators that have elected both to not follow their Load and gross Settlement, will be charged for an amount equal to

any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to the Scheduling Coordinator's Measured Demand. Scheduling Coordinators for MSS Operators that have elected to either follow their Load or net Settlement, or both, will be charged for an amount equal to any remaining hourly Net IFM Bid Cost Uplift for the Trading Hour in proportion to their MSS Aggregation Net Measured Demand.

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11.8.6.5.2 Calculation of the Hourly Net RUC Bid Cost Uplift

For each Trading Hour of the RUC, the hourly Net RUC Bid Cost Uplift is determined as the sum over the Settlement Intervals in that Trading Hour of the product of any positive Net RUC Bid Cost Uplift remaining in the Settlement Interval after the sequential netting in Section 11.8.6.2 and the application of the uplift ratio as determined in Section 11.8.6.3. Consistent with Section 31.5.2.2, Scheduling Coordinators for MSS Operators that have opted out of RUC participation, or opt-out of RUC by default as a result of having elected to Load follow, will not be subject to any RUC Bid Cost Uplift allocation. Scheduling Coordinators for MSS Operators that have opted-into RUC, and consequently also are non-Load following and under gross Settlement, will receive the allocation of hourly Net RUC Bid Cost Uplift like all other Scheduling Coordinators.

11.8.6.5.3 Allocation of the RUC Compensation Costs

11.8.6.5.3.1 Allocation in the First Tier

Hourly RUC Compensation Costs are allocated in the first tier as follows:

- (i) The amount of RUC Compensation Costs allocated to each Scheduling Coordinator is equal to the product of the RUC Bid Cost Uplift rate and the RUC obligation for the Scheduling Coordinator. Participating Load will not be subject to the first-tier allocation of RUC Compensation Costs to the extent that the Participating Load's Net Negative CAISO Demand Deviation in that Trading Hour is incurred pursuant to a CAISO directive to consume in a Dispatch Instruction.
- (ii) The RUC Bid Cost Uplift rate is equal to the lower of (a) the RUC Compensation Costs to meet Measured Demand divided by the sum of each Scheduling Coordinator's Net

- Negative CAISO Demand Deviation and any positive net system-wide Virtual Supply Awards in that Trading Hour, or (b) the RUC Compensation Cost divided by the total RUC Award, for all Scheduling Coordinators in that Trading Hour.
- (iii) The RUC obligation for each Scheduling Coordinator is equal to the sum of the Net Negative CAISO Demand Deviation for the Scheduling Coordinator in that Trading Hour and any RUC Bid Cost obligation for Virtual Supply Awards for the Scheduling Coordinator.
 - (iv) The portion of the RUC Compensation Costs to meet Measured Demand are equal to the RUC Compensation Cost minus the excess load share, where the excess load share is equal to the product of (a) the RUC Compensation Cost divided by total RUC Capacity and (b) the maximum of zero (0) or the amount by which the CAISO Forecast of CAISO Demand exceeds Measured Demand.
 - (v) For each Scheduling Coordinator with positive net Virtual Supply Awards, the RUC Bid Cost obligation for Virtual Supply Awards is equal to the product of (a) the positive net Virtual Supply Awards for the Scheduling Coordinator divided by the sum of each Scheduling Coordinator's positive net Virtual Supply Awards and (b) any positive net system-wide Virtual Supply Awards. For each Scheduling Coordinator with non-positive net Virtual Supply Awards, the RUC Bid Cost obligation for Virtual Supply Awards is zero (0).

11.8.6.5.3.2 Allocation in the Second Tier

In the second tier, the Scheduling Coordinator shall be charged an amount equal to any remaining RUC Compensation Costs in proportion to the Scheduling Coordinator's metered CAISO Demand in any Trading Hour, including any RUC Compensation Costs that were not recovered in the first tier pursuant to Section 11.8.6.5.3.1.

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 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 HASP 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 HASP 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 HASP 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 HASP 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 across all Scheduling Coordinators for the Trading Hour.

* * *

11.21.2 Price Correction for Settlement of Virtual Awards

If the CAISO corrects an LMP pursuant to Section 35 that affects a Virtual Award such that either a portion or the entirety of the Virtual Bid Curve associated with the Virtual Award becomes uneconomic, then the CAISO will calculate and apply the price correction for settlement of Virtual Awards as follows: the total cleared MWhs of Virtual Awards multiplied by the corrected LMP, plus the make-whole amount. The make-whole amount for Virtual Demand Awards will be calculated on an hourly basis determined by the area between the Virtual Bid Curve and the corrected LMP, which is calculated as the MWhs in each of the cleared Virtual Bid segments of the Virtual Demand Bid multiplied by the maximum of zero or the corrected LMP minus the Virtual Bid segment price. For Virtual Supply Awards, the make-whole amount will be calculated on an hourly basis determined by the area between the Virtual Bid Curve and the

corrected LMP, which is calculated as the MWhs in each of the cleared Virtual Bid segments of the Virtual Supply Bid multiplied by the maximum of zero or the Virtual Bid segment price minus the corrected LMP.

* * *

11.22.2.5 Allocation of the GMC Among Scheduling Coordinators

The costs recovered through the Grid Management Charge shall be allocated to the service charges that comprise the Grid Management Charge. If the CAISO's revenue requirement for any service charge changes from the most recent FERC-approved revenue requirement for that service charge, the costs recovered through that service charge shall be delineated in a filing to be made at FERC as set forth in Section 11.22.2.6. The service charges, as described in more detail in Appendix F, Schedule 1, Parts A and F, are as follows:

- (a) Core Reliability Services – Demand Charge;
- (b) Core Reliability Services – Energy Exports Charge;
- (c) Energy Transmission Services – Net Energy Charge;
- (d) Energy Transmission Services – Uninstructed Deviations Charge;
- (e) Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge;
- (f) Forward Scheduling Charge;
- (g) Market Usage Charge;
- (h) Settlements, Metering, and Client Relations Charge; and
- (i) Virtual Award Charge.

The charges shall be levied separately monthly in arrears on all Scheduling Coordinators based on the billing determinants specified below for each charge in accordance with formulae set out in Appendix F, Schedule 1, Part A, subject to the requirements set out in Appendix F, Schedule 1, Part F.

* * *

11.22.2.5.9 Virtual Award Charge

The Virtual Award Charge for each Scheduling Coordinator will be calculated according to the formula in Appendix F, Schedule 1, Part A, subject to the requirements set out in Appendix F, Schedule 1, Parts A, C and E.

* * *

11.22.4 Virtual Bid Submission Charge

Each Scheduling Coordinator submitting a Virtual Bid will be subject to a Virtual Bid Submission Charge of \$0.005 for each Virtual Bid segment that is passed to the IFM.

* * *

11.24 [Not Used]

11.24.1 [Not Used]

11.24.2 [Not Used]

11.24.3 [Not Used]

11.24.4 [Not Used]

* * *

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 a Scheduling Coordinator wholly or partially reverses in the HASP:

- (i) The CAISO will charge the Scheduling Coordinator the positive difference between the Day-Ahead Market price and the HASP price applicable to any imports that clear the Day-Ahead Market and are reduced in the HASP for which the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with the Scheduling Coordinator's Day-Ahead Schedule and WECC scheduling criteria.
- (ii) The CAISO will charge the Scheduling Coordinator the positive difference between the HASP price and the Day-Ahead Market price applicable to any exports that clear the Day-Ahead Market and are reduced in the HASP for which

the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with the Scheduling Coordinator's Day-Ahead Schedule and WECC scheduling criteria.

- (iii) The CAISO will treat any reduction by a Scheduling Coordinator to a Day-Ahead import or export Schedule in the HASP 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, 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 Interties and that a Scheduling Coordinator wholly or partially reverses in the HASP to the extent such Schedules are valid and balanced ETC, TOR, or Converted Rights Self-Schedules in the Day-Ahead Market.

* * *

12.1.1.2 Credit Strength Indicators

In determining a Market Participant's Unsecured Credit Limit, the CAISO may rely on information gathered from financial reporting agencies, the general/financial/energy press, and provided by the Market Participant to assess its overall financial health and its ability to meet its financial obligations.

Information considered by the CAISO in this process may include the following qualitative factors:

- (a) Applicant's history;
- (b) Nature of organization and operating environment;
- (c) Management;
- (d) Contractual obligations;
- (e) Governance policies;
- (f) Financial and accounting policies;

- (g) Risk management and credit policies;
- (h) Market risk including price exposures, credit exposures and operational exposures;
- (i) Event risk;
- (j) The state or local regulatory environment; and
- (k) Affiliate disclosure information provided pursuant to this CAISO Tariff, including Sections 4.14.2.1, 12.1.1, 39.9, and/or 39.11.1.

Material negative information in these areas may result in a reduction of up to one hundred percent (100%) in the Unsecured Credit Limit that would otherwise be granted based on the six-step process described in Section 12.1.1.1. A Market Participant, upon request, will be provided a written analysis as to how the provisions in Section 12.1.1.1 and this section were applied in setting its Unsecured Credit Limit.

* * *

12.1.3.1.1 Calculation of the EAL Amount

Except as described in Section 12.1.3.1.2, the CAISO shall use the method described in this Section 12.1.3.1.1 to calculate each Market Participant's Estimated Aggregate Liability (EAL). The Estimated Aggregate Liability represents the amount owed to the CAISO for all unpaid obligations, specifically, the obligations for the number of Trading Days outstanding at a given time based on the CAISO's Payments Calendar plus five (7) Trading Days based on the allowable period for Market Participants to respond to CAISO requests for additional Financial Security collateral (three (3) Business Days), and other liabilities including the value of a Market Participant's CRR portfolio, if negative. The charges the CAISO shall use to calculate Estimated Aggregate Liability shall be charges described or referenced in the CAISO Tariff. The CAISO shall calculate the Estimated Aggregate Liability for each Market Participant by aggregating the following obligations:

- (a) invoiced amounts, i.e., any published but unpaid amounts on Invoices;
- (b) published amounts, i.e., amounts for Trading Days for which Settlement Statements have been issued;

- (c) estimated amounts, i.e., amounts based on estimated Settlement amounts calculated by the Settlement system using estimated meter data, and other available operational data;
- (d) extrapolated amounts, i.e., amounts calculated for Trading Days for which neither actual nor estimated Settlement Statements have been issued;
- (e) CRR portfolio value, i.e., the prospective value of the CRR portfolio, if negative, as described in Section 12.6.3;
- (f) CRR Auction limit, i.e., the maximum credit limit for participation in a CRR Auction;
- (g) CRR Auction awards (prior to invoicing), i.e., amounts to cover winning offers at the completion of the CRR Auction but prior to invoicing;
- (h) Estimated Aggregate Liability adjustments resulting from Virtual Bid Submission Charges and the submission of Virtual Bids and/or receipt of Virtual Awards pursuant to Section 12.8;
- (i) past-due amounts, i.e., any unpaid or past due amounts on Invoices;
- (j) FERC Annual FERC Charges, i.e., FERC Annual Charges for a Market Participant that has elected to pay such amounts on an annual basis that are owed and outstanding and not already captured in any other component of Estimated Aggregate Liability;
- (k) WAC Charges, i.e., WAC amounts for the current year or future years as specified in Section 36.9.2;
- (l) Estimated Aggregate Liability adjustments, i.e., adjustments that may be necessary as a result of analysis performed as a result of Section 12.4.2; and
- (m) extraordinary adjustments, i.e., adjustments to Settlement amounts related to FERC proceedings, if known and estimated by the CAISO, as described in Section 12.1.3.1.3.

For a Market Participant that maintains multiple BAID numbers, the Estimated Aggregate Liability of the Market Participant as a legal entity shall be calculated by summing the Estimated Aggregate Liabilities for all such BAID numbers and comparing the sum of the Estimated Aggregate Liabilities to the Aggregate Credit Limit of the Market Participant. Market Participants may recommend changes to the liability estimates produced by the CAISO's Estimated Aggregate Liability calculation through the dispute procedures described in Section 12.4.2.

* * *

12.8 Credit Requirements Applicable to Virtual Bids

12.8.1 Credit Check in the Day-Ahead Market

12.8.1.1 Credit Check Requirements

For each Scheduling Coordinator that submits one or more Virtual Bids in the Day-Ahead Market, the CAISO will estimate the total value of all of the submitted Virtual Bids after the Virtual Bids have been validated in accordance with Section 30.7.3. In all circumstances except where the Scheduling Coordinator submits both a Virtual Supply Bid and a Virtual Demand Bid at the same Eligible PNode or Eligible Aggregated PNode for the same Trading Hour, the CAISO will estimate the total value of the submitted Virtual Bids at each Eligible PNode or Eligible Aggregated PNode for each Trading Hour by calculating the sum of the products of the absolute values of the MWs of the submitted Virtual Bids multiplied by the applicable Virtual Bid Reference Price at the Eligible PNode or Eligible Aggregated PNode for all Trading Hours. In circumstances where the Scheduling Coordinator submits both a Virtual Supply Bid and a Virtual Demand Bid at the same Eligible PNode or Eligible Aggregated PNode for the same Trading Hour, the CAISO will estimate the total value of the submitted Virtual Bids at the Eligible PNode or Eligible Aggregated PNode for the Trading Hour by calculating the greater of (i) the product of the absolute value of the MW of the submitted Virtual Supply Bid multiplied by the Virtual Bid Reference Price for Virtual Supply Bids at the Eligible PNode or Eligible Aggregated PNode or (ii) the product of the absolute value of the MW of the submitted Virtual Demand Bid multiplied by the Virtual Bid Reference Price for Virtual Demand Bids at the Eligible PNode or Eligible Aggregated PNode. The CAISO will then adjust the Scheduling Coordinator's Estimated Aggregate Liability to include the CAISO's estimate of the total value of the submitted Virtual Bids. If the adjusted Estimated Aggregate Liability is greater than the Scheduling Coordinator's Aggregate Credit Limit, the CAISO will reject the Scheduling Coordinator's

submitted Virtual Bids. After rejection of its submitted Virtual Bids, a Scheduling Coordinator may submit revised Virtual Bids, subject to the timelines set forth in the CAISO Tariff and the applicable Business Practice Manual regarding the submission of Bids.

12.8.1.2 Temporary Suspension of Virtual Bidding

In the event that the financial exposure of Scheduling Coordinators cannot be determined pursuant to Section 12.8.1.1 with a reasonable degree of accuracy due to factors such as software or system failures, the CAISO may temporarily suspend virtual bidding. If the CAISO temporarily suspends virtual bidding pursuant to this Section 12.8.1.2, as soon as reasonably practicable, the CAISO will notify FERC and Market Participants of the reason(s) for any suspension of virtual bidding, the action(s) necessary to restore virtual bidding, and the estimated time required to restore virtual bidding. The CAISO does not intend to suspend virtual bidding in the event of brief intermittent software or system failures or where the CAISO anticipates the credit checking functionality will be available prior to the close of the Day-Ahead Market. During instances of software or system failures that extend past the close of the Day-Ahead Market and in the absence of any suspension of virtual bidding, the CAISO will accept pending Virtual Bids at the close of the Day-Ahead Market even though the Virtual Bids have not been validated by the credit checking functionality. Any resulting financial obligations will be included in the next available calculation of each Scheduling Coordinator's Estimated Aggregate Liability.

12.8.2 Virtual Bid Reference Prices

For Virtual Supply Bids, the Virtual Bid Reference Price will be the 95th percentile value of the difference between the LMP in the Real-Time Market (or in the HASP for Virtual Supply Bids at the Interties) and the LMP in the Day-Ahead Market at a given Eligible PNode or Eligible Aggregated PNode. For Virtual Demand Bids, the Virtual Bid Reference Price will be the 95th percentile value of the difference between the LMP in the Day-Ahead Market and the LMP in the Real-Time Market (or in the HASP for Virtual Demand Bids at the Interties) at a given Eligible PNode or Eligible Aggregated PNode. Each Virtual Bid Reference Price will be calculated in \$/MWh. The CAISO will calculate the Virtual Bid Reference Price for each Eligible PNode or Eligible Aggregated PNode for three-month periods (covering January-March, April-June, July-September, and October-December) of each year using the hourly actual LMPs for the same period of the previous year.

12.8.3 Adjustment of EAL After Close of the DAM

After the Day-Ahead Market closes but before the Real-Time Market closes, the CAISO will recalculate the estimate of the total liability of the Virtual Bids of each Scheduling Coordinator based on the MW quantity that cleared in the Day-Ahead Market. The revised total estimated liability will equal the sum of the products of the absolute values of the amounts of MWs of Virtual Awards multiplied by the Virtual Bid Reference Price. The CAISO will then adjust the Estimated Aggregate Liability of the Scheduling Coordinator to reflect the revised total estimated liability of the Virtual Bids as calculated by the CAISO.

12.8.4 Adjustment of EAL After the Close of the RTM

After the Real-Time Market closes, the CAISO will recalculate the total liability of each Scheduling Coordinator with Virtual Awards based on the MW quantity that cleared in the Day-Ahead Market and the LMPs produced in the Day-Ahead Market, HASP, and Real-Time Market. The total liability of a Scheduling Coordinator will equal the sum of the liability of each Virtual Bid submitted by the Scheduling Coordinator that cleared in the Day-Ahead Market. The liability of a Virtual Supply Bid will equal the product of the value of the amount of cleared MWs multiplied by the difference between the Real-Time or HASP LMP, as appropriate, and the Day-Ahead LMP at the Eligible PNode or Eligible Aggregated PNode at which the Virtual Supply Bid was submitted. The liability of a Virtual Demand Bid will equal the product of the value of the amount of cleared MWs multiplied by the difference between the Day-Ahead LMP and the Real-Time or HASP LMP, as appropriate, at the Eligible PNode or Eligible Aggregated PNode at which the Virtual Demand Bid was submitted. The Estimated Aggregate Liability will be adjusted accordingly and will continue to be adjusted as a result of any price correction made in accordance with Section 35.

* * *

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, 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.

* * *

30.7.3.6 Additional Bid Validation Rules for Virtual Bids

In addition to the validation rules described in Section 30.7.3.1, Virtual Bids will be subject to the following additional validation rules.

30.7.3.6.1 Scheduling Coordinator Validation

The CAISO will validate that the SCID associated with a Virtual Bid is submitted from a Scheduling Coordinator authorized to submit Virtual Bids and that the Virtual Bid is submitted at an Eligible PNode or Eligible Aggregated PNode. The CAISO will reject Virtual Bids that do not satisfy these requirements.

30.7.3.6.2 Credit Requirement

Virtual Bids must satisfy the credit requirements of Section 12.8. The Scheduling Coordinator will be notified if Virtual Bids fail to satisfy the credit requirements. If the Scheduling Coordinator fails to resubmit Virtual Bids that satisfy the credit requirements or to provide adequate additional Financial Security, the CAISO will reject the Scheduling Coordinator's Virtual Bids on a last-in, first-out basis.

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, Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs), and Interties.

30.7.3.6.3.1 Position Limits at Eligible PNodes and Eligible Aggregated PNodes

For an Eligible PNode associated with a single physical supply resource, the CAISO will publish a locational limit that will be equal to the PMax of the physical supply resource. For an Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub) associated with more than one physical supply resource, the CAISO will publish a locational limit that will be equal to the sum of the PMaxes of the physical supply resources. For an Eligible PNode associated with a single physical demand resource, the CAISO will publish a locational limit that will be equal to the forecast of the maximum MW consumption of the physical demand resource. For an Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub) associated with more than one physical demand resource, the CAISO will publish a locational limit that will be equal to the forecast of the maximum MW consumption of the physical demand resources. The percentages used to calculate the position limits for each Convergence Bidding Entity at Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs) will be the following percentages of the published locational limits:

- (a) Position limits of ten (10) percent will apply during the time period beginning as of the effective date of this tariff provision through the last day of the eighth month following the effective date of this tariff provision.
- (b) Position limits of fifty (50) percent will apply during the time period beginning as of the first day of the ninth month following the effective date of this tariff provision through the last day of the twelfth month following the effective date of this tariff provision.

- (c) Position limits will cease to apply beginning on the first day of the month as of the first anniversary of the effective date of this tariff provision.

The CAISO will enforce the position limits for Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs) at the time of Virtual Bid submission. It is possible for the enforcement of position limits on a later-submitted Virtual Bid to cause a previously approved Virtual Bid to be rejected, if both of those Virtual Bids are submitted by a Scheduling Coordinator on behalf of the same Convergence Bidding Entity at the same Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub). The CAISO will timely publish the locational limits for Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs).

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 five (5) percent will apply during the time period beginning as of the effective date of this tariff provision through the last day of the eighth month following the effective date of this tariff provision.
- (b) Position limits of twenty-five (25) percent will apply during the time period beginning as of the first day of the ninth month following the effective date of this tariff provision through the last day of the twelfth month following the effective date of this tariff provision.
- (c) Position limits of fifty (50) percent will apply during the time period beginning on the first day of the month as of the first anniversary of the effective date of this tariff provision through the last day of the sixteenth month following the effective date of this tariff provision.
- (d) Position limits will cease to apply beginning on the first day of the seventeenth month 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.

* * *

30.8 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 Operating Transfer Capability for that path is zero (0) MW. The CAISO shall reject Bids or ETC Self-Schedules submitted at Scheduling Points where the Operating Transfer Capability on the transmission path is zero (0) MW. If the Operating 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 HASP. As necessary to comply with Applicable Reliability Criteria, the CAISO shall reduce any non-zero (0) HASP Bids across zero-rated transmission paths to zero after the Market Close for the HASP.

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.

30.9.1 Virtual Bid Components

Each Virtual Bid must have the following components: an indicator that identifies the Virtual Bid as a Virtual Supply Bid or a Virtual Demand Bid; Scheduling Coordinator ID Code; Eligible PNode or Eligible Aggregated PNode as applicable; Virtual Bid Curve; and the Trading Hour or Trading Day to which the Virtual Bid applies. Virtual Bids do not include Start-Up Costs or Minimum Load Costs.

30.10 Use of AC Solution and Nodal MW Constraints

The CAISO will achieve an alternating current (AC) solution in the Day-Ahead Market to the extent practicable. If and when it is impracticable to achieve an AC power flow solution without the initial enforcement of nodal MW limit constraints, the CAISO will apply nodal MW constraints to Eligible PNodes (except for Eligible PNodes established for Interties, which are addressed through the process described in Section 31.8). The CAISO will determine whether to apply such nodal MW constraints as follows:

- (i) The CAISO will calculate a MW limit for each Eligible PNode other than an Eligible PNode established for an Intertie. For an Eligible PNode associated with a physical supply resource, the MW limit will be equal to a factor multiplied by the PMax of the physical supply resource. For an Eligible PNode associated with a physical demand resource, the MW limit will be equal to a factor multiplied by the nodal load forecast of the Eligible PNode calculated as the MW portion of the System Demand Forecast that is distributed to the Eligible PNode according to the corresponding system Load Distribution Factor associated with the Eligible PNode. The factors used in these calculations will be determined in accordance with a process set forth in the Business Practice Manuals.
- (ii) For each of the Eligible PNodes or group of Eligible PNodes, the CAISO will calculate the percentage by which the sum of the MW amounts of all Energy Supply Bids, Demand Bids, and Virtual Bids exceeds the MW limit calculated pursuant to Section 30.10(i).
- (iii) Starting with the Eligible PNodes or group of Eligible PNodes at which the MW limits would be exceeded by the largest percentages, and working in descending

order of the Eligible PNodes or group of Eligible PNodes that would exceed their MW limits ranked by the extent to which the corresponding MW limits would be exceeded, the CAISO will apply the MW limits to all Energy Supply Bids, Demand Bids, and Virtual Bids at the applicable Eligible PNodes or group of Eligible PNodes and run iterations of the IFM until the CAISO Markets can achieve an AC solution. The application of the MW limit will be enforced by means of a MW limit constraint on the sum of the nodal Energy Supply Bids, Demand Bids, and Virtual Bids as well as the portions of the aggregate Energy Supply Bids, Demand Bids, and Virtual Bids that are applicable to the Eligible PNodes or group of Eligible PNodes. The MW limit constraints will be enforced in the IFM optimization engine to curtail the Bids at the Eligible PNodes or group of Eligible PNodes that have been identified as candidates for causing AC convergence issues. The IFM optimization engine will use the economic criteria based on Bid prices and effectiveness of Bids to mitigate the violation of the MW limit at the Eligible PNode or group of Eligible PNodes.

* * *

31.2 MPM-RRD

After the Market Close of the DAM, and after the CAISO has validated the Bids pursuant to Section 30.7, the CAISO will perform the MPM-RRD procedures in a series of processing runs that occur prior to the IFM Market Clearing run. The MPM process determines which Bids need to be mitigated in the IFM. The RRD process is the automated process for determining RMR Generation requirements for RMR Units. The MPM-RRD process optimizes resources using the same optimization used in the IFM, but instead of using Demand Bids as in the IFM the MPM-RRD process optimizes resources to meet one hundred percent of the CAISO Demand Forecast and Export Bids to the extent the Export Bids are selected in the MPM-RRD process, and meet one hundred percent of Ancillary Services requirements based on Supply Bids submitted to the DAM. Virtual Bids are excluded from the MPM-RRD process. Bids on behalf of Proxy Demand Resources are not mitigated and are not considered in the MPM-RRD process. Virtual Bids are excluded from the MPM-RRD process. The mitigated or unmitigated Bid identified in the MPM-

RRD process for all resources that cleared in the MPM-RRD are then passed to the IFM. The CAISO performs the MPM-RRD for the DAM for the twenty-four (24) hours of the targeted Trading Day.

* * *

31.5.1.1 Capacity Eligible for RUC Participation

RUC participation is voluntary for capacity that has not been designated as Resource Adequacy Capacity. Scheduling Coordinators may make such capacity available for participation in RUC by submitting a RUC Availability Bid, provided the Scheduling Coordinator has also submitted an Energy Bid (other than a Virtual Bid) for such capacity into the IFM. Virtual Bids are not eligible to participate in RUC. Capacity from Non-Dynamic System Resources that has not been designated Resource Adequacy Capacity is not eligible to participate in RUC. Capacity from resources including System Resources that has been designated as qualified Resource Adequacy Capacity must participate in RUC. RUC participation is required for Resource Adequacy Capacity to the extent that Resource Adequacy Capacity is not committed following the IFM. System Resources eligible to participate in RUC will be considered on an hourly basis; that is, RUC will not observe any multi-hour block constraints. In RUC the CAISO may commit a Multi-Stage Generating Resource with a Resource Adequacy must-offer obligation at any MSG Configuration with capacity equal to or greater than the MSG Configuration committed in the Integrated Forward Market. RUC will observe the Energy Limits that may have been submitted in conjunction with Energy Bids to the IFM. RMR Unit capacity will be considered in RUC in accordance with Section 31.5.1.3. MSS resources may participate in RUC in accordance with Section 31.5.2.3. COG resources are accounted for in RUC, but may not submit or be paid RUC Availability Payments. The ELS Resources committed through the ELC Process conducted two (2) days before the day the RUC process is conducted for the next Trading Day as described in Section 31.7 are binding.

31.5.1.2 RUC Availability Bids

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

the full amount of Resource Adequacy Capacity for a given resource reduced by any upward Ancillary Services Awards. For Multi-Stage Generating Resources that fail to submit a \$0/MW per hour for the Resource Adequacy Capacity, the CAISO will insert the \$0/MW per hour for the resource's Resource Adequacy Capacity at the MSG Configuration level up to the minimum of the Resource Adequacy Capacity or the PMax of the MSG Configuration. Scheduling Coordinators may submit non-zero RUC Availability Bids for the portion of a resource's capacity that is not Resource Adequacy Capacity.

* * *

31.8 Constraints at Scheduling Points for Interties

Within the IFM optimization, the CAISO enforces two (2) constraints at each Intertie Scheduling Point so that Virtual Bids do not result in net interchange schedules violating scheduling limits unless the bidding prohibition set forth in Section 30.8 applies. The first constraint is 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. The second constraint is 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. Although both constraints are enforced in both scheduling and pricing runs, only the second constraint Shadow Price is incorporated into the pricing run LMPs.

* * *

34.1 Inputs To The Real-Time Market

The RTM utilizes results produced by the DAM and HASP for each Trading Hour of the Trading Day, including the combined commitments contained in the Day-Ahead Schedules, Day Ahead AS Awards, RUC Awards, HASP Intertie Schedules, HASP Self-Schedules, HASP Intertie AS Awards and the MPM-RRD that is run as part of the HASP to determine reliability needs and mitigated bids for each relevant Trading Hour. Virtual Bids and Virtual Awards are not used in the Real-Time Market. 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. Bids submitted in HASP for all Generating Units and Participating Load shall be used in the Real-Time Market.

* * *

37.3.1.1 Expected Conduct

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. HASP Intertie Schedules for import or export Energy are not subject to the foregoing requirement, but failure to deliver on such HASP Intertie Schedules can violate the anti-manipulation provisions in Section 37.7 and in any regulations issued by FERC. The requirements of this Section 37.3.1.1 do not apply to the submission of Virtual Bids.

* * *

39.6.1.4 Minimum Bid Price for Energy Bids

Energy Bids into the CAISO Markets less than -\$30/MWh are not eligible to set any LMP. If the CAISO dispatches a resource with an Energy Bid less than -\$30/MWh, the Scheduling Coordinator on behalf of the resource will be eligible to be paid the Bid price upon the submission of detailed information justifying the cost components of the Bid to the CAISO and FERC no later than seven (7) days after the end of the month in which the Bid was submitted. The CAISO will treat such information as confidential and will apply the procedure in Section 20.4 with regard to requests for disclosure of such information. The CAISO shall pay Scheduling Coordinators for amounts in excess of -\$30/MWh minimum Bid price upon FERC acceptance of the information justifying the cost components. Virtual Bids may not be less than -\$30/MWh.

* * *

39.11 Market Power Mitigation Applicable to Virtual Bidding

39.11.1 Affiliate Disclosure Requirements

Each Convergence Bidding Entity must satisfy the Affiliate disclosure requirements set forth in Section 4.14.2.1.

39.11.2 Monitoring of Virtual Bidding Activity

The CAISO and DMM will monitor virtual bidding activity for anomalous market behavior, gaming, or the exercise of market power.

* * *

Appendix A

Master Definition Supplement

* * *

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.

* * *

CBEA

Convergence Bidding Entity Agreement

Convergence Bidding Entity (CBE)

An entity which has undertaken in writing by execution of a Convergence Bidding Entity Agreement to comply with all applicable provisions of the CAISO Tariff.

Convergence Bidding Entity Agreement (CBEA)

An agreement between the CAISO and a Convergence Bidding Entity, a pro forma version of which is set forth in Appendix B.

* * *

EAL

Estimated Aggregate Liability

* * *

Eligible Aggregated PNode

An Aggregated PNode located at an Intertie where virtual bidding is permitted, or an Aggregated PNode where either aggregated physical supply, a Default LAP, or a Trading Hub are located and where virtual bidding is permitted.

* * *

Eligible PNode

A PNode located at an Intertie where virtual bidding is permitted, or a PNode where either physical supply or demand is located and where virtual bidding is permitted.

* * *

Energy Bid

A Demand Bid, an Energy Supply Bid, or a Virtual Bid.

* * *

Estimated Aggregate Liability (EAL)

The sum of a Market Participant's or CRR Holder's known and reasonably estimated potential liabilities for a specified time period arising from charges described in the CAISO Tariff, as provided for in Section 12.

* * *

Flow Impact

The combined impact of the CRR Holder's portfolio of Virtual Awards from the IFM on the power flows of a Constraint. The Flow Impact is calculated by multiplying the CRR Holder's Virtual Awards at a Node by the shift factor of that Node relative to the Constraint. This product is computed for each Node for which the Convergence Bidding Entity had Virtual Awards, and the Flow Impact is the sum of those products. In this definition, shift factor means the factor to be applied to a resource's expected change in output to determine the amount of flow contribution that change in output will impose on an identified transmission facility or flowgate.

* * *

Market Participant

An entity, including a Scheduling Coordinator, who either: (1) participates in the CAISO Markets through the buying, selling, transmission, or distribution of Energy, Capacity, or Ancillary Services into, out of, or through the CAISO Controlled Grid; (2) is a CRR Holder or Candidate CRR Holder; or (3) is a Convergence Bidding Entity.

* * *

Net Hourly Energy Charge

Total charges to all Demand and Virtual Demand Awards minus total payments to all Supply and Virtual Supply Awards both based on the product of MWh amounts specified in all Day-Ahead Schedules and Virtual Awards and the relevant Day-Ahead LMPs at the applicable PNodes or Aggregated Pricing Node. This also includes any amounts associated with price corrections for Virtual Awards in accordance with Section 11.21.2.

* * *

Real-Time Congestion Offset

For each Settlement Period of the HASP and 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 or HASP, and the RTM or HASP 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 or HASP, and the RTM or HASP MCC at the relevant Location; including also the sum of RTM and HASP Congestion Charges for Intertie Ancillary Services Awards, and excluding the HASP and 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.

* * *

* * *

Virtual Award

A Virtual Supply Award or a Virtual Demand Award.

Virtual Award Charge

The component of the Grid Management Charge that provides for the recovery of the CAISO's costs related to Virtual Awards. The methodology for determining the Virtual Award Charge is set forth in Appendix F, Schedule 1, Part A.

Virtual Bid

A Virtual Supply Bid or a Virtual Demand Bid.

Virtual Bid Curve

The Virtual Bid component that indicates the prices and related quantities at which a Virtual Supply Bid or a Virtual Demand Bid is submitted. For a Virtual Supply Bid, the Virtual Bid Curve is a monotonically increasing staircase function, consisting of no more than ten (10) segments defined by eleven (11) pairs of MW operating points and \$/MWh, which may be different for each Trading Hour of the applicable Virtual Bid time period. For a Virtual Demand Bid, the Virtual Bid Curve is a monotonically decreasing staircase function, consisting of no more than ten (10) segments defined by eleven (11) pairs of MW operating points and \$/MWh, which may be different for each Trading Hour of the applicable Virtual Bid time period.

Virtual Bid Reference Price

The price set forth in Section 12.8.2.

Virtual Bid Submission Charge

A charge assessed to a Scheduling Coordinator for each submitted Virtual Bid segment that is passed to the IFM.

Virtual Demand Award

The cleared Virtual Demand Bids in the IFM for a given hour.

Virtual Demand Bid

A Bid submitted in the DAM that, if cleared in the IFM, represents a commitment to pay for Energy at the LMP in the DAM and to receive revenues as specified in Section 11.3.

Virtual Supply Award

The cleared Virtual Supply Bids in the IFM for a given hour.

Virtual Supply Bid

A Bid submitted in the DAM that, if cleared in the IFM, represents a commitment to receive revenues for Energy at the LMP in the DAM and to make payments as specified in Section 11.3.

* * *

Appendix B.15 Convergence Bidding Entity Agreement

* * *

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

AND

[CONVERGENCE BIDDING ENTITY]

CONVERGENCE BIDDING ENTITY AGREEMENT**CONVERGENCE BIDDING ENTITY AGREEMENT**

THIS AGREEMENT is dated this _____ day of _____, _____, and is entered into, by and between:

- (1) **[Full Legal Name]** having its registered and principal place of business located at **[Address]** (the "Convergence Bidding Entity");

and

- (2) **California Independent System Operator Corporation**, a California nonprofit public benefit corporation having a principal executive office located at such place in the State of California as the CAISO Governing Board may from time to time designate, initially 151 Blue Ravine Road, Folsom, California 95630 (the "CAISO").

The Convergence Bidding Entity and the CAISO are hereinafter referred to individually as a “Party” and collectively as the “Parties.”

Whereas:

- A. The CAISO Tariff provides that any entity that intends to submit Virtual Bids (which can only be submitted through a Scheduling Coordinator that is either the entity itself or a representative of the entity) must register and qualify with the CAISO and comply with the terms of the CAISO Tariff.
- B. The Convergence Bidding Entity has completed the Convergence Bidding Entity application process and is eligible to submit Virtual Bids.
- C. The CAISO Tariff further provides that any entity who wishes to submit Virtual Bids must meet all of the Convergence Bidding Entity requirements in the CAISO Tariff and the relevant Business Practice Manual.
- D. The Convergence Bidding Entity intends to submit Virtual Bids and, therefore, wishes to undertake to the CAISO that it will comply with the applicable provisions of the CAISO Tariff.
- E. The Parties are entering into this Agreement in order to establish the terms and conditions pursuant to which the CAISO and the Convergence Bidding Entity will discharge their respective duties and responsibilities under the CAISO Tariff.

NOW THEREFORE, in consideration of the mutual covenants set forth herein, **THE PARTIES AGREE** as follows:

ARTICLE I

DEFINITIONS AND INTERPRETATION

- a. **Master Definitions Supplement.** All terms and expressions used in this Agreement shall have the same meanings as those contained in the Master Definitions Supplement in Appendix A of the CAISO Tariff.
- b. **Rules of Interpretation.** The following rules of interpretation and conventions shall apply to this Agreement:
 - (a) if there is any inconsistency between this Agreement and the CAISO Tariff, the CAISO Tariff will prevail to the extent of the inconsistency;
 - (b) the singular shall include the plural and vice versa;
 - (c) the masculine shall include the feminine and neutral and vice versa;
 - (d) “includes” or “including” shall mean “including without limitation”;
 - (e) references to a Section, Article, or Schedule shall mean a Section, Article, or a Schedule of this Agreement, as the case may be, unless the context otherwise requires;
 - (f) a reference to a given agreement or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented, or restated through the date as of which such reference is made;

- (g) unless the context otherwise requires, references to any law shall be deemed references to such law as it may be amended, replaced, or restated from time to time;
- (h) 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 personality;
- (i) unless the context otherwise requires, any reference to a Party includes a reference to its permitted successors and assigns;
- (j) any reference to a day, week, month, or year is to a calendar day, week, month, or year; and
- (k) the captions and headings in this Agreement are inserted solely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and conditions of this Agreement.

ARTICLE II

ACKNOWLEDGEMENTS OF CONVERGENCE BIDDING ENTITY AND CAISO

- 2.1 **Scope of Application to Parties.** The Convergence Bidding Entity and CAISO acknowledge that all Convergence Bidding Entities must sign a form of this Agreement in accordance with Section 4.14 of the CAISO Tariff.

ARTICLE III

TERM AND TERMINATION

- 3.1 **Effective Date.** This Agreement shall be effective as of the later of the date it is executed by both Parties or the date accepted for filing and made effective by FERC, if such FERC filing is required, and shall remain in full force and effect until terminated pursuant to Section 3.2 of this Agreement.
- 3.2 **Termination**
 - 3.2.1 **Termination by CAISO.** Subject to Article V, the CAISO may terminate this Agreement by giving written notice to the Convergence Bidding Entity of termination in the event that the Convergence Bidding Entity commits any material default under this Agreement and/or the CAISO Tariff as it pertains to this Agreement which, if capable of being remedied, is not remedied within the time frame specified in the CAISO Tariff after the CAISO has given written notice of the material default to the Convergence Bidding Entity. The CAISO will not terminate this Agreement if the material default of the Convergence Bidding Entity is excused by reason of Uncontrollable Forces in accordance with Article X of this Agreement or if the CAISO agrees, in writing, to an extension of the time to remedy such material default. Any outstanding financial right or obligation or any other obligation under the CAISO Tariff of the Scheduling Coordinator that represents the Convergence Bidding Entity that has arisen while that Scheduling Coordinator was submitting Virtual Bids, and any provision of this Agreement necessary to give effect to such right or obligation, shall survive until satisfied. With respect to any notice of termination given pursuant to this Section, the CAISO must file a timely notice of termination with FERC, if this Agreement was filed with FERC, or must otherwise comply with the requirements of FERC Order No. 2001 and related FERC orders. The filing of the notice of termination by the CAISO with FERC will be considered timely if: (1) the filing of the notice of termination is made after the preconditions for

termination have been met and the CAISO files the notice of termination within sixty (60) days after issuance of the notice of default; or (2) the CAISO files the notice of termination in accordance with the requirements of FERC Order No. 2001. This Agreement shall terminate upon acceptance by FERC of such a notice of termination, if filed with FERC, or thirty (30) days after the date of the CAISO's notice of default, if terminated in accordance with the requirements of FERC Order No. 2001 and related FERC orders.

- 3.2.2 Termination by Convergence Bidding Entity.** In the event that the Convergence Bidding Entity no longer intends to submit Virtual Bids, it may terminate this Agreement, on giving the CAISO not less than ninety (90) days' written notice; provided, however, that any outstanding financial right or obligation or any other obligation under the CAISO Tariff of the Scheduling Coordinator that represents the Convergence Bidding Entity that has arisen while that Scheduling Coordinator was submitting Virtual Bids, and any provision of this Agreement necessary to give effect to such right or obligation, shall survive until satisfied. With respect to any notice of termination given pursuant to this Section, the CAISO must file a timely notice of termination with FERC, if this Agreement has been filed with FERC, or must otherwise comply with the requirements of FERC Order No. 2001 and related FERC orders. The filing of the notice of termination by the CAISO with FERC will be considered timely if: (1) the request to file a notice of termination is made after the preconditions for termination have been met and the CAISO files the notice of termination within sixty (60) days after receipt of such request; or (2) the CAISO files the notice of termination in accordance with the requirements of FERC Order No. 2001. This Agreement shall terminate upon acceptance by FERC of such a notice of termination, if such notice is required to be filed with FERC, or upon ninety (90) days after the CAISO's receipt of the Convergence Bidding Entity's notice of termination, if terminated in accordance with the requirements of FERC Order No. 2001 and related FERC orders.

ARTICLE IV

GENERAL TERMS AND CONDITIONS

- 4.1 Convergence Bidding Entity Requirements.** The Convergence Bidding Entity must register and qualify with the CAISO and comply with all terms of the CAISO Tariff applicable to Convergence Bidding Entities.
- 4.2 Electronic Contracting.** All submitted applications, bids, confirmations, changes to information on file with the CAISO and other communications conducted via electronic transfer (e.g., direct computer link, FTP file transfer, bulletin board, e-mail, facsimile or any other means established by the CAISO) shall have the same legal rights, responsibilities, obligations and other implications as set forth in the terms and conditions of the CAISO Tariff as if executed in written format.
- 4.3 Agreement Subject to CAISO Tariff.** The Parties will comply with all applicable provisions of the CAISO Tariff. This Agreement shall be subject to the CAISO Tariff, which shall be deemed to be incorporated herein.

ARTICLE V

PERFORMANCE

- 5.1 Penalties.** The Convergence Bidding Entity shall be subject to all penalties made applicable to Convergence Bidding Entities set forth in the CAISO Tariff. Nothing in this Agreement, with the exception of the provisions relating to the CAISO ADR Procedures, shall be construed as waiving

the rights of the Convergence Bidding Entity to oppose or protest the specific imposition by the CAISO of any FERC-approved penalty on the Convergence Bidding Entity.

- 5.2 Corrective Measures.** If the Convergence Bidding Entity fails to meet or maintain the requirements set forth in this Agreement and/or the CAISO Tariff, the CAISO shall be permitted to take any of the measures, contained or referenced in the CAISO Tariff, which the CAISO deems to be necessary to correct the situation.

ARTICLE VI

COSTS

- 6.1 Operating and Maintenance Costs.** The Convergence Bidding Entity shall be responsible for all its costs incurred in connection with all its activities related to submittal of Virtual Bids.

ARTICLE VII

DISPUTE RESOLUTION

- 7.1 Dispute Resolution.** The Parties shall make reasonable efforts to settle all disputes arising out of or in connection with this Agreement. In the event any dispute is not settled, the Parties shall adhere to the CAISO ADR Procedures set forth in Section 13 of the CAISO Tariff, which is incorporated by reference, except that any reference in Section 13 of the CAISO Tariff to Market Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE VIII

REPRESENTATIONS AND WARRANTIES

- 8.1 Representation and Warranties.** Each Party represents and warrants that the execution, delivery and performance of this Agreement by it has been duly authorized by all necessary corporate and/or governmental actions, to the extent authorized by law.

ARTICLE IX

LIABILITY

- 9.1 Liability.** The provisions of Section 14 of the CAISO Tariff will apply to liability arising under this Agreement, except that all references in Section 14 of the CAISO Tariff to Market Participants shall be read as references to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE X

UNCONTROLLABLE FORCES

- 10.1 Uncontrollable Forces Tariff Provisions.** Section 14.1 of the CAISO Tariff shall be incorporated by reference into this Agreement except that all references in Section 14.1 of the CAISO Tariff to Market Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE XI

MISCELLANEOUS

- 11.1 Assignments.** Either Party may assign or transfer any or all of its rights and/or obligations under this Agreement with the other Party's prior written consent in accordance with Section 22.2 of the CAISO Tariff and other CAISO Tariff requirements as applied to Convergence Bidding Entities. Such consent shall not be unreasonably withheld. Any such transfer or assignment shall be conditioned upon the successor in interest accepting the rights and/or obligations under this Agreement as if said successor in interest was an original Party to this Agreement.
- 11.2 Notices.** Any notice, demand, or request which may be given to or made upon either Party regarding this Agreement shall be made in accordance with Section 22.4 of the CAISO Tariff, provided that all references in Section 22.4 of the CAISO Tariff to Market Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement, and unless otherwise stated or agreed shall be made to the representative of the other Party indicated in Schedule 1. A Party must update the information in Schedule 1 of this Agreement as information changes. Such changes to Schedule 1 shall not constitute an amendment to this Agreement.
- 11.3 Waivers.** Any waiver at any time by either Party of its rights with respect to any default under this Agreement, or with respect to any other matter arising in connection with this Agreement, shall not constitute or be deemed a waiver with respect to any subsequent default or other matter arising in connection with this Agreement. Any delay, short of the statutory period of limitations, in asserting or enforcing any right under this Agreement shall not constitute or be deemed a waiver of such right.
- 11.4 Governing Law and Forum.** This Agreement shall be deemed to be a contract made under, and for all purposes shall be governed by and construed in accordance with, the laws of the State of California, except its conflict of law provisions. The Parties irrevocably consent that any legal action or proceeding arising under or relating to this Agreement to which the CAISO ADR Procedures do not apply, shall be brought in any of the following forums, as appropriate: (i) any court of the State of California, (ii) any federal court of the United States of America located in the State of California, except to the extent subject to the protections of the Eleventh Amendment of the United States Constitution or, (iii) where subject to its jurisdiction, before FERC.
- 11.5 Consistency with Federal Laws and Regulations.** This Agreement shall incorporate by reference Section 22.9 of the CAISO Tariff as if the references to the CAISO Tariff were referring to this Agreement.
- 11.6 Merger.** This Agreement constitutes the complete and final agreement of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter.

- 11.7 Severability.** If any term, covenant, or condition of this Agreement or the application or effect of any such term, covenant, or condition is held invalid as to any person, entity, or circumstance, or is determined to be unjust, unreasonable, unlawful, imprudent, or otherwise not in the public interest by any court or government agency of competent jurisdiction, then such term, covenant, or condition shall remain in force and effect to the maximum extent permitted by law, and all other terms, covenants, and conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect and the Parties shall be relieved of their obligations only to the extent necessary to eliminate such regulatory or other determination unless a court or governmental agency of competent jurisdiction holds that such provisions are not separable from all other provisions of this Agreement.
- 11.8 Amendments.** This Agreement and the Schedules attached hereto may be amended from time to time by the mutual agreement of the Parties in writing. Amendments that require FERC approval shall not take effect until FERC has accepted such amendments for filing and made them effective. Nothing herein shall be construed as affecting in any way the right of the CAISO to make unilateral application to FERC for a change in the rates, terms, and conditions of this Agreement under Section 205 of the FPA and pursuant to FERC's rules and regulations promulgated thereunder, and the Convergence Bidding Entity shall have the right to make a unilateral filing with FERC to modify this Agreement pursuant to Section 206 or any other applicable provision of the FPA and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under Sections 205 or 206 of the FPA and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein. The standard of review FERC shall apply when acting upon proposed modifications to this Agreement by the CAISO shall be the "just and reasonable" standard of review rather than the "public interest" standard of review. The standard of review FERC shall apply when acting upon proposed modifications to this Agreement by FERC's own motion or by a signatory other than the CAISO or non-signatory entity shall also be the "just and reasonable" standard of review. Schedule 1 is provided for informational purposes and revisions to that schedule do not constitute a material change in the Agreement warranting FERC review.
- 11.9 Counterparts.** This Agreement may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed on behalf of each by and through their authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: _____

Name: _____

Title: _____

Date: _____

[Name of Convergence Bidding Entity]

By: _____

Name: _____

Title: _____

Date: _____

SCHEDULE 1

NOTICES

[Section 11.2]

Convergence Bidding Entity

Name of Primary
Representative:

Title:

Company:

Address:

City/State/Zip Code:

Email Address:

Phone:

Fax No:

Name of Alternative
Representative:

Title:

Company:

Address:

City/State/Zip Code:

Email Address:

Phone:

Fax No:

CAISO

Name of Primary Representative: _____

Title: _____

Address: _____

City/State/Zip Code: _____

Email address: _____

Phone: _____

Fax: _____

Name of Alternative Representative: _____

Title: _____

Address: _____

City/State/Zip Code: _____

Email address: _____

Phone: _____

Fax: _____

* * *

**Appendix F Rate Schedules
Schedule 1
Grid Management Charge**

Part A – Monthly Calculation of Grid Management Charge (GMC)

The Grid Management Charge consists of the following separate service charges: (1) the Core Reliability Services – Demand Charge, (2) the Core Reliability Services – Energy Exports Charge; (3) Energy Transmission Services – Net Energy Charge, (4) the Energy Transmission Services – Uninstructed Deviations Charge, (5) the Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge, (6) the Forward Scheduling Charge, (7) the Market Usage Charge, (8) the Settlements, Metering, and Client Relations Charge, and (9) the Virtual Award Charge.

1. The rate in \$/MW for the Core Reliability Services – Demand Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total of the forecasted Scheduling Coordinators' metered non-coincident peak hourly demand in MW for all months during the year (excluding the portion of such Demand associated with Energy Exports, if any, as may be modified in accordance with Part F of this Schedule 1), reduced by thirty-four percent (34%) of the sum of all Scheduling Coordinators' metered non-coincident peak Demands occurring during the hours ending 0100 through 0600, or during the hours ending 2300 through 2400, every day, including Sundays and holidays; provided that if a Scheduling Coordinator's metered non-coincident peak Demand hour during the month occurs during the hours ending 0100 through 0600, or during the hours ending 2300 through 2400, every day, the rate shall be sixty-six percent (66%) of the standard Core Reliability Services – Demand Charge rate.
2. The rate in \$/MWh for the Core Reliability Services – Energy Exports Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this

Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total of the forecasted Scheduling Coordinators' metered volume of Energy Exports in MWh, excluding each Scheduling Coordinator's Energy Exports associated with Transmission Ownership Rights.

3. The rate in \$/MWh for the Energy Transmission Services – Net Energy Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total annual forecasted Metered Balancing Authority Area Load, excluding each Scheduling Coordinator's Metered Balancing Authority Area Load associated with Transmission Ownership Rights.
4. The rate in \$/MWh for the Energy Transmission Services – Uninstructed Deviations Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the absolute value of total annual forecasted net Uninstructed Imbalance Energy (netted within a Settlement Interval summed over the calendar month) in MWh; provided that the rate for each Scheduling Coordinator's Participating Intermittent Resources will be assessed against the Uninstructed Imbalance Energy of such Participating Intermittent Resources netted over the Trading Month.
5. The rate in \$/MWh for the Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total annual forecasted Metered Balancing Authority Area Load associated with Transmission Ownership Rights.
6. The rate in \$ per Schedule or \$ per Inter-SC Trade for the Forward Scheduling Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted number of non-zero MW Day-Ahead and HASP Schedules, as may be modified in accordance with Part F of this Schedule 1, including all awarded Ancillary Service and Residual Unit Commitment Bids and all Inter-SC Trades, including Inter-SC Trades of IFM Load Uplift Obligations. This charge will be assessed separately with respect to Schedules and Inter-SC Trades.
7. The rate in \$/MWh for the Market Usage Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted total purchases and sales (including out-of-market transactions) of Ancillary Services, Energy, Instructed Imbalance Energy, and net Uninstructed Imbalance Energy (with Uninstructed Imbalance Energy for Participating Intermittent Resources netted over the Trading Month and all other Uninstructed Imbalance Energy being netted within a Settlement Interval) in MWh. A Market Usage Charge rate will be calculated separately for two sets of CAISO Markets: (i) the Ancillary Services and RTM rate will be based on MWh of purchases and sales of Ancillary Services in the DAM, the HASP, and the RTM, MWh of Instructed Imbalance Energy, and MWh of Uninstructed Imbalance Energy netted over the Settlement Interval; and (ii) the rate for the Day-Ahead Market for Energy will be based on MWh of Day-Ahead Schedules. The rate for the Day-Ahead Market for Energy will be based on the sum, for all Scheduling Coordinators and all Settlement Periods, of the greater of the amount of MWh associated with each Scheduling Coordinator's Day-Ahead Schedule of Supply or the amount associated with its Day-Ahead Schedule of Demand for each Settlement Period.
8. The rate for the Settlements, Metering, and Client Relations Charge will be fixed at \$1000.00 per month, per Scheduling Coordinator ID Code (SCID) with an invoice value other than \$0.00 in the current Trading Month.

9. The rate in \$/MWh for the Virtual Award Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted total virtual supply and virtual demand cleared in the IFM. This service category will be allocated nine (9) percent of the Forward Scheduling Charge and Market Usage – Forward Energy service categories based upon the total annual forecasted cleared supply and demand. All amounts collected from the assessment of the Virtual Bid Submission Charge in a given year will be used to offset the amount of the Virtual Award Charge for the next year.

For a Scheduling Coordinator for a Load following MSS, the GMC service charges set forth in above shall be applied as set forth in Section 11.22.3 of the CAISO Tariff.

The rates for the foregoing charges shall be adjusted automatically each year, effective January 1 for the following twelve months, in the manner set forth in Part D of this Schedule.

Part B – Quarterly Adjustment, If Required

Each component rate of the Grid Management Charge will be adjusted automatically on a quarterly basis, up or down, so that rates reflect the annual revenue requirement as stated in the CAISO's filing or posting on the CAISO Website, as applicable, if the estimated revenue collections for that component, on an annual basis, change by more than five percent (5%) or \$1 million, whichever is greater, during the year. Such adjustment may be implemented not more than once per calendar quarter, and will be effective the first day of the next calendar month.

The rates will be adjusted according to the formulae listed in Appendix F, Schedule 1, Part A with the billing determinant(s) readjusted on a going-forward basis to reflect the change of more than five percent (5%) or \$1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

Part C – Costs Recovered through the GMC

As provided in Section 11.22.2 of the CAISO Tariff, the Grid Management Charge includes the following costs, as projected in the CAISO's budget for the year to which the Grid Management Charge applies:

- CAISO Operating Costs;
- CAISO Other Costs and Revenues, including penalties, interest earnings and other revenues;
- CAISO Financing Costs, including debt service on CAISO Start Up and Development Costs and subsequent capital expenditures; and
- CAISO Operating and Capital Reserves Costs.

Such costs, for the CAISO as a whole, are allocated to the service charges that comprise the Grid Management Charge: (1) Core Reliability Services - Demand Charge, (2) Core Reliability Services – Energy Exports Charge, (3) Energy Transmission Services – Net Energy Charge, (4) Energy Transmission Services – Uninstructed Deviations Charge, (5) Core Reliability Services/ Energy Transmission Services – Transmission Ownership Rights Charge, (6) Forward Scheduling Charge, (7) Market Usage Charge, (8) Settlements, Metering, and Client Relations Charge, and (9) Virtual Award Charge, according to the factors listed in Part E of this Schedule 1, and

adjusted annually for:

- any surplus revenues from the previous year as deposited in the CAISO Operating and Capital Reserves Account, or deficiency of revenues, as recorded in a memorandum account;

divided by:

- forecasted annual billing determinant volumes;

adjusted quarterly for:

- a change in the volume estimate used to calculate the individual Grid Management Charge components, if, on an annual basis, the change is five percent (5%) or \$1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

The Grid Management Charge revenue requirement formula is as follows:

Grid Management Charge revenue requirement =

$$\text{CAISO Operating Costs} + \text{CAISO Financing Costs} + \text{CAISO Other Costs and Revenues} \\ + \text{CAISO Operating and Capital Reserves Costs},$$

[The "USoA" reference below is the FERC Uniform System of Accounts, and is intended to include subsequent re-numbering or re-designation of the same accounts or subaccounts.]

Where,

(1) CAISO Operating Costs include:

- (a) Transmission expenses (USoA 560-574);
- (b) Regional market expenses (USoA 575 subaccounts);
- (c) Customer accounting expenses (USoA 901-905);
- (d) Customer service and informational expenses (USoA 906-910);
- (e) Sales expenses (USoA 911-917);
- (f) Administrative & general expenses (USoA 920-935);
- (g) Taxes other than income taxes that relate to CAISO operating income (USoA 408.1); and
- (h) Miscellaneous, non-operating expenses, penalties and other deductions (USoA 426 subaccounts).

(2) CAISO Financing Costs include:

- (a) For any fiscal year, scheduled principal and interest payments, sinking fund payments related to balloon maturities, repayment of commercial paper notes, net payments required pursuant to a payment obligation, or payments due on any CAISO notes. This amount includes the current year accrued principal and interest payments due in the first one hundred twenty (120) days of the following year.
- (b) The debt service coverage requirement, which is a percentage of the senior lien debt service, i.e., all debt service that has a first lien on CAISO net operating revenues. The coverage requirement is twenty-five percent (25%), unless otherwise specified by the rate covenants of the official statements for each CAISO bond offering.

(3) CAISO Other Costs and Revenues include:

- (a) Interest earnings (USoA 419) on CAISO Operating and Capital Reserves Account balances, excluding interest on bond or note proceeds specifically designated for capital projects or capitalized interest.
- (b) Miscellaneous revenues (USoA 421 and 456 subaccounts), including but not limited to Scheduling Coordinator application and training fees, and fines assessed and collected by the CAISO.
- (c) Other interest expenses (USoA 431) not provided for elsewhere.

- (4) CAISO Operating and Capital Reserves Costs include:
- (a) The projected CAISO Operating and Capital Reserves Account balance for December 31 of the prior year less the reserve requirement. If such amount is negative, the amount may be divided by two, so that the reserve is replenished within a two-year period. The reserve requirement is fifteen percent (15%) of annual CAISO Operating Costs, unless otherwise specified by (1) the rate covenants of the official statements for each CAISO bond offering, (2) the CAISO Governing Board or (3) the FERC.
 - (b) Funding from current year revenues for approved capital and projects initiated in the fiscal year.

A separate revenue requirement shall be established for each component of the Grid Management Charge by developing the revenue requirement for the CAISO as a whole and then assigning such costs to the service categories using the allocation factors provided in Appendix F, Schedule 1, Part E.

* * *

Part E – Cost Allocation

1. The Grid Management Charge revenue requirement, determined in accordance with Part C of this Schedule 1, shall be allocated to the service charges specified in Part A of this Schedule 1 as follows, subject to Section 2 of this Part E and to Part F of this Schedule 1. Expenses projected to be recorded in each cost center shall be allocated among the charges in accordance with the allocation factors listed in Table 1 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1. In the event the CAISO budgets for projected expenditures for cost centers are not specified in Table 1 to Schedule 1, such expenditures shall be allocated based on the allocation factors for the respective CAISO division hosting that newly-created cost center. Such divisional allocation factors are specified in Table 1 to this Schedule 1.

Debt service expenditures for the CAISO's existing bond offerings shall be allocated among the charges in accordance with the allocation factors listed in Table 1 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1. Capital expenditures shall be allocated among the charges in accordance with the allocation factors listed in Table 2 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1, for the system for which the capital expenditure is projected to be made.

Any costs allocated by the factors listed in Table 1 and Table 2 to the Settlements, Metering, and Client Relations Charge category that would remain un-recovered after the assessment of the charge for that service specified in Section 8 of Part A of this Schedule 1 on forecasted billing determinant volumes shall be reallocated to the remaining GMC service categories in the ratios set forth in Table 3 to this Schedule 1.

The cost allocation factors in Tables 1, 2, and 3 to this Schedule 1 include the following association of factors to the components of the Grid Management Charge, subject to Part F of this Schedule 1:

CRS: This factor is the allocation of costs to the Core Reliability Services – Demand Charge and Core Reliability Services - Energy Exports Charge.

ETS: This factor is the allocation of costs to the Energy Transmission Services – Net Energy Charge and Energy Transmission Services – Uninstructed Deviations Charge, subject to Section 2 of this Part E.

CRS/ETS TOR: This factor is the allocation of costs to Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge for the assessment of the Core Reliability Services – Demand Charge, Core Reliability Services – Energy Exports Charge, and the Energy Transmission Services – Net Energy Charge to Metered Balancing Authority Area Load served over Transmission Ownership Rights.

FS: This factor is the allocation of costs to the Forward Scheduling Charge.

MU: This factor is the allocation of costs to the Market Usage Charge, except for the application of the Market Usage Charge to purchases or sales of Energy in the Day-Ahead Market.

MU-FE: This factor is the allocation of costs to the Market Usage Charge as applied to Day-Ahead Schedules. For each Scheduling Coordinator, the charge for the Day-Ahead Market for Energy will be based on the sum, for all Settlement Periods, of the greater of the amount of MWh associated with the Scheduling Coordinator's Day-Ahead Schedule of Supply or the amount associated with its Day-Ahead Schedule of Demand for each Settlement Period.

SMCR: This factor is the allocation of costs to the Settlements, Metering, and Client Relations Charge.

The allocation of costs to cost allocation factors FS and MU-FE includes the allocation of costs to the Virtual Award Charge.

2. The allocation of costs in accordance with Section 1 and Tables 1 and 2 of this Part E shall be adjusted as follows:

Costs allocated to the Energy Transmission Services (ETS) category in the following tables are further apportioned to the Energy Transmission Services – Net Energy Charge and Energy Transmission Services – Uninstructed Deviations Charge subcategories in eighty percent (80%) and twenty percent (20%) ratios, respectively.

* * *

Attachment B – Marked Tariff
Convergence Bidding Tariff Amendment Refile and Compliance
California Independent System Operator Corporation
Fifth Replacement FERC Electric Tariff

**Language originally filed in Docket No. ER10-300-000 on June 25, 2010 is shown in track changes,
new compliance language is shown in yellow highlight track changes.**

* * *

4.5.1 Scheduling Coordinator Certification

Only Scheduling Coordinators that the CAISO has certified as having met the requirements of this Section 4.5.1 may participate in the CAISO's Energy and Ancillary Services markets. Scheduling Coordinators offering Ancillary Services shall additionally meet the requirements of Section 8.

Each Scheduling Coordinator shall:

- (a) demonstrate to the CAISO's reasonable satisfaction that it is capable of performing the functions of a Scheduling Coordinator under this CAISO Tariff including (without limitation) the functions specified in Sections 4.5.3 and 4.5.4 as applicable;
- (b) identify each of the Eligible Customers (including itself if it trades for its own account) which it is authorized to represent as Scheduling Coordinator and confirm that the metering requirements under Section 10 are met in relation to each Eligible Customer that it represents under this CAISO Tariff;
- (c) identify each of the Convergence Bidding Entities that it is authorized to represent as Scheduling Coordinator;
- (d) confirm that each of the End-Use Customers it represents is eligible for service as a Direct Access End User;
- (e) confirm that none of the Wholesale Customers it represents is ineligible for wholesale transmission service pursuant to the provisions of FPA Section 212(h);
- (f) demonstrate to the CAISO's reasonable satisfaction that it meets the financial criteria set out in Section 12;
- (g) enter into a Scheduling Coordinator Agreement with the CAISO; and
- (h) provide NERC tagging data as applicable.

* * *

4.5.1.1.6.2 Scheduling Coordinator Applicant's Obligation for Contracts

A Scheduling Coordinator Applicant must certify that it is duly authorized to represent the Generators and Loads that are its Scheduling Coordinator Customers and must further certify that:

- (a) represented Generators have entered into Participating Generator Agreements or Qualifying Facility Participating Generator Agreements as provided in Appendices B.2 and B.3, respectively with the CAISO;
- (b) represented UDCs have entered into UDC Operating Agreements as provided in Appendix B.8 with the CAISO;
- (c) represented CAISO Metered Entities have entered into Meter Service Agreements for CAISO Metered Entities as provided in Appendix B.6 with the CAISO;
- (d) none of the Wholesale Customers it will represent are ineligible for wholesale transmission service pursuant to the provisions of the FPA Section 212(h); and
- (e) each End-Use Customer it will represent is eligible for service as a Direct Access End User pursuant to an established program approved by the California Public Utilities Commission or a Local Regulatory Authority.

A Scheduling Coordinator Applicant that seeks to serve as Scheduling Coordinator for one or more Convergence Bidding Entities must certify that it is duly authorized to represent those Convergence Bidding Entities and to submit and settle Virtual Bids on their behalf.

* * *

4.5.2 Eligible Customers and Convergence Bidding Entities

4.5.2.1 SCs Representing Eligible Customers

Each Scheduling Coordinator shall within ten (10) days of a request by the CAISO provide the CAISO with a list of the Eligible Customers that it represents at the date of the request.

4.5.2.2 SCs Representing Convergence Bidding Entities

Each Scheduling Coordinator that is or represents one or more Convergence Bidding Entities will provide the CAISO with a list of the Convergence Bidding Entities that it represents and the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids for each Convergence Bidding Entity, at least

eleven (11) Business Days prior to the Scheduling Coordinator's initial submission of a Virtual Bid on behalf of any of those Convergence Bidding Entities. This list must satisfy the requirements of Section 4.14.2.3. In the event that the Scheduling Coordinator will represent additional Convergence Bidding Entities or modifies any of the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids on behalf of any Convergence Bidding Entity, the Scheduling Coordinator will provide the CAISO with an updated list of Convergence Bidding Entities and/or SCIDs at least eleven (11) Business Days prior to submitting a Virtual Bid involving a Convergence Bidding Entity and/or SCID not already included in the most recent list provided to the CAISO. The CAISO will incorporate the information provided pursuant to this Section 4.5.2.2 into the CAISO's official list of the Convergence Bidding Entities that Scheduling Coordinators represent and will incorporate the SCIDs that Scheduling Coordinators use to submit Virtual Bids on behalf of Convergence Bidding Entities into the Master File within eleven (11) Business Days after the CAISO determines that the information in each list or updated list provided by a Scheduling Coordinator or Convergence Bidding Entity is accurate and complete.

* * *

4.5.3.7 Annual and Monthly Forecasts

Submitting to the CAISO its forecasted monthly and annual peak Demand in the CAISO Balancing Authority Area and/or its forecasted monthly and annual Generation capacity, as applicable; the forecasts shall be submitted to the CAISO electronically on a monthly basis by noon of the 18th working day of the month and shall cover a period of twelve (12) months on a rolling basis. Scheduling Coordinators that represent only Convergence Bidding Entities will not be subject to the requirements of this Section 4.5.3.7.

* * *

4.5.3.12 Financial Responsibility

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

* * *

4.5.4 Operations Of A Scheduling Coordinator

4.5.4.1 Maintain Twenty-four (24) Hour Scheduling Centers

Each Scheduling Coordinator other than a Scheduling Coordinator that represents only Convergence Bidding Entities shall operate and maintain a twenty-four (24) hour, seven (7) days per week, scheduling center. Each Scheduling Coordinator shall designate a senior member of staff as its scheduling center manager who shall be responsible for operational communications with the CAISO and who shall have sufficient authority to commit and bind the Scheduling Coordinator.

* * *

4.14 Relationship Between the CAISO and CBEs

Only entities that satisfy all of the requirements specified in this Section 4.14 will be certified by the CAISO to be Convergence Bidding Entities and thus be authorized by the CAISO to submit Virtual Bids.
A Convergence Bidding Entity may submit Virtual Bids only through a Scheduling Coordinator, which can be either the Convergence Bidding Entity itself or another entity that is a Scheduling Coordinator. A Convergence Bidding Entity may be represented by only one Scheduling Coordinator at any given time.

4.14.1 Procedure to Become a Convergence Bidding Entity

4.14.1.1 Convergence Bidding Entity Application

To become a Convergence Bidding Entity, a Convergence Bidding Entity applicant must submit a completed written application, as provided in the applicable form posted on the CAISO Website, to the CAISO by mail or in person.

4.14.1.2 CAISO Information

The CAISO will provide the following information, in its most current form, on the CAISO Website and, upon request by a Convergence Bidding Entity applicant, the CAISO will send the requested information by electronic mail:

- (a) the Convergence Bidding Entity application form; and
- (b) the CAISO Tariff and Business Practice Manuals.

4.14.1.3 Convergence Bidding Entity Applicant Submits Application

At least sixty (60) Business Days before the date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, the Convergence Bidding Entity applicant must return a completed application form.

4.14.1.4 Notice of Receipt

Within three (3) Business Days of receiving the application, the CAISO will send written notification to the Convergence Bidding Entity applicant that it has received the application.

4.14.1.5 CAISO Review of Application

Within ten (10) Business Days after receiving an application, the CAISO will notify the Convergence Bidding Entity applicant whether the Convergence Bidding Entity applicant has submitted all necessary information as set forth in Section 4.14.1.

4.14.1.5.1 Information Requirements

The Convergence Bidding Entity applicant must submit with its application:

- (a) the proposed date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, which may not be less than sixty (60) Business Days after the date the application was filed, unless waived by the CAISO;
- (b) an explanation of whether the Convergence Bidding Entity applicant is a Rated or Unrated Public/Private Corporation, a Rated or Unrated Governmental Entity, a Local Publicly Owned Electric Utility, or another type of entity, and a chart, or equivalent information, depicting the Convergence Bidding Entity applicant's corporate structure, including all parent companies of the Convergence Bidding Entity applicant, all subsidiaries of the Convergence Bidding Entity applicant, and all Affiliates of the Convergence Bidding Entity applicant that meet the requirements of Section 4.14.2.1; and
- (c) the name of the Scheduling Coordinator and SCID(s) that the Convergence Bidding Entity anticipates will be used for submitting Virtual Bids on behalf of the Convergence Bidding Entity.

Additional instructions for completing the foregoing requirements will be set forth in the applicable Business Practice Manual(s) posted on the CAISO Website.

4.14.1.6 Deficient Application

In the event that the CAISO determines that the application is deficient, the CAISO will send an electronic notification of the deficiency to the Convergence Bidding Entity applicant within ten (10) Business Days of receipt by the CAISO of the application explaining the deficiency and requesting additional information.

4.14.1.6.1 Additional Information

Once the CAISO requests additional information, the Convergence Bidding Entity applicant has five (5) Business Days, or such longer period as the CAISO may agree not to exceed five (5) additional Business Days, to provide the additional material requested by the CAISO.

4.14.1.6.2 No Response from Convergence Bidding Entity Applicant

If the Convergence Bidding Entity applicant does not submit additional information within five (5) Business Days or the longer period referred to in Section 4.14.1.6.1, the application may be rejected by the CAISO.

4.14.1.7 CAISO Approval or Rejection of an Application

4.14.1.7.1 Approval or Rejection Notification

- (a) If the CAISO approves the application, it will send a written notification of approval. In addition, the CAISO will provide an executable Convergence Bidding Entity Agreement.
- (b) If the CAISO rejects the application, the CAISO will send an electronic notification of rejection stating one or more of the following grounds:
 - (i) incomplete information; or
 - (ii) non-compliance with any other CAISO Tariff requirements.

Upon request, the CAISO will provide guidance as to how the Convergence Bidding Entity applicant can cure the grounds for the rejection.

4.14.1.7.2 Time for Processing Application

The CAISO will make a decision whether to accept or reject the application within ten (10) Business Days of receipt of the application. If more information is requested, the CAISO will make a final decision within ten (10) Business Days of the receipt of all outstanding or additional information requested.

4.14.1.8 Convergence Bidding Entity Applicant's Response

4.14.1.8.1 Convergence Bidding Entity Applicant's Acceptance

If the CAISO accepts the application, the Convergence Bidding Entity applicant must return the partially executed Convergence Bidding Entity Agreement previously provided by the CAISO.

4.14.1.8.2 Convergence Bidding Entity Applicant's Rejection

4.14.1.8.2.1 Resubmittal

If the CAISO rejects the application, the Convergence Bidding Entity applicant may resubmit its application at any time.

4.14.1.8.2.2 Appeal

The Convergence Bidding Entity applicant may also appeal the rejection of an application by the CAISO.

An appeal must be submitted within twenty (20) Business Days following the CAISO's issuance of a notification of rejection.

4.14.1.9 Final Certification

The Convergence Bidding Entity applicant will become a Convergence Bidding Entity when:

- (a) its application has been accepted;
- (b) it has entered into a Convergence Bidding Entity Agreement and any other applicable agreements with the CAISO; and
- (c) it has fulfilled all requirements of Section 4.14.1.5.1.

The CAISO will not certify a Convergence Bidding Entity applicant as a Convergence Bidding Entity until the Convergence Bidding Entity applicant has completed all the above-referenced requirements to the CAISO's satisfaction, at least ten (10) Business Days before the commencement of service.

4.14.2 Convergence Bidding Entity's Ongoing Obligations

4.14.2.1 Affiliate Disclosure Requirements

Each Convergence Bidding Entity applicant will notify the CAISO of any Affiliate that is a Market Participant, any Affiliate that participates in an organized electricity market in North America, and any guarantor of any such Affiliate. Upon request, a Convergence Bidding Entity applicant will provide the CAISO with information on each such Affiliate, including information concerning the ownership structure of such Affiliate and the business purpose of such Affiliate. These requirements will continue to apply after a Convergence Bidding Entity applicant becomes a Convergence Bidding Entity.

4.14.2.2 Obligation to Report a Change in Filed Information

Each Convergence Bidding Entity has an ongoing obligation to inform the CAISO of any changes to any of the information submitted by it to the CAISO as part of the application process, including but not limited to any changes to such information after the application is initially submitted, any changes to the additional information requested by the CAISO, and changes regarding its Affiliates that satisfy the requirements of Section 4.14.2.1, within five (5) Business Days of when each such change occurs. The applicable Business Practice Manual sets forth the procedures for changing the Convergence Bidding Entity's information.

4.14.2.3 Identification of SCIDs

Each Convergence Bidding Entity will provide the CAISO with a list of the SCIDs that the Scheduling Coordinator that represents the Convergence Bidding Entity will use to submit Virtual Bids for that Convergence Bidding Entity, at least eleven (11) Business Days prior to the Scheduling Coordinator's submission of a Virtual Bid on behalf of the Convergence Bidding Entity. If there is a subsequent change to the list of the SCIDs that the Scheduling Coordinator will use to submit Virtual Bids on behalf of the Convergence Bidding Entity or the identity of the Scheduling Coordinator that represents the Convergence Bidding Entity, the Convergence Bidding Entity will provide the CAISO with an updated list of SCIDs that the Scheduling Coordinator that represents the Convergence Bidding Entity will use to submit Virtual Bids on behalf of the Convergence Bidding Entity, at least eleven (11) Business Days prior to the Scheduling Coordinator's submittal of a Virtual Bid involving a Convergence Bidding Entity and/or SCID not already included in the most recent list provided to the CAISO. The identification of the Scheduling Coordinator and list of SCIDs provided by the Convergence Bidding Entity and the list of SCIDs provided by the Scheduling Coordinator regarding that Convergence Bidding Entity pursuant to

Section 4.5.2.2 must correspond. In the event these lists do not correspond, the CAISO will inform the applicable Scheduling Coordinator and Convergence Bidding Entity, and the parties will provide revised lists that correspond prior to the Scheduling Coordinator's submission of a Virtual Bid on behalf of that Convergence Bidding Entity. The CAISO will incorporate the information provided pursuant to this Section 4.14.2.3 into the CAISO's official list of the Scheduling Coordinators that are eligible to submit Virtual Bids on behalf of Convergence Bidding Entities and the SCIDs used on their behalf will be incorporated into the Master File within eleven (11) Business Days after the CAISO determines that the information in each list, updated list, or revised list provided by a Scheduling Coordinator or Convergence Bidding Entity is accurate and complete.

4.14.2.4 Failure to Promptly Report a Material Change

If a Convergence Bidding Entity fails to inform the CAISO of a material change in its information provided to the CAISO, the CAISO may limit, suspend, or terminate the Convergence Bidding Entity's rights under the CAISO Tariff and terminate the Convergence Bidding Entity Agreement in accordance with the terms of Sections 4.14.3, 12, and 39.11.2. If the CAISO intends to terminate the Convergence Bidding Entity Agreement, it will file a notice of termination with FERC, if required by FERC rules, in accordance with the terms of the Convergence Bidding Entity Agreement. Such termination will be effective upon acceptance by FERC of a notice of termination, if required by FERC rules, or as otherwise permitted by FERC rules.

4.14.3 Termination of a Convergence Bidding Entity Agreement

- (a) A Convergence Bidding Entity Agreement may be terminated by the CAISO on written notice to the Convergence Bidding Entity in accordance with the terms of the Convergence Bidding Entity Agreement:
 - (i) if the Convergence Bidding Entity no longer meets the requirements for eligibility set out in Section 4.14 and fails to remedy the default within a period of seven (7) Business Days after the CAISO has given written notice of the default;
 - (ii) if the Scheduling Coordinator that represents the Convergence Bidding Entity fails to pay any sum under this CAISO Tariff and fails to remedy

- the default within a period of five (5) Business Days after the CAISO has given written notice of the default; or
- (iii) if the Convergence Bidding Entity commits any other default under this CAISO Tariff or any of the Business Practice Manuals which, if capable of being remedied, is not remedied within thirty (30) days after the CAISO has given it written notice of the default.
- (b) The Convergence Bidding Entity may terminate the Convergence Bidding Entity Agreement in accordance with the provisions of that agreement.
- (c) Upon termination of the Convergence Bidding Entity Agreement, the Scheduling Coordinator that represents the Convergence Bidding Entity will continue to be liable for any outstanding financial or other obligations incurred under the CAISO Tariff as a result of the Convergence Bidding Entity's status as a Convergence Bidding Entity.
- (d) The CAISO will, following termination of a Convergence Bidding Entity Agreement and within thirty (30) days of being satisfied that no sums remain owing by the Scheduling Coordinator that represents the Convergence Bidding Entity under the CAISO Tariff, return or release to the Scheduling Coordinator, as appropriate, any Financial Security support provided by such Scheduling Coordinator to the CAISO under Section 12.

* * *

6.5.2.3.6 Virtual Bid Reference Prices

The CAISO will publish Virtual Bid Reference Prices prior to the applicable reference period for the Virtual Bid Reference Prices.

* * *

6.5.3.2.3 After the results of the Day-Ahead Market are published pursuant to Section 6.5.3.2.2, the CAISO will publish on OASIS a daily market report that includes a summary of information regarding submitted and cleared physical quantities and Virtual Awards.

* * *

6.5.6 Market Bid Information

6.5.6.1 Public Market Information

6.5.6.1.1 180 Days After Trading Day

The following information shall be published on OASIS 180 days following the applicable Trading Day, with the exclusion of the information that is specific to Scheduling Coordinators:

- (a) AS market Bids;
- (b) Energy market Bids, including Virtual Bids separately identified as such; and
- (c) RUC market Bids.

* * *

6.5.8 Virtual Award Information

The CAISO will post on OASIS the net cleared quantities of Virtual Awards at each Eligible PNode or Eligible Aggregated PNode by the close of the Real-Time Market for each Trading Day.

6.5.9 Transmission Flowgate Constraint Information

The CAISO will post on OASIS all transmission flowgate Constraints with the corresponding Shadow Prices.

* * *

7.7.15 System Operations In The Event Of A Market Disruption

7.7.15.1 Actions in the Event of a Market Disruption, to Prevent a Market Disruption or to minimize the Extent of a Market Disruption

The CAISO may take one or more of the following actions in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption:

- (a) postpone the closure of the applicable CAISO Market;
- (b) remove Bids, including Self-Schedules, that have resulted in a Market Disruption previously;
- (c) close the applicable CAISO Market and manually copy Bids, including Self-Schedules, from the previous day or other applicable market period;

- (d) close the applicable CAISO Market and use submitted Bids, including Self-Schedules, to the extent possible;
- (e) cancel the applicable CAISO Market, in which case import/export schedules shall be determined by submittal of E-Tags;
- (f) utilize Administrative Prices to settle metered Supply and Demand; and
- (g) utilize Exceptional Dispatch and issue operating orders for resources to be committed and dispatched to meet Demand; and
- (h) suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids on behalf of Convergence Bidding Entities at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes.

* * *

7.9 Suspension or Limitation of Virtual Bidding

7.9.1 Suspension or Limitation Generally

The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities for any of the reasons set forth in Section 7.9.2.

The CAISO has the authority to suspend or to limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities regardless of whether the CAISO has evidence that the virtual bidding activities that led to the suspension or limitation were the result of actions purposely or knowingly taken by Scheduling Coordinators or Convergence Bidding Entities to cause the outcomes set forth in Section 7.9.2. The CAISO may exercise its suspension or limitation authority pursuant to this Section 7.9 at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes. The CAISO may suspend or limit Virtual Bids that have already been submitted, Virtual Bids that will be submitted in the future, or both. The CAISO's authority to suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes will be governed by the Market Disruption provisions of Section 7.7.15 of the CAISO Tariff and not this Section 7.9.

7.9.2 Reasons for Suspension or Limitation

The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids if the CAISO determines that virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities detrimentally affect System Reliability or grid operations.

Virtual bidding activities can detrimentally affect System Reliability or grid operations if such activities contribute to threatened or imminent reliability conditions, including but not limited to the following circumstances:

- (a) Submitted Virtual Bids create a substantial risk that the CAISO will be unable to obtain sufficient Energy and Ancillary Services to meet Real-Time Demand and Ancillary Service requirements in the CAISO Balancing Authority Area.
- (b) Submitted Virtual Bids render the CAISO Day-Ahead Market software unable to process Bids submitted into the Day-Ahead Market.
- (c) Submitted Virtual Bids render the CAISO unable to achieve an alternating current (AC) solution in the Day-Ahead Market for an extended period of time.

7.9.3 Procedures Regarding Suspension or Limitation

- (a) Whenever practicable, prior to suspending or limiting virtual bidding, the CAISO will notify affected Scheduling Coordinators and affected Convergence Bidding Entities that the CAISO intends to suspend or limit virtual bidding and will confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. In cases where taking such actions prior to suspending or limiting virtual bidding is not practicable, the CAISO will promptly notify the affected Scheduling Coordinators and affected Convergence Bidding Entities that the CAISO has suspended or limited virtual bidding, and will promptly confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. Within two (2) Business Days of the notice of suspension or limitation, the CAISO will provide the affected Scheduling Coordinators and

affected Convergence Bidding Entities with information justifying the decision to suspend or limit virtual bidding.

- (b) Suspension or limitation of virtual bidding by the CAISO will remain in effect for ninety (90) days or any shorter time period determined by the CAISO. The CAISO will have the authority to discontinue the suspension or limitation of virtual bidding at any time it determines such suspension or limitation is no longer appropriate.

* * *

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) HASP charges and payments for Energy and Ancillary Services; (7) High Voltage Access Charges and TAC Transition Charges; (8) Wheeling Access Charges; (9) Voltage Support and Black Start charges; (10) Excess Cost Payments; (11) default interest charges; (12) CRR Charges and Payments, (13) Inter-SC Trades charges and payments; (14) neutrality adjustments; (15) FERC Annual Charges; (16) distribution of excess Marginal Losses; (17) Virtual Bid Submission Charges; (18) miscellaneous charges and payments; and (19) Participating Intermittent Resource Fees.

* * *

11.2.4.1 Calculation of the IFM Congestion Charge

For each Settlement Period of the IFM, the CAISO shall calculate the IFM Congestion Charge as the IFM MCC amount for all scheduled Demand and Virtual Demand Supply Awards minus the IFM MCC amount for all scheduled Supply and Virtual Demand Awards. The where the IFM MCC amount for all scheduled Demand and Virtual Demand Awards is the sum of the products of the IFM MCC and the total of the MWh of Demand scheduled in the Day-Ahead Schedule and Virtual Demand Supply Awards at all the applicable PNodes, Scheduling Points and Aggregated Pricing Nodes for the Settlement Period. The and the IFM MCC amount for all scheduled Supply and Virtual Demand Awards is the sum of the products of

the IFM MCC and the total of the MWh of Supply scheduled in the Day-Ahead Schedule and the Virtual Supply Awards at all the applicable PNodes and Scheduling Points for the Settlement Period.

* * *

11.2.4.5 CRR Balancing Account

The CRR Balancing Account shall accumulate: (1) the seasonal and monthly CRR Auction revenue amounts that were converted into daily CRRBA values as described in Section 11.2.4.3, and (2) any surplus revenue or shortfall generated from hourly CRR Settlements as described in Section 11.2.4.4, and (3) any adjustments of CRR revenue due to virtual bidding or Intertie scheduling practices as described in Section 11.2.4.6.- Interest accruing due to the CRR Balancing Account shall be at the CAISO's received interest rate and shall be credited to each monthly CRRBA Accrued Interest Fund, which is then allocated to monthly Measured Demand excluding Measured Demand associated with valid and balanced ETC, TOR, or CVR self-schedule quantities for which IFM Congestion Credits and/or RTM Congestion Credits were provided in the same month.

* * *

11.2.4.6 Adjustment of CRR Revenue

The CAISO will adjust the revenue from the CRRs of a CRR Holder that is also a Convergence Bidding Entity, and will 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 has reduced a Day-Ahead import or export Schedule in the HASP as set forth in Section 11.32, whenever the virtual bidding activity on behalf of that entity or a reduction to a Day-Ahead import or export Schedule in the HASP has had a significant impact on the value of the CRRs in the DAM as determined in accordance with the following steps.

- (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 HASP 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 Constraint binding in the IFM, HASP, or

RTD, 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 Constraint was significantly impacted by the Virtual Awards awarded to the Scheduling Coordinator that represents the CRR Holder.
- Congestion on the 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 configurable threshold percentage of the flow limit for the Constraint. The threshold percentage is will initially be set at ten (10) percent of the flow limit for each Constraint. The threshold percentage may be changed as provided in the Business Practice Manual. An increase in the threshold percentage for any Constraint must be based on evidence (from simulations of market re-runs or other appropriate analytical tool) that a Flow Impact greater than the current threshold percentage should not be expected to have a significant impact on the Constraint's Shadow Price. A decrease in the threshold percentage for any Constraint must be based on evidence (from simulations of market re-runs or other appropriate analytical tool) that a Flow Impact less than the current threshold percentage should not be expected to have a significant impact on the Constraint's Shadow Price. DMM will notify FERC of a change in any Constraint's threshold percentage in a quarterly report covering the date of the change in threshold percentage on a quarterly basis in the event of any change in threshold percentage during that quarter.
- (c) For each peak or off-peak hour that passes both criteria in Section 11.2.4.6(b), the CAISO will compare the Constraint's impact on the Day-Ahead Market value

of the CRR Holder's CRR portfolio with the Constraint's impact on the HASP or
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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 Constraint's contribution to the Day-Ahead Market value of the CRR Holder's CRR portfolio exceeds the Constraint's contribution to the HASP or 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 [NOT USED] 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 hourly average of the Dispatch Interval Real-Time LMPs at the Eligible PNode or Eligible Aggregated PNode multiplied by the MWhs of Virtual Supply Awards. The CAISO will charge each Scheduling Coordinator with Virtual Supply Awards at an Intertie an amount equal to the simple hourly average of the fifteen (15) minute HASP Intertie LMPs 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 hourly average of the Dispatch Interval Real-Time LMPs at the Eligible PNode or Eligible Aggregated PNode multiplied by the IFM MWhs of Virtual Demand Awards. The CAISO will pay each Scheduling Coordinator with Virtual Demand Awards at an Intertie an amount equal to the simple hourly average of the fifteen (15) minute HASP Intertie LMPs multiplied by the Day-Ahead MWhs of Virtual Demand Awards.

* * *

11.4 HASP Settlement Of Scheduling Points

The CAISO shall settle both incremental and decremental Energy at the relevant Scheduling Points including Operational Adjustments for all Non-Dynamic System Resources based on the HASP Intertie LMP in accordance with Sections 11.4.1, and 11.4.2, and 11.32. Energy dispatched using HASP Intertie Schedules is accounted as Instructed Imbalance Energy and its costs shall be included in the Real-Time Market Settlements in accordance with Section 11.5.

11.5.4.2 Allocations of Non-Zero Amounts of the Sum of IIE, UIE, UFE, and 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 HASP and RTM Congestion Credit was provided as specified in Section 11.5.7, and excluding Demand associated with ETC, Converted Right, or TOR Self-Schedules for which an IFM Congestion Credit was provided as specified in Section 11.2.1.5; and (2) the Real-Time Marginal Cost of Losses Offset and allocate it to all Scheduling Coordinators based on Measured Demand, excluding Demand associated with TOR Self-Schedules for which a RTM Marginal Cost of Losses Credit for Eligible TOR Self-Schedules was provided as specified in Section 11.5.7.2 , and excluding Demand associated with 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, ~~and~~ the Real-Time Ancillary Services Congestion revenues ~~and Virtual Awards settlements in the HASP and 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, ~~and~~ the Real-Time Ancillary Services Congestion Revenues ~~and Virtual Awards settlements in the HASP and~~

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, and the Real-Time Ancillary Services Congestion Revenues and Virtual Awards settlements in the HASP and Real-Time Market in accordance with Section 11.3, less Real-Time Congestion Offset and less the Real-Time Marginal Cost of Losses Offset.

* * *

11.8 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, which is netted across the CAISO Markets. In any Settlement Interval a resource is eligible for Bid Cost Recovery payments only if it is On, or in the case of a Participating Load or a Proxy Demand Resource, only if the resource has actually stopped or started consuming pursuant to the Dispatch Instruction. BCR Eligible Resources for different MSS Operators are supply resources listed in the applicable MSS Agreement. All Bid Costs shall be based on mitigated Bids as 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.

* * *

11.8.3 RUC Bid Cost Recovery Amount

For purposes of determining the RUC Unrecovered Bid Cost Uplift Payments as determined in Section 11.8.5 and for the purposes of allocating Net RUC Bid Cost Uplift as described in Section 11.8.6.5, the CAISO shall calculate the RUC Bid Cost Shortfall or the RUC Bid Cost Surplus as the algebraic difference between the RUC Bid Cost and the RUC Market Revenues for each Bid Cost Recovery Eligible Resource for each Settlement Interval. The RUC Bid Costs shall be calculated pursuant to Section 11.8.3.1 and the RUC Market Revenues shall be calculated pursuant to Section 11.8.3.2. Bid Cost Recovery costs related to Short Start Units committed in Real-Time as a result of awarded RUC Capacity will be included in RUC Compensation Costs.

* * *

11.8.6.3 Determination of Total Positive CAISO Markets Uplifts

Any negative IFM, RUC or Real-Time Market Bid Cost Uplifts are set to \$0 and any positive Net IFM Bid Cost Uplifts, RUC Bid Cost Uplifts, or Real-Time Market Bid Cost Uplifts are further reduced by the uplift ratio in Section 11.8.6.3(iii) to determine the Total CAISO Markets Uplift as follows;

- (i) The Total CAISO Markets Uplift is determined as the sum of the Net IFM Bid Cost Uplift, the Net RUC Bid Cost Uplift, and the Net Real-Time Market Bid Cost Uplift, for all Settlement Intervals in the IFM, RUC and Real-Time Market.
- (ii) The Total Positive CAISO Market Uplift, is determined as the sum of the positive IFM Bid Cost Uplift, positive RUC Bid Cost Uplift and positive Real-Time Market Bid Cost Uplift, for all Settlement Intervals in the IFM, RUC and Real-Time Market.
- (iii) The uplift ratio is equal to the Total CAISO Markets Uplift divided by the Total Positive CAISO Market Uplift.

11.8.6.4 Allocation of Net IFM Bid Cost Uplift

For each Trading Hour of the IFM the hourly Net IFM Bid Cost Uplift is determined as the sum over the Settlement Intervals in that Trading Hour of the product of any positive Net IFM Bid Cost Uplift remaining in the Settlement Interval after the sequential netting in Section 11.8.6.2 and the application of the uplift

ratio as determined in Section 11.8.6.3. The hourly Net IFM Bid Cost Uplift is allocated in two tiers as follows:

11.8.6.4.1 Allocation in(i) In the First Tier

The first tier, the hourly Net IFM Bid Cost Uplift is allocated in the first tier as follows:

- (i) The hourly amount of Net IFM Bid Cost Uplift- allocated to each Scheduling Coordinator is equal to the product of their non-negative IFM Load Uplift Obligation, but with an IFM Bid Cost Uplift rate and the IFM uplift obligation for the Scheduling Coordinator.
- (ii) The IFM Bid Cost Uplift rate is equal which is not to the Net IFM Bid Cost Uplift divided by the sum of the positive IFM Load Uplift Obligations for all Scheduling Coordinators and the IFM system-wide Virtual Demand Award uplift obligation, subject to the condition that the IFM Bid Cost Uplift rate cannot exceed the ratio of the hourly Net IFM Bid Cost Uplift for the Trading Hour divided by the maximum of (a1) the sum of all hourly IFM Load Uplift Obligations for all Scheduling Coordinators in that Trading Hour or (b2) the sum of all hourly Generation scheduled in the Day-Ahead Schedule and IFM upward AS Awards for all Scheduling Coordinators from CAISO-committed Bid Cost Recovery Eligible Resources in that Trading Hour.
- (iii) The IFM uplift obligation for each Scheduling Coordinator is equal to the sum of the IFM Load Uplift Obligation for the Scheduling Coordinator and any IFM Virtual Demand Award uplift obligation for the Scheduling Coordinator.
- (iv) The IFM Load Uplift Obligation for each Scheduling Coordinator, including Scheduling Coordinators for Metered Subsystems regardless of their MSS optional elections (net/gross Settlement, Load following, RUC opt-in/out), is equal to the positive difference between the total Demand scheduled in the Day-Ahead Schedule of that Scheduling Coordinator and the sum of scheduled Generation and scheduled imports from the Self-Schedules in the Day-Ahead Schedule of

that Scheduling Coordinator, adjusted by any applicable Inter-SC Trades of IFM Load Uplift Obligations.

- (v) The IFM system-wide Virtual Demand Award uplift obligation is calculated for each hour in the IFM and is equal to maximum of zero (0) or the following quantity: the total system-wide Virtual Demand Awards from the IFM minus the total system-wide Virtual Supply Awards from the IFM, plus the minimum of zero (0) or the following quantity: the total amount of Scheduled Demand (which excludes Virtual Demand Awards), minus net Virtual Demand Awards minus Measured Demand.
- (vi) For each Scheduling Coordinator with positive net Virtual Demand Awards, the IFM Virtual Demand Award uplift obligation is equal to the product of (a) the positive net Virtual Demand Awards for the Scheduling Coordinator divided by the sum of each Scheduling Coordinator's positive net Virtual Demand Award and (b) the IFM system-wide Virtual Demand Award uplift obligation. For each Scheduling Coordinator with negative net Virtual Demand Awards, the IFM Virtual Demand Award uplift obligation is zero (0).

11.8.6.4.2 Allocation in the Second Tier

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

* * *

11.8.6.5.2 Calculation of the Hourly Net RUC Bid Cost Uplift

For each Trading Hour of the RUC, the hourly Net RUC Bid Cost Uplift is determined as the sum over the Settlement Intervals in that Trading Hour of the product of any positive Net RUC Bid Cost Uplift remaining in the Settlement Interval after the sequential netting in Section 11.8.6.2 and the application of the uplift ratio as determined in Section 11.8.6.3. Consistent with Section 31.5.2.2, Scheduling Coordinators for MSS Operators that have opted out of RUC participation, or opt-out of RUC by default as a result of having elected to Load follow, will not be subject to any RUC Bid Cost Uplift allocation. Scheduling Coordinators for MSS Operators that have opted-into RUC, and consequently also are non-Load following and under gross Settlement, will receive the allocation of hourly Net RUC Bid Cost Uplift like all other Scheduling Coordinators.

11.8.6.5.3 Allocation of the RUC Compensation Costs

11.8.6.5.3.1 Allocation in(i) In the First Tier

Hourly~~first tier~~, the RUC Compensation Costs are allocated in the first tier as follows:

- (i) ~~to Scheduling Coordinators, based on their Net Negative CAISO Demand Deviation in that Trading Hour. The amount of RUC Compensation Costs allocated to each Scheduling Coordinator is equal to the product of shall be charged at a rate which is the lower of (1) the RUC Compensation Costs divided by the Net Negative CAISO Demand Deviation for all Scheduling Coordinators in that Trading Hour; or (2) the RUC Bid Cost Uplift rate and Compensation Costs divided by the RUC obligationCapacity, for the all Scheduling CoordinatorCoordinators in that Trading Hour. Participating Load will and Demand Response Providers shall not be subject to the first-tier allocation of RUC Compensation Costs to the extent that the Participating Load's or Demand Response Provider's Net Negative CAISO Demand Deviation in that Trading Hour is incurred pursuant to a CAISO directive to consume in a Dispatch Instruction.~~
- (ii) The RUC Bid Cost Uplift rate is equal to the lower of (a) the RUC Compensation Costs to meet Measured Demand divided by the sum of each Scheduling Coordinator's Net Negative CAISO Demand Deviation and any positive net system-wide Virtual Supply

- Awards in that Trading Hour, or (b) the RUC Compensation Bid Cost Uplift divided by the total RUC Award Capacity, for all Scheduling Coordinators in that Trading Hour.
- (iii) The RUC obligation for each Scheduling Coordinator is equal to the sum of the Net Negative CAISO Demand Deviation for the Scheduling Coordinator in that Trading Hour and any RUC Bid Cost obligation for Virtual Supply Awards for the Scheduling Coordinator.
- (iv) The portion of the RUC Compensation Costs to meet Measured Demand are equal to the RUC Compensation Bid Cost Uplift minus the excess load share, where the excess load share is equal to the product of (a) the RUC Compensation Bid Cost Uplift divided by total RUC Capacity and (b) the maximum of zero (0) or the amount by which excess of the CAISO Forecast of CAISO Demand Forecast over exceeds Measured Demand.
- (v) For each Scheduling Coordinator with positive net Virtual Supply Awards, the RUC Bid Cost obligation for Virtual Supply Awards is equal to the product of (a) the positive net Virtual Supply Awards for the Scheduling Coordinator divided by the sum of each Scheduling Coordinator's positive net Virtual Supply Awards and (b) any positive net system-wide Virtual Supply Awards. For each Scheduling Coordinator with non-positive net Virtual Supply Awards, the RUC Bid Cost obligation for Virtual Supply Awards is zero (0).

11.8.6.5.3.2 Allocation in the Second Tier

- (ii) In the second tier, the Scheduling Coordinator shall be charged an amount equal to any remaining RUC Compensation Costs in proportion to the Scheduling Coordinator's metered CAISO Demand in any Trading Hour, including any RUC Compensation Costs that were not recovered in the first tier pursuant to Section 11.8.6.5.3.1.

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 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 HASP 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 HASP 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 HASP 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 HASP 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 across all Scheduling Coordinators for the Trading Hour.

* * *

11.21.2 [Not Used] Price Correction for Settlement of Virtual Awards

If the CAISO corrects an LMP pursuant to Section 35 that affects a Virtual Award such that either a portion or the entirety of the Virtual Bid Curve associated with the Virtual Award becomes uneconomic, then the CAISO will calculate and apply the price correction for settlement of Virtual Awards as follows: the total cleared MWhs of Virtual Awards multiplied by the corrected LMP, plus the make-whole amount. The make-whole amount for Virtual Demand Awards will be calculated on an hourly basis determined by the area between the Virtual Bid Curve and the corrected LMP, which is calculated as the MWhs in each of the cleared Virtual Bid segments of the Virtual Demand Bid multiplied by the maximum of zero or the corrected LMP minus the Virtual Bid segment price. For Virtual Supply Awards, the make-whole amount will be calculated on an hourly basis determined by the area between the Virtual Bid Curve and the corrected LMP, which is calculated as the MWhs in each of the cleared Virtual Bid segments of the Virtual Supply Bid multiplied by the maximum of zero or the Virtual Bid segment price minus the corrected LMP.

* * *

11.22.2.5 Allocation of the GMCGrid Management Charge Among Scheduling Coordinators

The costs recovered through the Grid Management Charge shall be allocated to the service charges that comprise the Grid Management Charge. If the CAISO's revenue requirement for any service charge changes from the most recent FERC-approved revenue requirement for that service charge, the costs recovered through that service charge shall be delineated in a filing to be made at FERC as set forth in Section 11.22.2.6. The service charges, as described in more detail in Appendix F, Schedule 1, Parts A and F, are as follows:

- (a4) Core Reliability Services – Demand Charge;
- (b2) Core Reliability Services – Energy Exports Charge;
- (c3) Energy Transmission Services – Net Energy Charge;
- (d4) Energy Transmission Services – Uninstructed Deviations Charge;
- (e5) Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge;
- (f6) Forward Scheduling Charge;
- (g7) Market Usage Charge; and
- (h8) Settlements, Metering, and Client Relations Charge; and
- (i) Virtual Award Charge.

The charges shall be levied separately monthly in arrears on all Scheduling Coordinators based on the billing determinants specified below for each charge in accordance with formulae set out in Appendix F, Schedule 1, Part A, subject to the requirements set out in Appendix F, Schedule 1, Part F.

* * *

11.22.2.5.9 Virtual Award Charge

The Virtual Award Charge for each Scheduling Coordinator will be calculated according to the formula in Appendix F, Schedule 1, Part A, subject to the requirements set out in Appendix F, Schedule 1, Parts A, C and E.

* * *

11.22.4 Virtual Bid Submission Charge

Each Scheduling Coordinator submitting a Virtual Bid will be subject to a Virtual Bid Submission Charge of \$0.005 for each Virtual Bid segment that is passed to the IFM.

* * *

11.24 [Not Used]

11.24.1 [Not Used]

~~The CAISO will provide to each Scheduling Coordinator on a weekly basis a report of the difference between a Scheduling Coordinator's metered CAISO Demand and the total CAISO Demand scheduled by the Scheduling Coordinator in its Day-Ahead Schedule, based on available Meter Data. The CAISO shall treat such reports as confidential in accordance with Section 20. Such reports shall be prepared as provided in the applicable Business Practice Manual.~~

11.24.2 [Not Used]

~~The monthly Interim Scheduling Charge will be calculated and charged to Scheduling Coordinators based on each Scheduling Coordinator's Net Negative CAISO Demand Deviation in each applicable LAP minus the CAISO Curtailed IFM Quantity. The monthly Interim Scheduling Charge will be calculated and charged as follows:~~

- ~~(a) For any given Trading Hour in which the Scheduling Coordinator's Net Negative CAISO Demand Deviation in its applicable LAP minus the CAISO Curtailed IFM Quantity is greater than fifteen percent (15%) and less than twenty percent (20%) of the maximum of the Scheduling Coordinator's cleared total CAISO Demand as represented in its Day-Ahead Schedule in its applicable LAP or its submitted Self-Schedule for that LAP, the Scheduling Coordinator shall pay \$150/MWh for its Net Negative CAISO Demand Deviation minus the CAISO Curtailed IFM Quantity minus fifteen percent (15%) of the maximum of the Scheduling~~

~~Coordinator's cleared total CAISO Demand as represented in its Day Ahead Schedule or its submitted Self-Schedule for that LAP.~~

- (b) ~~For any given Trading Hour in which the Scheduling Coordinator's Net Negative CAISO Demand Deviation in its applicable LAP minus the CAISO Curtailed IFM Quantity is greater than or equal to twenty percent (20%) of the maximum of the Scheduling Coordinator's cleared total CAISO Demand as represented in its Day Ahead Schedule in its applicable LAP or its submitted Self-Schedule for that LAP, the Scheduling Coordinator shall pay \$250/MWh for its Net Negative CAISO Demand Deviation minus the CAISO Curtailed IFM Quantity minus twenty percent (20%) of the maximum of the Scheduling Coordinator's cleared total CAISO Demand as represented in its Day Ahead Schedule or its submitted Self-Schedule for that LAP, plus \$150/MWh for five percent (5%) of the maximum of its cleared total CAISO Demand as represented in its Day Ahead Schedule or its submitted Self-Schedule for that LAP.~~

11.24.3 [Not Used]

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

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

- (e) For any given Trading Hour when the Hourly Real-Time LAP Price is less than the Day-Ahead LAP Price for the same Trading Hour in the applicable LAP.
- (f) For metered CAISO Demand of Station Power Loads.

11.24.4 [Not Used]

~~Any revenues collected with the assessment of the Interim Scheduling Charge shall be treated as "Other Revenues" as described in Part C of Schedule 1 of Appendix F. The Interim Scheduling Charge revenues will be used to offset the revenue requirement associated with the Market Usage Charge.~~

* * *

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 a Scheduling Coordinator wholly or partially reverses in the HASP:~~

- (i) ~~The CAISO will charge the Scheduling Coordinator the positive difference between the Day-Ahead Market price and the HASP price applicable to any imports that clear the Day-Ahead Market and are reduced in the HASP for which the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with the Scheduling Coordinator's Day-Ahead Schedule and WECC scheduling criteria.~~
- (ii) ~~The CAISO will charge the Scheduling Coordinator the positive difference between the HASP price and the Day-Ahead Market price applicable to any exports that clear the Day-Ahead Market and are reduced in the HASP for which the Scheduling Coordinator has failed to submit an E-Tag or E-Tags consistent with the Scheduling Coordinator's Day-Ahead Schedule and WECC scheduling criteria.~~
- (iii) ~~The CAISO will treat any reduction by a Scheduling Coordinator to a Day-Ahead import or export Schedule in the HASP 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, 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 Interties and that a Scheduling Coordinator wholly or partially reverses in the HASP to the extent such Schedules are valid and balanced ETC **Self-Schedules**, **balanced-TOR-Self-Schedules**, or **balanced Converted Rights Self-Schedules** **in the Day-Ahead Market.**

* * *

12.1.1.2 Qualitative and Quantitative Credit Strength Indicators

In determining a Market Participant's Unsecured Credit Limit, the CAISO may rely on information gathered from financial reporting agencies, the general/financial/energy press, and provided by the Market Participant to assess its overall financial health and its ability to meet its financial obligations. Information considered by the CAISO in this process may include the following qualitative factors:

- (a) Applicant's history;
- (b) Nature of organization and operating environment;
- (c) Management;
- (d) Contractual obligations;
- (e) Governance policies;
- (f) Financial and accounting policies;
- (g) Risk management and credit policies;
- (h) Market risk including price exposures, credit exposures and operational exposures;
- (i) Event risk;
- (j) The state or local regulatory environment; and

(k) Affiliate disclosure information provided pursuant to this CAISO Tariff, including Sections 4.14.2.1, Section 12.1.1, 39.9, and/or Section 39.11.19.

-Material negative information in these areas may result in a reduction of up to one hundred percent (100%) in the Unsecured Credit Limit that would otherwise be granted based on the six-step process described in Section 12.1.1.1. A Market Participant, upon request, will be provided a written analysis as to how the provisions in Section 12.1.1.1 and this section were applied in setting its Unsecured Credit Limit.

* * *

12.1.3.1.1 Calculation of the EAL Estimated Aggregate Liability Amount

-Except as described in Section 12.1.3.1.2, the CAISO shall use the method described in this Section 12.1.3.1.1 to calculate each Market Participant's Estimated Aggregate Liability (EAL). The Estimated Aggregate Liability represents the amount owed to the CAISO for all unpaid obligations, specifically, the obligations for the number of Trading Days outstanding at a given time based on the CAISO's Payments Calendar plus five (7) Trading Days based on the allowable period for Market Participants to respond to CAISO requests for additional Financial Security collateral (three (3) Business Days), and other liabilities including the value of a Market Participant's CRR portfolio, if negative. The charges the CAISO shall use to calculate Estimated Aggregate Liability shall be charges described or referenced in the CAISO Tariff. The CAISO shall calculate the Estimated Aggregate Liability for each Market Participant by aggregating the following obligations:

- (a) invoiced amounts, i.e., any published but unpaid amounts on Invoices;
- (b) published amounts, i.e., amounts for Trading Days for which Settlement Statements have been issued;
- (c) estimated amounts, i.e., amounts based on estimated Settlement amounts calculated by the Settlement system using estimated meter data, and other available operational data;
- (d) extrapolated amounts, i.e., amounts calculated for Trading Days for which neither actual nor estimated Settlement Statements have been issued;

- (e) CRR portfolio value, i.e., the prospective value of the CRR portfolio, if negative, as described in Section 12.6.3;
 - (f) CRR Auction limit, i.e., the maximum credit limit for participation in a CRR Auction;
 - (g) CRR Auction awards (prior to invoicing), i.e., amounts to cover winning offers at the completion of the CRR Auction but prior to invoicing;
- (h) Estimated Aggregate Liability adjustments resulting from Virtual Bid Submission Charges and the submission of Virtual Bids and/or receipt of Virtual Awards pursuant to Section 12.8:
- (i) past-due amounts, i.e., any unpaid or past due amounts on Invoices;
 - (j) FERC Annual FERC Charges, i.e., FERC Annual Charges for a Market Participant that has elected to pay such amounts on an annual basis that are owed and outstanding and not already captured in any other component of Estimated Aggregate Liability;
 - (k) WAC Charges, i.e., WAC amounts for the current year or future years as specified in Section 36.9.2;
 - (l) Estimated Aggregate Liability adjustments, i.e., adjustments that may be necessary as a result of analysis performed as a result of Section 12.4.2; and
 - (m) extraordinary adjustments, i.e., adjustments to Settlement amounts related to FERC proceedings, if known and estimated by the CAISO, as described in Section 12.1.3.1.3.

-For a Market Participant that maintains multiple BAID numbers, the Estimated Aggregate Liability of the Market Participant as a legal entity shall be calculated by summing the Estimated Aggregate Liabilities for all such BAID numbers and comparing the sum of the Estimated Aggregate Liabilities to the Aggregate Credit Limit of the Market Participant. Market Participants may recommend changes to the liability estimates produced by the CAISO's Estimated Aggregate Liability calculation through the dispute procedures described in Section 12.4.2.

* * *

12.8 Credit Requirements Applicable to Virtual Bids

12.8.1 Credit Check in the Day-Ahead Market

12.8.1.1 Credit Check Requirements

For each Scheduling Coordinator that submits one or more Virtual Bids in the Day-Ahead Market, the CAISO will estimate the total value of all of the submitted Virtual Bids after the Virtual Bids have been validated in accordance with Section 30.7.3. In all circumstances except where the Scheduling Coordinator submits both a Virtual Supply Bid and a Virtual Demand Bid at the same Eligible PNode or Eligible Aggregated PNode for the same Trading Hour, the CAISO will estimate the total value of the submitted Virtual Bids at each Eligible PNode or Eligible Aggregated PNode for each Trading Hour by calculating the sum of the products of the absolute values of the MWs of the submitted Virtual Bids multiplied by the applicable Virtual Bid Reference Price at the Eligible PNode or Eligible Aggregated PNode for all Trading Hours. In circumstances where the Scheduling Coordinator submits both a Virtual Supply Bid and a Virtual Demand Bid at the same Eligible PNode or Eligible Aggregated PNode for the same Trading Hour, the CAISO will estimate the total value of the submitted Virtual Bids at the Eligible PNode or Eligible Aggregated PNode for the Trading Hour by calculating the greater of (i) the product of the absolute value of the MW of the submitted Virtual Supply Bid multiplied by the Virtual Bid Reference Price for Virtual Supply Bids at the Eligible PNode or Eligible Aggregated PNode or (ii) the product of the absolute value of the MW of the submitted Virtual Demand Bid multiplied by the Virtual Bid Reference Price for Virtual Demand Bids at the Eligible PNode or Eligible Aggregated PNode. The CAISO will then adjust the Scheduling Coordinator's Estimated Aggregate Liability to include the CAISO's estimate of the total value of the submitted Virtual Bids. If the adjusted Estimated Aggregate Liability is greater than the Scheduling Coordinator's Aggregate Credit Limit, the CAISO will reject the Scheduling Coordinator's submitted Virtual Bids. After rejection of its submitted Virtual Bids, a Scheduling Coordinator may submit revised Virtual Bids, subject to the timelines set forth in the CAISO Tariff and the applicable Business Practice Manual regarding the submission of Bids.

12.8.1.2 Temporary Suspension of Virtual Bidding

In the event that the financial exposure of Scheduling Coordinators cannot be determined pursuant to Section 12.8.1.1 with a reasonable degree of accuracy due to factors such as software or system failures,

the CAISO may temporarily suspend virtual bidding. If the CAISO temporarily suspends virtual bidding pursuant to this Section 12.8.1.2, as soon as reasonably practicable, the CAISO will notify FERC and Market Participants of the reason(s) for any suspension of virtual bidding, the action(s) necessary to restore virtual bidding, and the estimated time required to restore virtual bidding. The CAISO does not intend to suspend virtual bidding in the event of brief intermittent software or system failures or where the CAISO anticipates the credit checking functionality will be available prior to the close of the Day-Ahead Market. During instances of software or system failures that extend past the close of the Day-Ahead Market and in the absence of any suspension of virtual bidding, the CAISO will accept pending Virtual Bids at the close of the Day-Ahead Market even though the Virtual Bids have not been validated by the credit checking functionality. Any resulting financial obligations will be included in the next available calculation of each Scheduling Coordinator's Estimated Aggregate Liability.

12.8.2 Virtual Bid Reference Prices

For Virtual Supply Bids, the Virtual Bid Reference Price will be the 95th percentile value of the difference between the LMP in the Real-Time Market (or in the HASP for Virtual Supply Bids at the Interties) and the LMP in the Day-Ahead Market at a given Eligible PNode or Eligible Aggregated PNode. For Virtual Demand Bids, the Virtual Bid Reference Price will be the 95th percentile value of the difference between the LMP in the Day-Ahead Market and the LMP in the Real-Time Market (or in the HASP for Virtual SupplyDemand Bids at the Interties) at a given Eligible PNode or Eligible Aggregated PNode. Each Virtual Bid Reference Price will be calculated in \$/MWh. The CAISO will calculate the Virtual Bid Reference Price for each Eligible PNode or Eligible Aggregated PNode for three-month periods (covering January-March, April-June, July-September, and October-December) of each year using the hourly actual LMPs for the same period of the previous year.

12.8.3 Adjustment of EAL After Close of the DAM

After the Day-Ahead Market closes but before the Real-Time Market closes, the CAISO will recalculate the estimate of the total liability of the Virtual Bids of each Scheduling Coordinator based on the MW quantity that cleared in the Day-Ahead Market. The revised total estimated liability will equal the sum of the products of the absolute values of the amounts of MWs of Virtual Awards multiplied by the Virtual Bid

Reference Price. The CAISO will then adjust the Estimated Aggregate Liability of the Scheduling Coordinator to reflect the revised total estimated liability of the Virtual Bids as calculated by the CAISO.

12.8.4 Adjustment of EAL After the Close of the RTM

After the Real-Time Market closes, the CAISO will recalculate the total liability of each Scheduling Coordinator with Virtual Awards based on the MW quantity that cleared in the Day-Ahead Market and the LMPs produced in the Day-Ahead Market, HASP, and Real-Time Market. The total liability of a Scheduling Coordinator will equal the sum of the liability of each Virtual Bid submitted by the Scheduling Coordinator that cleared in the Day-Ahead Market. The liability of a Virtual Supply Bid will equal the product of the value of the amount of cleared MWs multiplied by the difference between the Real-Time or HASP LMP, as appropriate, and the Day-Ahead LPMP at the Eligible PNode or Eligible Aggregated PNode at which the Virtual Supply Bid was submitted. The liability of a Virtual Demand Bid will equal the product of the value of the amount of cleared MWs multiplied by the difference between the Day-Ahead LPMP and the Real-Time or HASP LMP, as appropriate, at the Eligible PNode or Eligible Aggregated PNode at which the Virtual Demand Bid was submitted. The Estimated Aggregate Liability will be adjusted accordingly and will continue to be adjusted as a result of any price correction made in accordance with Section 35.

* * *

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, 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.

* * *

30.7.3.6 Additional Bid Validation Rules for Virtual Bids

In addition to the validation rules described in Section 30.7.3.1, Virtual Bids will be subject to the following additional validation rules.

30.7.3.6.1 Scheduling Coordinator Validation

The CAISO will validate that the SCID associated with a Virtual Bid is submitted from a Scheduling Coordinator authorized to submit Virtual Bids and that the Virtual Bid is submitted at an Eligible PNode or Eligible Aggregated PNode. The CAISO will reject Virtual Bids that do not satisfy these requirements.

30.7.3.6.2 Credit Requirement

Virtual Bids must satisfy the credit requirements of Section 12.8. The Scheduling Coordinator will be notified if Virtual Bids fail to satisfy the credit requirements. If the Scheduling Coordinator fails to resubmit Virtual Bids that satisfy the credit requirements or to provide adequate additional Financial Security, the CAISO will reject the Scheduling Coordinator's Virtual Bids on a last-in, first-out basis.

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, Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs), and Interties.

30.7.3.6.3.1 Position Limits at Eligible PNodes and Eligible Aggregated PNodes

For an Eligible PNode associated with a single physical supply resource, the CAISO will publish a locational limit that will be equal to the PMax of the physical supply resource. For an Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub) associated with more than one physical supply resource, the CAISO will publish a locational limit that will be equal to the sum of the PMaxes of the physical supply resources. For an Eligible PNode associated with a single physical demand resource, the CAISO will publish a locational limit that will be equal to the forecast of the maximum MW consumption of the physical demand resource. For an Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub) associated with more than one physical demand resource, the CAISO will publish a locational limit that will be equal to the forecast of the maximum MW consumption of the physical demand resources. The percentages used to calculate the position limits for each Convergence Bidding Entity at Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs) will be the following percentages of the published locational limits:

- (a) Position limits of ten (10) percent will apply during the time period beginning as of the effective date of this tariff provision through the last day of the eighth month following the effective date of this tariff provision.
- (b) Position limits of fifty (50) percent will apply during the time period beginning as of the first day of the ninth month following the effective date of this tariff provision through the last day of the twelfth month following the effective date of this tariff provision.
- (c) Position limits will cease to apply beginning on the first day of the month as of the first anniversary of the effective date of this tariff provision.

The CAISO will enforce the position limits for Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs) at the time of Virtual Bid submission. It is possible for the

enforcement of position limits on a later-submitted Virtual Bid to cause a previously approved Virtual Bid to be rejected, if both of those Virtual Bids are submitted by a Scheduling Coordinator on behalf of the same Convergence Bidding Entity at the same Eligible PNode or Eligible Aggregated PNode (other than a Default LAP or Trading Hub). The CAISO will timely publish the locational limits for Eligible PNodes and Eligible Aggregated PNodes (other than Default LAPs or Trading Hubs).

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 five (5) percent will apply during the time period beginning as of the effective date of this tariff provision through the last day of the eighth month following the effective date of this tariff provision.
- (b) Position limits of twenty-five (25) percent will apply during the time period beginning as of the first day of the ninth month following the effective date of this tariff provision through the last day of the twelfth month following the effective date of this tariff provision.
- (c) Position limits of fifty (50) percent will apply during the time period beginning on the first day of the month as of the first anniversary of the effective date of this tariff provision through the last day of the sixteenth month following the effective date of this tariff provision.
- (d) Position limits will cease to apply beginning on the first day of the seventeenth month 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.

* * *

30.8 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 Operating Transfer Capability for that path is zero (0) MW. The CAISO shall reject Bids or ETC Self-Schedules submitted at Scheduling Points where the Operating Transfer Capability on the transmission path is zero (0) MW. If the Operating 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 HASP. As necessary to comply with Applicable Reliability Criteria, the CAISO shall reduce any non-zero (0) HASP Bids across zero-rated transmission paths to zero after the Market Close for the HASP.

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.

30.9.1 Virtual Bid Components

Each Virtual Bid must have the following components: an indicator that identifies the Virtual Bid as a Virtual Supply Bid or a Virtual Demand Bid; Scheduling Coordinator ID Code; Eligible PNode or Eligible Aggregated PNode as applicable; Virtual Bid Curve; and the Trading Hour or Trading Day to which the Virtual Bid applies. Virtual Bids do not include Start-Up Costs or Minimum Load Costs.

30.10 Use of AC Solution and Nodal MW Constraints

The CAISO will achieve an alternating current (AC) solution in the Day-Ahead Market to the extent practicable. If and when it is impracticable to achieve an AC power flow solution without the initial enforcement of nodal MW limit constraints, the CAISO will apply nodal MW constraints to Eligible PNodes (except for Eligible PNodes established for Interties, which are addressed through the process described in Section 31.98). The CAISO will determine whether to apply such nodal MW constraints as follows:

- (i) The CAISO will calculate a MW limit for each Eligible PNode other than an Eligible PNode established for an Intertie. For an Eligible PNode associated with a physical supply resource, the MW limit will be equal to a factor multiplied by the PMax of the physical supply resource. For an Eligible PNode associated with a physical demand resource, the MW limit will be equal to a factor multiplied by the nodal load forecast of the Eligible PNode calculated as the MW portion of the System Demand Forecast that is distributed to the Eligible PNode according to the corresponding system Load Distribution Factor associated with the Eligible PNode. The factors used in these calculations will be determined in accordance with a process set forth in the Business Practice Manuals.
- (ii) For each of the Eligible PNodes or group of Eligible PNodes, the CAISO will calculate the percentage by which the sum of the MW amounts of all Energy Supply Bids, Demand Bids, and Virtual Bids exceeds the MW limit calculated pursuant to Section 30.10(i).
- (iii) Starting with the Eligible PNodes or group of Eligible PNodes at which the MW limits would be exceeded by the largest percentages, and working in descending order of the Eligible PNodes or group of Eligible PNodes that would exceed their MW limits ranked by the extent to which the corresponding MW limits would be exceeded, the CAISO will apply the MW limits to all Energy Supply Bids, Demand Bids, and Virtual Bids at the applicable Eligible PNodes or group of Eligible PNodes and run iterations of the IFM until the CAISO Markets can

achieve an AC solution. The application of the MW limit will be enforced by means of a MW limit constraint on the sum of the nodal Energy Supply Bids, Demand Bids, and Virtual Bids as well as the portions of the aggregate Energy Supply Bids, Demand Bids, and Virtual Bids that are applicable to the Eligible PNodes or group of Eligible PNodes. The MW limit constraints will be enforced in the IFM optimization engine to curtail the Bids at the Eligible PNodes or group of Eligible PNodes that have been identified as candidates for causing AC convergence issues. The IFM optimization engine will use the economic criteria based on Bid prices and effectiveness of Bids to mitigate the violation of the MW limit at the Eligible PNode or group of Eligible PNodes.

* * *

31.2 Market Power Mitigation and Reliability Requirement Determination (MPM-RRD)

After the Market Close of the DAM, and after the CAISO has validated the Bids pursuant to Section 30.7, the CAISO will perform the MPM-RRD procedures in a series of processing runs that occur prior to the IFM Market Clearing run. The MPM process determines which Bids need to be mitigated in the IFM. The RRD process is the automated process for determining RMR Generation requirements for RMR Units. The MPM-RRD process optimizes resources using the same optimization used in the IFM, but instead of using Demand Bids as in the IFM the MPM-RRD process optimizes resources to meet one hundred percent of the CAISO Demand Forecast and Export Bids to the extent the Export Bids are selected in the MPM-RRD process, and meet one hundred percent of Ancillary Services requirements based on Supply Bids submitted to the DAM. Virtual Bids are excluded from the MPM-RRD process. Bids on behalf of Proxy Demand Resources are not mitigated and are not considered in the MPM-RRD process. Virtual Bids are excluded from the MPM-RRD process. The mitigated or unmitigated Bid identified in the MPM-RRD process for all resources that cleared in the MPM-RRD are then passed to the IFM. The CAISO performs the MPM-RRD for the DAM for the twenty-four (24) hours of the targeted Trading Day.

* * *

31.5.1.1 Capacity Eligible for RUC Participation

RUC participation is voluntary for capacity that has not been designated as Resource Adequacy Capacity. Scheduling Coordinators may make such capacity available for participation in RUC by submitting a RUC Availability Bid, provided the Scheduling Coordinator has also submitted an Energy Bid (other than a Virtual Bid) for such capacity into the IFM. Virtual Bids are not eligible to participate in RUC. Capacity from Non-Dynamic System Resources that has not been designated Resource Adequacy Capacity is not eligible to participate in RUC. Capacity from resources including System Resources that has been designated as qualified Resource Adequacy Capacity must participate in RUC. RUC participation is required for Resource Adequacy Capacity to the extent that Resource Adequacy Capacity is not committed following the IFM. System Resources eligible to participate in RUC will be considered on an hourly basis; that is, RUC will not observe any multi-hour block constraints. In RUC the CAISO may commit a Multi-Stage Generating Resource with a Resource Adequacy must-offer obligation at any MSG Configuration with capacity equal to or greater than the MSG Configuration committed in the Integrated Forward Market. RUC will observe the Energy Limits that may have been submitted in conjunction with Energy Bids to the IFM. RMR Unit capacity will be considered in RUC in accordance with Section 31.5.1.3. MSS resources may participate in RUC in accordance with Section 31.5.2.3. COG resources are accounted for in RUC, but may not submit or be paid RUC Availability Payments. The ELS Resources committed through the ELC Process conducted two (2) days before the day the RUC process is conducted for the next Trading Day as described in Section 31.7 are binding.

31.5.1.2 RUC Availability Bids

Scheduling Coordinators may only submit RUC Availability Bids for capacity (above the Minimum Load) for which they are also submitting an Energy Bid (other than a Virtual Bid) to participate in the IFM. The RUC Availability Bid for the Resource Adequacy Capacity submitted by a Scheduling Coordinator must be \$0/MW per hour for the entire Resource Adequacy Capacity. If the Scheduling Coordinator fails to submit a \$0/MW per hour for Resource Adequacy Capacity, the CAISO will insert the \$0/MW per hour for the full amount of Resource Adequacy Capacity for a given resource reduced by any upward Ancillary Services Awards. For Multi-Stage Generating Resources that fail to submit a \$0/MW per hour for the Resource Adequacy Capacity, the CAISO will insert the \$0/MW per hour for the resource's Resource Adequacy Capacity at the MSG Configuration level up to the minimum of the Resource Adequacy

Capacity or the PMax of the MSG Configuration. Scheduling Coordinators may submit non-zero RUC Availability Bids for the portion of a resource's capacity that is not Resource Adequacy Capacity.

* * *

31.8 Constraints at Scheduling Points for Interties

Within the IFM optimization, the CAISO enforces two (2) constraints at each Intertie Scheduling Point so that Virtual Bids do not result in net interchange schedules violating scheduling limits unless the bidding prohibition set forth in Section 30.8 applies. The first constraint is 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. The second constraint is 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. Although both constraints are enforced in both scheduling and pricing runs, only the second constraint Shadow Price is incorporated into the pricing run LMPs.

* * *

34.1 Inputs To The Real-Time Market

The RTM utilizes results produced by the DAM and HASP for each Trading Hour of the Trading Day, including the combined commitments contained in the Day-Ahead Schedules, Day Ahead AS Awards, RUC Awards, HASP Intertie Schedules, HASP Self-Schedules, HASP Intertie AS Awards and the MPM-RRD that is run as part of the HASP to determine reliability needs and mitigated bids for each relevant Trading Hour. Virtual Bids and Virtual Awards are not used in the Real-Time Market. 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. Bids submitted in HASP for all Generating Units and Participating Load shall be used in the Real-Time Market.

* * *

37.3.1.1 Expected Conduct

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. HASP Intertie Schedules for import or export Energy are not subject to the foregoing requirement, but failure to deliver on such HASP Intertie Schedules can violate the anti-manipulation provisions in Section 37.7 and in any regulations issued by FERC. The requirements of this Section 37.3.1.1 do not apply to the submission of Virtual Bids.

* * *

39.6.1.4 Minimum Bid Price for Energy Bids

Energy Bids into the CAISO Markets less than -\$30/MWh are not eligible to set any LMP. If the CAISO dispatches a resource with an Energy Bid less than -\$30/MWh, the Scheduling Coordinator on behalf of the resource will be eligible to be paid the Bid price upon the submission of detailed information justifying the cost components of the Bid to the CAISO and FERC no later than seven (7) days after the end of the month in which the Bid was submitted. The CAISO will treat such information as confidential and will apply the procedure in Section 20.4 with regard to requests for disclosure of such information. The CAISO shall pay Scheduling Coordinators for amounts in excess of -\$30/MWh minimum Bid price upon FERC acceptance of the information justifying the cost components. Virtual Bids may not be less than -\$30/MWh.

* * *

39.11 Market Power Mitigation Applicable to Virtual Bidding

39.11.1 Affiliate Disclosure Requirements

Each Convergence Bidding Entity must satisfy the Affiliate disclosure requirements set forth in Section 4.14.2.1.

39.11.2 Suspension or Limitation Monitoring of Virtual Bidding Activity

39.11.2.1 Suspension or Limitation Generally

The CAISO and DMM will monitor virtual bidding activity for anomalous market behavior, gaming, or the exercise of market power. The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities for any of the

reasons set forth in Section 39.11.2.2. The CAISO has the authority to suspend or to limit the ability of one or more Scheduling Coordinators to submit Virtual Bids on behalf of one or more Convergence Bidding Entities regardless of whether the CAISO has evidence that the virtual bidding activities that led to the suspension or limitation were the result of actions purposely or knowingly taken by Scheduling Coordinators or Convergence Bidding Entities to cause the outcomes set forth in Section 39.11.2.2 (including but not limited to actions taken in order to increase CRR revenues received by one or more CRR Holders, regardless of whether such actions result in an adjustment of CRR revenue pursuant to Section 11.2.4.6). The CAISO may exercise its suspension or limitation authority pursuant to this Section 39.11.2 at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes. The CAISO may suspend or limit Virtual Bids that have already been submitted, Virtual Bids that will be submitted in the future, or both. The CAISO's authority to suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes will be governed by the Market Disruption provisions of Section 7.7.15 of the CAISO Tariff and not this Section 39.11.

39.11.2.2 Reasons for Suspension or Limitation

- (a) The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids if the CAISO determines that virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities detrimentally affect System Reliability or grid operations. Virtual bidding activities can detrimentally affect System Reliability or grid operations if such activities contribute to threatened or imminent reliability conditions, including but not limited to the following circumstances:
 - (i) Submitted Virtual Bids create a substantial risk that the CAISO will be unable to obtain sufficient Energy and Ancillary Services to meet Real-Time Demand and Ancillary Service requirements in the CAISO Balancing Authority Area.

- (ii) Submitted Virtual Bids render the CAISO Day-Ahead Market software unable to process Bids submitted into the Day-Ahead Market.
- (iii) Submitted Virtual Bids render the CAISO unable to achieve an alternating current (AC) solution in the Day-Ahead Market for an extended period of time.
- (b) The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids if the CAISO determines that virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities cause or contribute to unwarranted divergence in prices between the Day-Ahead Market and the HASP or Real-Time Market. The CAISO will determine whether virtual bidding causes or contributes to unwarranted divergence in prices in the Day-Ahead Market and the HASP or Real-Time Market, as applicable, using the following methodology:
- (i) The CAISO will calculate the average divergence between Day-Ahead prices and Real-Time prices for the CAISO Balancing Authority Area over a four (4) week period of time or such other period of time that the CAISO determines to be appropriate.
- (ii) The CAISO will determine whether there are any Eligible PNodes and/or Eligible Aggregated PNodes at which: (A) the absolute value of the average divergence between Day-Ahead prices and Real-Time prices over that period of time or an appropriate subset of that period of time exceeded the system-wide average divergence in prices calculated pursuant to Section 39.11.2.2(b)(i), by a percentage established by the CAISO pursuant to the applicable Business Practice Manual and (B) the virtual bidding activities of one or more Scheduling Coordinators

on behalf of one or more Convergence Bidding Entities

significantly contributed to this excess divergence.

- (c) The CAISO may suspend or limit the ability of one or more Scheduling Coordinators to submit Virtual Bids if the CAISO determines that virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities cause or contribute to an unwarranted divergence in Shadow Prices between the Day-Ahead Market and the HASP or Real-Time Market that contributes to a significant divergence in LMPs at any Eligible PNode and/or Eligible Aggregated PNode. The CAISO will base each determination of whether virtual bidding causes or contributes to an unwarranted divergence in Shadow Prices in the Day-Ahead Market and the HASP or Real-Time Market on a calculation of the deviation between average hourly Shadow Prices in the Day-Ahead Market and the HASP or Real-Time Market, as applicable, during a rolling four (4) week period, or such other period that the CAISO determines to be appropriate given the virtual bidding activity under review. If the CAISO calculates that, over the time period employed in the CAISO's review, the virtual bidding activities of one or more Scheduling Coordinators on behalf of one or more Convergence Bidding Entities has resulted in a deviation between average hourly Shadow Prices in the Day-Ahead Market and the HASP or Real-Time Market (as applicable) the absolute value of which is greater than a percentage established by the CAISO pursuant to the applicable Business Practice Manual and such divergence in Shadow Prices contributes to a significant divergence in LMPs at any Eligible PNode and/or Eligible Aggregated PNode, the CAISO will determine that virtual bidding causes or contributes to an unwarranted divergence in Shadow Prices.

39.11.2.3 Procedures Regarding Suspension or Limitation

- (a) Whenever practicable, prior to suspending or limiting virtual bidding, the CAISO will notify affected Scheduling Coordinators and affected Convergence Bidding

Entities that the CAISO intends to suspend or limit virtual bidding and will confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. In cases where taking such actions prior to suspending or limiting virtual bidding is not practicable, the CAISO will promptly notify the affected Scheduling Coordinators and affected Convergence Bidding Entities that the CAISO has suspended or limited virtual bidding, and will promptly confer and exchange information with the affected Scheduling Coordinators and affected Convergence Bidding Entities in an effort to resolve any dispute as to whether suspension or limitation of virtual bidding is warranted. Within two (2) Business Days of the notice of suspension or limitation, the CAISO will provide the affected Scheduling Coordinators and affected Convergence Bidding Entities with information justifying the decision to suspend or limit virtual bidding.

- (b) The CAISO will submit to FERC supporting documentation, including any information provided to the CAISO by the affected Scheduling Coordinators and affected Convergence Bidding Entities, within ten (10) Business Days after any suspension or limitation of virtual bidding begins, unless the CAISO concludes prior to the end of the ten (10) Business Day period that the suspension or limitation of virtual bidding was or is not warranted. The CAISO will provide the affected Scheduling Coordinators and affected Convergence Bidding Entities with a copy of any supporting documentation submitted to FERC.
- (c) Suspension or limitation of virtual bidding by the CAISO will remain in effect for ninety (90) days after the CAISO submits its initial supporting documentation to FERC, unless FERC directs otherwise or the CAISO determines that the suspension or limitation of virtual bidding should continue for fewer than ninety (90) days. After the ninety (90) day period expires, the suspension or limitation

of virtual bidding will remain in effect only if FERC permits or requires it to remain in effect.

- (d) The CAISO will maintain the confidentiality of the identities of the affected Scheduling Coordinators and affected Convergence Bidding Entities until such time as FERC concludes that the circumstances or the conduct of the affected Scheduling Coordinators and affected Convergence Bidding Entities warranted suspension or limitation of virtual bidding.
- (e) The CAISO will have the authority to discontinue the suspension or limitation of virtual bidding at any time it determines such suspension or limitation is no longer appropriate and will notify FERC if such suspension or limitation of virtual bidding is discontinued after supporting information concerning such suspension or limitation has been submitted to FERC.

* * *

Appendix A

Master Definition Supplement

* * *

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.

* * *

CBEA

Convergence Bidding Entity Agreement

Convergence Bidding Entity (CBE)

An entity which has undertaken in writing by execution of a Convergence Bidding Entity Agreement to comply with all applicable provisions of the CAISO Tariff.

Convergence Bidding Entity Agreement (CBEA)

An agreement between the CAISO and a Convergence Bidding Entity, a pro forma version of which is set forth in Appendix B.

* * *

EAL

Estimated Aggregate Liability

* * *

Eligible Aggregated PNode

An Aggregated PNode located at an Intertie where virtual bidding is permitted, or an Aggregated PNode where either aggregated physical supply, a Default LAP, or a Trading Hub are located and where virtual bidding is permitted.

* * *

Eligible PNode

A PNode located at an Intertie where virtual bidding is permitted, or a PNode where either physical supply or demand is located and where virtual bidding is permitted.

* * *

Energy Bid

A Demand Bid, or an Energy Supply Bid, or a Virtual Bid.

* * *

Estimated Aggregate Liability (EAL)

The sum of a Market Participant's or CRR Holder's known and reasonably estimated potential liabilities for a specified time period arising from charges described in the CAISO Tariff, as provided for in Section 12.

* * *

Flow Impact

The combined impact of the CRR Holder's portfolio of Virtual Awards from the IFM on the power flows of a Constraint. The Flow Impact is calculated by multiplying the CRR Holder's Virtual Awards at a Node by the shift factor of that Node relative to the Constraint. This product is computed for each Node for which the Convergence Bidding Entity had Virtual Awards, and the Flow Impact is the sum of those products. In this definition, shift factor means the factor to be applied to a resource's expected change in output to determine the amount of flow contribution that change in output will impose on an identified transmission facility or flowgate.

* * *

Market Participant

An entity, including a Scheduling Coordinator, who either: (1) participates in the CAISO Markets through the buying, selling, transmission, or distribution of Energy, Capacity, or Ancillary Services into, out of, or through the CAISO Controlled Grid; or (2) is a CRR Holder or Candidate CRR Holder; or (3) is a Convergence Bidding Entity.

Net Hourly Energy Charge

Total charges to all Demand and Virtual Demand Awards minus total payments to all Supply and Virtual Supply Awards both based on the product of MWh amounts specified in all Day-Ahead Schedules and Virtual Awards and the relevant Day-Ahead LMPs at the applicable PNodes or Aggregated Pricing Node. This also includes any amounts associated with price corrections for Virtual Awards in accordance with Section 11.21.2.

Real-Time Congestion Offset

For each Settlement Period of the HASP and RTM, the CAISO shall calculate the Real-Time Congestion OffsetFund as the difference of 1) the sum of the products of the total of RTM or HASP MCC for Demand and the Demand Imbalance Energy and Virtual Supply liquidated as demand in the RTM or HASP, and the RTM or HASP MCC at the relevant Location; and 2) the sum of the products of the total of RTM or HASP MCC for Supply and the Supply Imbalance Energy and Virtual Demand liquidated as supply in the RTM or HASP, and the RTM or HASP MCC at the relevant Location; including also the sum of RTM and HASP Congestion Charges for Intertie Ancillary Services Awards, and excluding the HASP and 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 Congestion Offset

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

Virtual Award

A Virtual Supply Award or a Virtual Demand Award.

Virtual Award Charge

The component of the Grid Management Charge that provides for the recovery of the CAISO's costs related to Virtual Awards. The methodology for determining the Virtual Award Charge is set forth in Appendix F, Schedule 1, Part A.

Virtual Bid

A Virtual Supply Bid or a Virtual Demand Bid.

Virtual Bid Curve

The Virtual Bid component that indicates the prices and related quantities at which a Virtual Supply Bid or a Virtual Demand Bid is submitted. For a Virtual Supply Bid, the Virtual Bid Curve is a monotonically increasing staircase function, consisting of no more than ten (10) segments defined by eleven (11) pairs of MW operating points and \$/MWh, which may be different for each Trading Hour of the applicable Virtual Bid time period. For a Virtual Demand Bid, the Virtual Bid Curve is a monotonically decreasing staircase function, consisting of no more than ten (10) segments defined by eleven (11) pairs of MW operating points and \$/MWh, which may be different for each Trading Hour of the applicable Virtual Bid time period.

Virtual Bid Reference Price

The price set forth in Section 12.8.2.

Virtual Bid Submission Charge

A charge assessed to a Scheduling Coordinator for each submitted Virtual Bid segment that is passed to the IFM.

Virtual Demand Award

The cleared Virtual Demand Bids in the IFM for a given hour.

Virtual Demand Bid

A Bid submitted in the DAM that, if cleared in the IFM, represents a commitment to pay for Energy at the LMP in the DAM and to receive revenues as specified in Section 11.3.

Virtual Supply Award

The cleared Virtual Supply Bids in the IFM for a given hour.

Virtual Supply Bid

A Bid submitted in the DAM that, if cleared in the IFM, represents a commitment to receive revenues for Energy at the LMP in the DAM and to make payments as specified in Section 11.3.

* * *

Appendix B.15 Convergence Bidding Entity Agreement

* * *

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

AND

[CONVERGENCE BIDDING ENTITY]

CONVERGENCE BIDDING ENTITY AGREEMENT
CONVERGENCE BIDDING ENTITY AGREEMENT

THIS AGREEMENT is dated this _____ day of _____, and is entered into, by and between:

- (1) [Full Legal Name] having its registered and principal place of business located at [Address] (the "Convergence Bidding Entity");
and
(2) California Independent System Operator Corporation, a California nonprofit public benefit corporation having a principal executive office located at such place in the State of California as the CAISO Governing Board may from time to time designate, initially 151 Blue Ravine Road, Folsom, California 95630 (the "CAISO").

The Convergence Bidding Entity and the CAISO are hereinafter referred to individually as a "Party" and collectively as the "Parties."

Whereas:

- A. The CAISO Tariff provides that any entity that intends to submit Virtual Bids (which can only be submitted through a Scheduling Coordinator that is either the entity itself or a representative of the entity) must register and qualify with the CAISO and comply with the terms of the CAISO Tariff.
- B. The Convergence Bidding Entity has completed the Convergence Bidding Entity application process and is eligible to submit Virtual Bids.
- C. The CAISO Tariff further provides that any entity who wishes to submit Virtual Bids must meet all of the Convergence Bidding Entity requirements in the CAISO Tariff and the relevant Business Practice Manual.
- D. The Convergence Bidding Entity intends to submit Virtual Bids and, therefore, wishes to undertake to the CAISO that it will comply with the applicable provisions of the CAISO Tariff.
- E. The Parties are entering into this Agreement in order to establish the terms and conditions pursuant to which the CAISO and the Convergence Bidding Entity will discharge their respective duties and responsibilities under the CAISO Tariff.

NOW THEREFORE, in consideration of the mutual covenants set forth herein, **THE PARTIES AGREE** as follows:

ARTICLE I
DEFINITIONS AND INTERPRETATION

- a. **Master Definitions Supplement.** All terms and expressions used in this Agreement shall have the same meanings as those contained in the Master Definitions Supplement in Appendix A of the CAISO Tariff.
- b. **Rules of Interpretation.** The following rules of interpretation and conventions shall apply to this Agreement:
- (a) if there is any inconsistency between this Agreement and the CAISO Tariff, the CAISO Tariff will prevail to the extent of the inconsistency;
 - (b) the singular shall include the plural and vice versa;
 - (c) the masculine shall include the feminine and neutral and vice versa;
 - (d) “includes” or “including” shall mean “including without limitation”;
 - (e) references to a Section, Article, or Schedule shall mean a Section, Article, or a Schedule of this Agreement, as the case may be, unless the context otherwise requires;
 - (f) a reference to a given agreement or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented, or restated through the date as of which such reference is made;
 - (g) unless the context otherwise requires, references to any law shall be deemed references to such law as it may be amended, replaced, or restated from time to time;
 - (h) 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 personality;
 - (i) unless the context otherwise requires, any reference to a Party includes a reference to its permitted successors and assigns;
 - (j) any reference to a day, week, month, or year is to a calendar day, week, month, or year; and
 - (k) the captions and headings in this Agreement are inserted solely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and conditions of this Agreement.

ARTICLE II

ACKNOWLEDGEMENTS OF CONVERGENCE BIDDING ENTITY AND CAISO

- 2.1 Scope of Application to Parties.** The Convergence Bidding Entity and CAISO acknowledge that all Convergence Bidding Entities must sign a form of this Agreement in accordance with Section 4.14 of the CAISO Tariff.

ARTICLE III

TERM AND TERMINATION

3.1 Effective Date. This Agreement shall be effective as of the later of the date it is executed by both Parties or the date accepted for filing and made effective by FERC, if such FERC filing is required, and shall remain in full force and effect until terminated pursuant to Section 3.2 of this Agreement.

3.2 Termination

3.2.1 Termination by CAISO. Subject to Article V, the CAISO may terminate this Agreement by giving written notice to the Convergence Bidding Entity of termination in the event that the Convergence Bidding Entity commits any material default under this Agreement and/or the CAISO Tariff as it pertains to this Agreement which, if capable of being remedied, is not remedied within the time frame specified in the CAISO Tariff after the CAISO has given written notice of the material default to the Convergence Bidding Entity. The CAISO will not terminate this Agreement if the material default of the Convergence Bidding Entity is excused by reason of Uncontrollable Forces in accordance with Article X of this Agreement or if the CAISO agrees, in writing, to an extension of the time to remedy such material default. Any outstanding financial right or obligation or any other obligation under the CAISO Tariff of the Scheduling Coordinator that represents the Convergence Bidding Entity that has arisen while that Scheduling Coordinator was submitting Virtual Bids, and any provision of this Agreement necessary to give effect to such right or obligation, shall survive until satisfied. With respect to any notice of termination given pursuant to this Section, the CAISO must file a timely notice of termination with FERC, if this Agreement was filed with FERC, or must otherwise comply with the requirements of FERC Order No. 2001 and related FERC orders. The filing of the notice of termination by the CAISO with FERC will be considered timely if: (1) the filing of the notice of termination is made after the preconditions for termination have been met and the CAISO files the notice of termination within sixty (60) days after issuance of the notice of default; or (2) the CAISO files the notice of termination in accordance with the requirements of FERC Order No. 2001. This Agreement shall terminate upon acceptance by FERC of such a notice of termination, if filed with FERC, or thirty (30) days after the date of the CAISO's notice of default, if terminated in accordance with the requirements of FERC Order No. 2001 and related FERC orders.

3.2.2 Termination by Convergence Bidding Entity. In the event that the Convergence Bidding Entity no longer intends to submit Virtual Bids, it may terminate this Agreement, on giving the CAISO not less than ninety (90) days' written notice; provided, however, that any outstanding financial right or obligation or any other obligation under the CAISO Tariff of the Scheduling Coordinator that represents the Convergence Bidding Entity that has arisen while that Scheduling Coordinator was submitting Virtual Bids, and any provision of this Agreement necessary to give effect to such right or obligation, shall survive until satisfied. With respect to any notice of termination given pursuant to this Section, the CAISO must file a timely notice of termination with FERC, if this Agreement has been filed with FERC, or must otherwise comply with the requirements of FERC Order No. 2001 and related FERC orders. The filing of the notice of termination by the CAISO with FERC will be considered timely if: (1) the request to file a notice of termination is made after the preconditions for termination have been met and the CAISO files the notice of termination within sixty (60) days after receipt of such request; or (2) the CAISO files the notice of termination in accordance with the requirements of FERC Order No. 2001. This Agreement shall terminate upon acceptance by FERC of such a notice of termination, if such notice is required to be filed with FERC, or upon ninety (90) days after the CAISO's receipt of the Convergence Bidding Entity's notice of termination, if terminated in accordance with the requirements of FERC Order No. 2001 and related FERC orders.

ARTICLE IV
GENERAL TERMS AND CONDITIONS

- 4.1 Convergence Bidding Entity Requirements.** The Convergence Bidding Entity must register and qualify with the CAISO and comply with all terms of the CAISO Tariff applicable to Convergence Bidding Entities.
- 4.2 Electronic Contracting.** All submitted applications, bids, confirmations, changes to information on file with the CAISO and other communications conducted via electronic transfer (e.g., direct computer link, FTP file transfer, bulletin board, e-mail, facsimile or any other means established by the CAISO) shall have the same legal rights, responsibilities, obligations and other implications as set forth in the terms and conditions of the CAISO Tariff as if executed in written format.
- 4.3 Agreement Subject to CAISO Tariff.** The Parties will comply with all applicable provisions of the CAISO Tariff. This Agreement shall be subject to the CAISO Tariff, which shall be deemed to be incorporated herein.

ARTICLE V
PERFORMANCE

- 5.1 Penalties.** The Convergence Bidding Entity shall be subject to all penalties made applicable to Convergence Bidding Entities set forth in the CAISO Tariff. Nothing in this Agreement, with the exception of the provisions relating to the CAISO ADR Procedures, shall be construed as waiving the rights of the Convergence Bidding Entity to oppose or protest the specific imposition by the CAISO of any FERC-approved penalty on the Convergence Bidding Entity.
- 5.2 Corrective Measures.** If the Convergence Bidding Entity fails to meet or maintain the requirements set forth in this Agreement and/or the CAISO Tariff, the CAISO shall be permitted to take any of the measures, contained or referenced in the CAISO Tariff, which the CAISO deems to be necessary to correct the situation.

ARTICLE VI
COSTS

- 6.1 Operating and Maintenance Costs.** The Convergence Bidding Entity shall be responsible for all its costs incurred in connection with all its activities related to submittal of Virtual Bids.

ARTICLE VII
DISPUTE RESOLUTION

- 7.1 Dispute Resolution.** The Parties shall make reasonable efforts to settle all disputes arising out of or in connection with this Agreement. In the event any dispute is not settled, the Parties shall adhere to the CAISO ADR Procedures set forth in Section 13 of the CAISO Tariff, which is incorporated by reference, except that any reference in Section 13 of the CAISO Tariff to Market

Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE VIII

REPRESENTATIONS AND WARRANTIES

- 8.1 Representation and Warranties.** Each Party represents and warrants that the execution, delivery and performance of this Agreement by it has been duly authorized by all necessary corporate and/or governmental actions, to the extent authorized by law.

ARTICLE IX

LIABILITY

- 9.1 Liability.** The provisions of Section 14 of the CAISO Tariff will apply to liability arising under this Agreement, except that all references in Section 14 of the CAISO Tariff to Market Participants shall be read as references to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE X

UNCONTROLLABLE FORCES

- 10.1 Uncontrollable Forces Tariff Provisions.** Section 14.1 of the CAISO Tariff shall be incorporated by reference into this Agreement except that all references in Section 14.1 of the CAISO Tariff to Market Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE XI

MISCELLANEOUS

- 11.1 Assignments.** Either Party may assign or transfer any or all of its rights and/or obligations under this Agreement with the other Party's prior written consent in accordance with Section 22.2 of the CAISO Tariff and other CAISO Tariff requirements as applied to Convergence Bidding Entities. Such consent shall not be unreasonably withheld. Any such transfer or assignment shall be conditioned upon the successor in interest accepting the rights and/or obligations under this Agreement as if said successor in interest was an original Party to this Agreement.
- 11.2 Notices.** Any notice, demand, or request which may be given to or made upon either Party regarding this Agreement shall be made in accordance with Section 22.4 of the CAISO Tariff, provided that all references in Section 22.4 of the CAISO Tariff to Market Participants shall be read as a reference to the Convergence Bidding Entity and references to the CAISO Tariff shall be read as references to this Agreement, and unless otherwise stated or agreed shall be made to the representative of the other Party indicated in Schedule 1. A Party must update the

information in Schedule 1 of this Agreement as information changes. Such changes to Schedule 1 shall not constitute an amendment to this Agreement.

- 11.3 Waivers.** Any waiver at any time by either Party of its rights with respect to any default under this Agreement, or with respect to any other matter arising in connection with this Agreement, shall not constitute or be deemed a waiver with respect to any subsequent default or other matter arising in connection with this Agreement. Any delay, short of the statutory period of limitations, in asserting or enforcing any right under this Agreement shall not constitute or be deemed a waiver of such right.
- 11.4 Governing Law and Forum.** This Agreement shall be deemed to be a contract made under, and for all purposes shall be governed by and construed in accordance with, the laws of the State of California, except its conflict of law provisions. The Parties irrevocably consent that any legal action or proceeding arising under or relating to this Agreement to which the CAISO ADR Procedures do not apply, shall be brought in any of the following forums, as appropriate: (i) any court of the State of California, (ii) any federal court of the United States of America located in the State of California, except to the extent subject to the protections of the Eleventh Amendment of the United States Constitution or, (iii) where subject to its jurisdiction, before FERC.
- 11.5 Consistency with Federal Laws and Regulations.** This Agreement shall incorporate by reference Section 22.9 of the CAISO Tariff as if the references to the CAISO Tariff were referring to this Agreement.
- 11.6 Merger.** This Agreement constitutes the complete and final agreement of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter.
- 11.7 Severability.** If any term, covenant, or condition of this Agreement or the application or effect of any such term, covenant, or condition is held invalid as to any person, entity, or circumstance, or is determined to be unjust, unreasonable, unlawful, imprudent, or otherwise not in the public interest by any court or government agency of competent jurisdiction, then such term, covenant, or condition shall remain in force and effect to the maximum extent permitted by law, and all other terms, covenants, and conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect and the Parties shall be relieved of their obligations only to the extent necessary to eliminate such regulatory or other determination unless a court or governmental agency of competent jurisdiction holds that such provisions are not separable from all other provisions of this Agreement.
- 11.8 Amendments.** This Agreement and the Schedules attached hereto may be amended from time to time by the mutual agreement of the Parties in writing. Amendments that require FERC approval shall not take effect until FERC has accepted such amendments for filing and made them effective. Nothing herein shall be construed as affecting in any way the right of the CAISO to make unilateral application to FERC for a change in the rates, terms, and conditions of this Agreement under Section 205 of the FPA and pursuant to FERC's rules and regulations promulgated thereunder, and the Convergence Bidding Entity shall have the right to make a unilateral filing with FERC to modify this Agreement pursuant to Section 206 or any other applicable provision of the FPA and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under Sections 205 or 206 of the FPA and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein. The standard of review FERC shall apply when acting upon proposed modifications to this Agreement by the CAISO shall be the "just and reasonable" standard of review rather than the "public interest" standard of review. The standard of review FERC shall apply when acting upon proposed modifications to this Agreement by FERC's own motion or by a signatory other than the CAISO or non-signatory entity shall also be the "just and

reasonable" standard of review. Schedule 1 is provided for informational purposes and revisions to that schedule do not constitute a material change in the Agreement warranting FERC review.

11.9 Counterparts. This Agreement may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed on behalf of each by and through their authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: _____

Name: _____

Title: _____

Date: _____

[Name of Convergence Bidding Entity]

By: _____

Name: _____

Title: _____

Date: _____

SCHEDULE 1

NOTICES

[Section 11.2]

Convergence Bidding Entity

Name of Primary

Representative:

Title:

Company:

Address:

City/State/Zip Code:

Email Address:

Phone:

Fax No:

Name of Alternative

Representative:

Title:

Company:

Address:

City/State/Zip Code:

Email Address:

Phone:

Fax No:

CAISO

Name of Primary

Representative:

Title:

Address:

City/State/Zip Code:

Email address:

Phone:

Fax:

Name of Alternative

Representative:

Title:

Address:

City/State/Zip Code:

Email address:

Phone:

Fax:

* * *

**Appendix F Rate Schedules
Schedule 1
Grid Management Charge**

Part A – Monthly Calculation of Grid Management Charge (GMC)

The Grid Management Charge consists of the following separate service charges: (1) the Core Reliability Services – Demand Charge, (2) the Core Reliability Services – Energy Exports Charge; (3) Energy Transmission Services – Net Energy Charge, (4) the Energy Transmission Services – Uninstructed Deviations Charge, (5) the Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge, (6) the Forward Scheduling Charge, (7) the Market Usage Charge, and (8) the Settlements, Metering, and Client Relations Charge, and (9) the Virtual Award Charge.

1. The rate in \$/MW for the Core Reliability Services – Demand Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total of the forecasted Scheduling Coordinators' metered non-coincident peak hourly demand in MW for all months during the year (excluding the portion of such Demand associated with Energy Exports, if any, as may be modified in accordance with Part F of this Schedule 1), reduced by thirty-four percent (34%) of the sum of all Scheduling Coordinators' metered non-coincident peak Demands occurring during the hours ending 0100 through 0600, or during the hours ending 2300 through 2400, every day, including Sundays and holidays; provided that if a Scheduling Coordinator's metered non-coincident peak Demand hour during the month occurs during the hours ending 0100 through 0600, or during the hours ending 2300 through 2400, every day, the rate shall be sixty-six percent (66%) of the standard Core Reliability Services – Demand Charge rate.
2. The rate in \$/MWh for the Core Reliability Services – Energy Exports Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this

Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total of the forecasted Scheduling Coordinators' metered volume of Energy Exports in MWh, excluding each Scheduling Coordinator's Energy Exports associated with Transmission Ownership Rights.

3. The rate in \$/MWh for the Energy Transmission Services – Net Energy Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total annual forecasted Metered Balancing Authority Area Load, excluding each Scheduling Coordinator's Metered Balancing Authority Area Load associated with Transmission Ownership Rights.
4. The rate in \$/MWh for the Energy Transmission Services – Uninstructed Deviations Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the absolute value of total annual forecasted net Uninstructed Imbalance Energy (netted within a Settlement Interval summed over the calendar month) in MWh; provided that the rate for each Scheduling Coordinator's Participating Intermittent Resources will be assessed against the Uninstructed Imbalance Energy of such Participating Intermittent Resources netted over the Trading Month.
5. The rate in \$/MWh for the Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the total annual forecasted Metered Balancing Authority Area Load associated with Transmission Ownership Rights.
6. The rate in \$ per Schedule or \$ per Inter-SC Trade for the Forward Scheduling Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted number of non-zero MW Day-Ahead and HASP Schedules, as may be modified in accordance with Part F of this Schedule 1, including all awarded Ancillary Service and Residual Unit Commitment Bids and all Inter-SC Trades, including Inter-SC Trades of IFM Load Uplift Obligations. This charge will be assessed separately with respect to Schedules and Inter-SC Trades.
7. The rate in \$/MWh for the Market Usage Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted total purchases and sales (including out-of-market transactions) of Ancillary Services, Energy, Instructed Imbalance Energy, and net Uninstructed Imbalance Energy (with Uninstructed Imbalance Energy for Participating Intermittent Resources netted over the Trading Month and all other Uninstructed Imbalance Energy being netted within a Settlement Interval) in MWh. A Market Usage Charge rate will be calculated separately for two sets of CAISO Markets: (i) the Ancillary Services and RTM rate will be based on MWh of purchases and sales of Ancillary Services in the DAM, the HASP, and the RTM, MWh of Instructed Imbalance Energy, and MWh of Uninstructed Imbalance Energy netted over the Settlement Interval; and (ii) the rate for the Day-Ahead Market for Energy will be based on MWh of Day-Ahead Schedules. The rate for the Day-Ahead Market for Energy will be based on the sum, for all Scheduling Coordinators and all Settlement Periods, of the greater of the amount of MWh associated with each Scheduling Coordinator's Day-Ahead Schedule of Supply or the amount associated with its Day-Ahead Schedule of Demand for each Settlement Period.
8. The rate for the Settlements, Metering, and Client Relations Charge will be fixed at \$1000.00 per month, per Scheduling Coordinator ID Code (SCID) with an invoice value other than \$0.00 in the current Trading Month.

9. The rate in \$/MWh for the Virtual Award Charge will be calculated by dividing the GMC costs, as determined in accordance with Part C of this Schedule 1, allocated to this service category in accordance with Part E of this Schedule 1, by the annual forecasted total virtual supply and virtual demand cleared in the IFM. This service category will be allocated nine (9) percentage of the Forward Scheduling Charge and Market Usage – Forward Energy service categories based upon the total annual forecasted cleared supply and demand. All amounts collected from the assessment of the Virtual Bid Submission Charge in a given year will be used to offset the amount of the Virtual Award Charge for the next year.

For a Scheduling Coordinator for a Load following MSS, the GMC service charges set forth in above shall be applied as set forth in Section 11.22.3 of the CAISO Tariff.

The rates for the foregoing charges shall be adjusted automatically each year, effective January 1 for the following twelve months, in the manner set forth in Part D of this Schedule.

Part B – Quarterly Adjustment, If Required

Each component rate of the Grid Management Charge will be adjusted automatically on a quarterly basis, up or down, so that rates reflect the annual revenue requirement as stated in the CAISO's filing or posting on the CAISO Website, as applicable, if the estimated revenue collections for that component, on an annual basis, change by more than five percent (5%) or \$1 million, whichever is greater, during the year. Such adjustment may be implemented not more than once per calendar quarter, and will be effective the first day of the next calendar month.

The rates will be adjusted according to the formulae listed in Appendix F, Schedule 1, Part A with the billing determinant(s) readjusted on a going-forward basis to reflect the change of more than five percent (5%) or \$1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

Part C – Costs Recovered through the GMC

As provided in Section 11.22.2 of the CAISO Tariff, the Grid Management Charge includes the following costs, as projected in the CAISO's budget for the year to which the Grid Management Charge applies:

- CAISO Operating Costs;
- CAISO Other Costs and Revenues, including penalties, interest earnings and other revenues;
- CAISO Financing Costs, including debt service on CAISO Start Up and Development Costs and subsequent capital expenditures; and
- CAISO Operating and Capital Reserves Costs.

Such costs, for the CAISO as a whole, are allocated to the service charges that comprise the Grid Management Charge: (1) Core Reliability Services - Demand Charge, (2) Core Reliability Services – Energy Exports Charge, (3) Energy Transmission Services – Net Energy Charge, (4) Energy Transmission Services – Uninstructed Deviations Charge, (5) Core Reliability Services/ Energy Transmission Services – Transmission Ownership Rights Charge, (6) Forward Scheduling Charge, (7) Market Usage Charge, and (8) Settlements, Metering, and Client Relations Charge, and (9) Virtual Award Charge, according to the factors listed in Part E of this Schedule 1, and

adjusted annually for:

- any surplus revenues from the previous year as deposited in the CAISO Operating and Capital Reserves Account, or deficiency of revenues, as recorded in a memorandum account;

divided by:

- forecasted annual billing determinant volumes;

adjusted quarterly for:

- a change in the volume estimate used to calculate the individual Grid Management Charge components, if, on an annual basis, the change is five percent (5%) or \$1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

The Grid Management Charge revenue requirement formula is as follows:

Grid Management Charge revenue requirement =

$$\text{CAISO Operating Costs} + \text{CAISO Financing Costs} + \text{CAISO Other Costs and Revenues} \\ + \text{CAISO Operating and Capital Reserves Costs},$$

[The "USoA" reference below is the FERC Uniform System of Accounts, and is intended to include subsequent re-numbering or re-designation of the same accounts or subaccounts.]

Where,

(1) CAISO Operating Costs include:

- (a) Transmission expenses (USoA 560-574);
- (b) Regional market expenses (USoA 575 subaccounts);
- (c) Customer accounting expenses (USoA 901-905);
- (d) Customer service and informational expenses (USoA 906-910);
- (e) Sales expenses (USoA 911-917);
- (f) Administrative & general expenses (USoA 920-935);
- (g) Taxes other than income taxes that relate to CAISO operating income (USoA 408.1); and
- (h) Miscellaneous, non-operating expenses, penalties and other deductions (USoA 426 subaccounts).

(2) CAISO Financing Costs include:

- (a) For any fiscal year, scheduled principal and interest payments, sinking fund payments related to balloon maturities, repayment of commercial paper notes, net payments required pursuant to a payment obligation, or payments due on any CAISO notes. This amount includes the current year accrued principal and interest payments due in the first one hundred twenty (120) days of the following year.
- (b) The debt service coverage requirement, which is a percentage of the senior lien debt service, i.e., all debt service that has a first lien on CAISO net operating revenues. The coverage requirement is twenty-five percent (25%), unless otherwise specified by the rate covenants of the official statements for each CAISO bond offering.

(3) CAISO Other Costs and Revenues include:

- (a) Interest earnings (USoA 419) on CAISO Operating and Capital Reserves Account balances, excluding interest on bond or note proceeds specifically designated for capital projects or capitalized interest.
- (b) Miscellaneous revenues (USoA 421 and 456 subaccounts), including but not limited to Scheduling Coordinator application and training fees, and fines assessed and collected by the CAISO.
- (c) Other interest expenses (USoA 431) not provided for elsewhere.

- (4) CAISO Operating and Capital Reserves Costs include:
- (a) The projected CAISO Operating and Capital Reserves Account balance for December 31 of the prior year less the reserve requirement. If such amount is negative, the amount may be divided by two, so that the reserve is replenished within a two-year period. The reserve requirement is fifteen percent (15%) of annual CAISO Operating Costs, unless otherwise specified by (1) the rate covenants of the official statements for each CAISO bond offering, (2) the CAISO Governing Board or (3) the FERC.
 - (b) Funding from current year revenues for approved capital and projects initiated in the fiscal year.

A separate revenue requirement shall be established for each component of the Grid Management Charge by developing the revenue requirement for the CAISO as a whole and then assigning such costs to the service categories using the allocation factors provided in Appendix F, Schedule 1, Part E.

* * *

Part E – Cost Allocation

1. The Grid Management Charge revenue requirement, determined in accordance with Part C of this Schedule 1, shall be allocated to the service charges specified in Part A of this Schedule 1 as follows, subject to Section 2 of this Part E and to Part F of this Schedule 1. Expenses projected to be recorded in each cost center shall be allocated among the charges in accordance with the allocation factors listed in Table 1 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1. In the event the CAISO budgets for projected expenditures for cost centers are not specified in Table 1 to Schedule 1, such expenditures shall be allocated based on the allocation factors for the respective CAISO division hosting that newly-created cost center. Such divisional allocation factors are specified in Table 1 to this Schedule 1.

Debt service expenditures for the CAISO's existing bond offerings shall be allocated among the charges in accordance with the allocation factors listed in Table 1 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1. Capital expenditures shall be allocated among the charges in accordance with the allocation factors listed in Table 2 to this Schedule 1, subject to Section 2 of this Part E and to Part F of this Schedule 1, for the system for which the capital expenditure is projected to be made.

Any costs allocated by the factors listed in Table 1 and Table 2 to the Settlements, Metering, and Client Relations Charge category that would remain un-recovered after the assessment of the charge for that service specified in Section 8 of Part A of this Schedule 1 on forecasted billing determinant volumes shall be reallocated to the remaining GMC service categories in the ratios set forth in Table 3 to this Schedule 1.

The cost allocation factors in Tables 1, 2, and 3 to this Schedule 1 include the following association of factors to the components of the Grid Management Charge, subject to Part F of this Schedule 1:

CRS: This factor is the allocation of costs to the Core Reliability Services – Demand Charge and Core Reliability Services - Energy Exports Charge.

ETS: This factor is the allocation of costs to the Energy Transmission Services – Net Energy Charge and Energy Transmission Services – Uninstructed Deviations Charge, subject to Section 2 of this Part E.

CRS/ETS TOR: This factor is the allocation of costs to Core Reliability Services/Energy Transmission Services – Transmission Ownership Rights Charge for the assessment of the Core Reliability Services – Demand Charge, Core Reliability Services – Energy Exports Charge, and the Energy Transmission Services – Net Energy Charge to Metered Balancing Authority Area Load served over Transmission Ownership Rights.

FS: This factor is the allocation of costs to the Forward Scheduling Charge.

MU: This factor is the allocation of costs to the Market Usage Charge, except for the application of the Market Usage Charge to purchases or sales of Energy in the Day-Ahead Market.

MU-FE: This factor is the allocation of costs to the Market Usage Charge as applied to Day-Ahead Schedules. For each Scheduling Coordinator, the charge for the Day-Ahead Market for Energy will be based on the sum, for all Settlement Periods, of the greater of the amount of MWh associated with the Scheduling Coordinator's Day-Ahead Schedule of Supply or the amount associated with its Day-Ahead Schedule of Demand for each Settlement Period.

SMCR: This factor is the allocation of costs to the Settlements, Metering, and Client Relations Charge.

The allocation of costs to cost allocation factors FS and MU-FE includes the allocation of costs to the Virtual Award Charge.

2. The allocation of costs in accordance with Section 1 and Tables 1 and 2 of this Part E shall be adjusted as follows:

Costs allocated to the Energy Transmission Services (ETS) category in the following tables are further apportioned to the Energy Transmission Services – Net Energy Charge and Energy Transmission Services – Uninstructed Deviations Charge subcategories in eighty percent (80%) and twenty percent (20%) ratios, respectively.

* * *