

January 2, 2009

***Via FedEx delivery***

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

**Re: California Independent System Operator Corporation  
Docket Nos. ER08-367-\_\_\_\_\_  
ER06-615-\_\_\_\_\_  
Compliance Filing**

Dear Secretary Bose:

The California Independent System Operator Corporation (“CAISO”) hereby submits an original and five copies of this filing in compliance with the Commission’s “Order on California Independent System Operator Corporation’s Fourth Revised Version of FERC Electric Tariff,” 125 FERC ¶ 61,262, issued on December 4, 2008.

## **I. BACKGROUND**

On December 21, 2007, the CAISO filed the fourth revised version of the CAISO tariff that will be effective upon implementation of the CAISO’s Market Redesign and Technology Upgrade (“MRTU”). In the December 4 order, the Commission accepted the preponderance of the proposed MRTU tariff. Additionally, the Commission conditionally accepted certain revised tariff sheets subject to the outcome of matters pending before the Commission or acted on by the Commission since the CAISO’s filing, and ordered that the CAISO make certain compliance filings. This filing addresses the compliance filing requirements set forth in the December 4 order.

## **II. MRTU TARIFF REVISIONS**

In the December 4 order, the Commission specified several sets of revisions to the MRTU tariff to be filed within thirty days to comply with the order. The revisions submitted by the CAISO in this compliance filing are described below.

**A. Revisions to the Term “Control Area”**

In the CAISO’s original December 2007 filing of the fourth revised version of the CAISO tariff, the CAISO converted the vast majority of uses of the term “Control Area” in prior versions of the MRTU tariff to the term “Balancing Authority Area” and made conforming revisions to related terms. However, the CAISO advised the Commission that it had left a few additional uses of the term “Control Area” unmodified for various reasons, including the expectation that many of the remaining uses of this term would be proposed for conversion in conjunction with anticipated amendments to specific sections of the tariff that were proposed for amendment in separate filings.

In paragraph 49 of the December 4 order, the Commission directed the CAISO to revise remaining uses of “Control Area” terms that are not pending in other Commission dockets to conform to the “Balancing Authority Area” terminology. On review of the current version of the MRTU tariff, the CAISO has identified the following provisions that need to be revised to satisfy this directive: Sections 11.8.6.1(ii), 20.4(c)(ii), 20.4(c)(iii), 30.5.2.6.1, 30.5.2.6.3, and 39.7.2.3, and Appendix C, Sections A and D. The CAISO has made the appropriate revisions in the attached revised tariff sheets.

Regarding this compliance requirement, the CAISO notes that there will still be a few remaining uses of “Control Area” terms in the MRTU tariff following this filing. One instance, the use of the term “Control Area” in Section 11.10.7, will be revised in conjunction with the other revisions to the MRTU tariff provisions regarding Voltage Support described in Section II.C below and which the CAISO proposes to include as part of a tariff amendment filing along with additional changes relating to the Voltage Support tariff provisions that go beyond those directed by the Commission on compliance. However, the CAISO submits that the other remaining uses of “Control Area” terms in the MRTU tariff should be retained. The CAISO proposes to retain limited use of these terms in Appendix A to provide context for prior tariff provisions and for contracts and other documents that may have incorporated references to these terms. The CAISO also proposes to retain the use of these terms in Appendix F, Schedule 3, Sections 3.1, 3.3, and 3.4 because they refer to preexisting circumstances in which these terms were the operative references. Finally, the CAISO proposes to retain the use of these terms in the pro forma “Reliability Management System Agreement” attached to Appendices T and V because that is the term used in the pro forma version of that agreement as filed by the Western Electricity Coordinating Council with the Commission, which the CAISO has not revised in any respect. These are the only references to “Control Area” terms that will remain in the MRTU tariff.

**B. Revision to the Term “Energy Bid Price”**

In paragraph 56 of the December 4 order, the Commission directed the CAISO to change the term “Energy Bid Price” to “Energy Bid price” in Section 11.5.6.1(b) of the MRTU tariff, as the term “Energy Bid Price” is not a defined term. The CAISO has already made that revision in a prior filing. Therefore, no further revision to that provision is required in this filing.

**C. Revisions to Provisions Regarding Voltage Support and Black Start**

In paragraphs 58-61 of the December 4 order, the Commission directed the CAISO to make revisions proposed by the CAISO to Sections 11.10.7 and 11.10.8 of the MRTU tariff regarding Voltage Support and Black Start. However, in the interim period since the CAISO’s December 2007 filing, the CAISO has undertaken a stakeholder process regarding the provisions for Voltage Support and Black Start that has identified even further tariff clarifications consistent with the CAISO’s objective to adapt pre-existing tariff policies to be consistent with the MRTU tariff. The CAISO posted its more comprehensive set of MRTU tariff revisions for stakeholder review and comment prior to the December 4 order and received no stakeholder objections.<sup>1</sup>

Consequently, as requested in the simultaneously filed motion for extension of time to comply with paragraphs 58-61, the CAISO proposes to defer submitting the revisions to the provisions regarding Voltage Support and Black Start that were directed by the Commission in the December 4 order and to consolidate the directed revisions into a subsequent filing of additional revisions to the MRTU Tariff to be submitted pursuant to Section 205 of the Federal Power Act. The CAISO intends to submit this separate filing of MRTU tariff revisions by January 15, so there should be no adverse consequences for the Commission or for stakeholders. To the contrary, the more comprehensive and integrated approach to the revisions to the Voltage Support and Black Start provisions gained by virtue of the consolidation of the revisions directed by the Commission with the other revisions presented to stakeholders will benefit stakeholders and the Commission by permitting their review in context and in a single filing.

**D. Revisions to Provisions for Weighted Average Rate for Wheeling Service**

In paragraph 67 of the December 4 order, the Commission directed the CAISO to restore the formula for the weighted average rate for wheeling service to the MRTU tariff in response to comments on this matter. In its answer to those

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<sup>1</sup> The CAISO has posted the proposed revisions and stakeholder comments on the CAISO website ([www.caiso.com](http://www.caiso.com)) under the heading “Miscellaneous Tariff Clarifications” at the following internet address: <http://www.caiso.com/17ba/17ba873e19350.html>.

comments filed on February 19, 2008, the CAISO proposed to adopt a modified version of the approach to this matter advocated in the comments of WPTF. To this end, in the interim period prior to the December 4 order, the CAISO developed proposed MRTU tariff revisions adapted from the WPTF comments and posted them for stakeholder review and comment. The CAISO has received no objections to the posted proposed tariff revisions.

Consequently, in the attached, the CAISO has incorporated the revisions to Section 14.4 of Schedule 3 of Appendix F of the MRTU tariff previously posted for stakeholder review regarding which no stakeholder voiced objections. The CAISO submits that this specification of the formula for determining the weighted average rate for wheeling service is fully descriptive of that formula, consistent with the Commission's "rule of reason" in determining rates, terms, and conditions of service that must be incorporated into its tariff, and responsive to the comments of WPTF.

**E. Revisions to Provisions for Reversion to Current Tariff and Transition Back to MRTU Tariff in the Event of Problems with MRTU Implementation**

In paragraph 83 of the December 4 order, the Commission directed the CAISO to make a number of revisions to the provisions of Section 44 of the MRTU tariff addressing the process for potential reversion to the current version of the CAISO tariff and for the transition back to the MRTU tariff in the event the CAISO might encounter problems in its efforts to implement MRTU. The Commission directed that Section 44 be revised to specify (1) that the transition back to the MRTU tariff must at the beginning of a month, (2) that at least ten days must elapse prior to the transition back, and (3) that a minimum of thirty days must elapse prior to the transition back if the system correction requires changes to market participant processes or systems. The CAISO has incorporated the directed revisions in the revised provisions of Section 44.1 attached.

**F. Addition of Provision for Market Participant Access to Confidential Operating Procedures**

In paragraph 92 of the December 4 order, the Commission directed the CAISO to include a provision in the MRTU tariff that outlines how a market participant will receive access to confidential operating procedures through the non-disclosure agreement process. In the attached MRTU tariff revisions, the CAISO has included a proposed new Section 22.11.3 outlining the process for

this form of access to the CAISO's confidential operating procedures consistent with the CAISO's existing applicable publicly available operating procedure.<sup>2</sup>

### **III. OTHER COMPLIANCE ITEMS**

In addition to the specific tariff revisions directed by the Commission as described above, the December 4 order also directed the CAISO to submit an informational filing specifying the effective dates of the accepted tariff sheets for the MRTU tariff (in paragraph 119) and recommended that the CAISO provide a "tabletop walk-through" of its reversion plan, including the CAISO's settlement plans (in paragraphs 84 and 118). With regard to the first item, the CAISO plans to make an informational filing of the entire MRTU tariff with the appropriate effective date on all tariff sheets approximately two weeks prior to the effective date of the MRTU tariff. With regard to the second item, the CAISO discussed the reversion plan in its December 18, 2008 MRTU implementation workshop. In addition, the CAISO has scheduled a call to discuss the reversion plan on January 8, 2009 and will present its final cutover and reversion plan on January 22, 2009.

### **IV. COMMUNICATIONS**

The CAISO requests that all correspondence, pleadings, and other communications concerning this filing be served upon the following:

Michael D. Dozier\*  
Senior Counsel  
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System Operator Corporation  
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\* Individual designated for service pursuant to Rule 203(b)(3),  
18 C.F.R. § 385.203(b)(3).

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<sup>2</sup> Operating Procedure A-02, Development and Distribution of Operating Procedures is located on the CAISO website at the following internet address:  
<http://www.caiso.com/docs/2002/04/09/200204090852088429.pdf>.

**V. EFFECTIVE DATE AND CONDITIONAL REQUEST FOR WAIVER**

The CAISO requests that the Commission approve the changes in this compliance filing to be effective one day prior to the implementation date of MRTU. The earliest implementation date of MRTU is March 31, 2009.

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

**VI. CONTENT OF FILING**

In addition to this transmittal letter, the instant filing contains the following attachments:

- |              |   |
|--------------|---|
| Attachment A | Clean sheets showing compliance filing changes to the MRTU Tariff; and    |
| Attachment B | Blacklined text showing the compliance filing changes to the MRTU Tariff. |

**VII. CONCLUSION**

For the reasons set forth above, the CAISO respectfully requests that the Commission accept the proposed modifications to the MRTU Tariff, in compliance with the December 4 order.

The Honorable Kimberly D. Bose  
January 2, 2009  
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An additional copy of this filing is enclosed to be date-stamped and returned in the enclosed, pre-paid Federal Express envelope. If there are any questions concerning this filing, please contact the undersigned.

Respectfully submitted,

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Attachments

## **Certificate of Service**

I hereby certify that I have this day served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated this 2<sup>nd</sup> day of January, 2009 at Folsom, California.

\_\_\_\_\_  
Anna Pascuzzo



**Attachment A – Clean Sheets**

**4<sup>th</sup> Replacement CAISO Tariff (MRTU)**

**December 21, 2007 MRTU Tariff Filing Compliance Filing**

**January 5, 2009**

- (ii) The RUC Bid Cost Uplift shall be the net of the RUC Bid Cost Shortfalls and RUC Bid Cost Surpluses for a Settlement Interval of all Bid Cost Recovery Eligible Resources in the CAISO Balancing Authority Area with Unrecovered Bid Cost Uplift Payments.
- (iii) The RTM Bid Cost Uplift shall be the net of the RTM Bid Cost Shortfalls and RTM Bid Cost Surpluses for a Settlement Interval of all Bid Cost Recovery Eligible Resources with Unrecovered Bid Cost Uplift Payments.

**11.8.6.2 Sequential Netting of IFM, RUC and RTM Bid Cost Uplift.**

For each Settlement Interval, the Net IFM, RUC or Real-Time Market Bid Cost Uplift is determined for the purposes of allocating Net IFM, RUC or Real-Time Market Bid Cost Uplift by the following netting rules applied sequentially:

- (i) The Net IFM Bid Cost Uplift, if positive, is reduced to the greater of zero or any positive IFM Bid Cost Uplift offset by negative Real-Time Market Bid Cost Uplift first and offset by any negative RUC Bid Cost Uplift.
- (ii) The Net RUC Bid Cost Uplift is equal to the greater of zero or any positive RUC Bid Cost Uplift offset by any remaining negative Real-Time Market Bid Cost Uplift after netting negative Real-Time Market Bid Cost Uplift in (i) and offset by any negative IFM Bid Cost Uplift.
- (iii) The Net Real-Time Market Bid Cost Uplift is equal to the greater of zero or any positive Real-Time Market Bid Cost Uplift offset by any remaining negative RUC Bid Cost Uplift after netting negative RUC Bid Cost Uplift in (i) above and any remaining negative IFM Bid Cost Uplift after netting negative IFM Bid Cost Uplift in (ii).

disclosure. The CAISO shall provide the requested information to the FERC or its staff within the time provided for in the request for information. The CAISO shall notify an affected Market Participant within a reasonable time after the CAISO is notified by FERC or its staff that a request for disclosure of, or decision to disclose, the confidential or commercially sensitive information has been received, at which time the CAISO and the affected Market Participant may respond before such information would be made public; or

- (ii) In order to maintain reliable operation of the CAISO Balancing Authority Area, the CAISO may share critical operating information, system models, and planning data with the WECC Reliability Coordinator that has executed the Western Electricity Coordinating Council Confidentiality Agreement for Electric System Data, or is subject to similar confidentiality requirements; or
- (iii) In order to maintain reliable operation of the CAISO Balancing Authority Area, the CAISO may share individual Generating Unit Outage information with the operations engineering and the outage coordination division(s) of other Balancing Authorities, Participating TOs, MSS Operators and other transmission system operators engaged in the operation and maintenance of the electric supply system whose system is significantly affected by the Generating Unit and who have executed the Western Electricity Coordinating Council Confidentiality Agreement for Electric System Data.

the urgent BPM PRR at its next regularly scheduled meeting, or at a special meeting called by the BPM change management coordinator to consider the urgent BPM PRR. Any revisions to a BPM that take effect pursuant to an urgent BPM PRR shall be subject to a BPM PRR impact analysis.

**22.11.2 Changes to Business Practice Manual for BPM Change Management.**

Any changes to the Business Practice Manual for BPM change management shall require CAISO Governing Board approval.

**22.11.3 Requests for and Access to Nonpublic Operating Procedures**

Subject to agreed upon controls, the CAISO will make nonpublic Operating Procedures or portions thereof available to a single representative of an entity that may be affected operationally by the Operating Procedure or any proposed changes to the Operating Procedure. Such controls may include execution of a nondisclosure agreement or other measures to ensure limited access and usage of any nonpublic information. An entity that may merely be affected economically or financially by a nonpublic Operating Procedure or portion thereof is not entitled to access to that Operating Procedure pursuant to this Section 22.11.3. Any entity that believes it is affected operationally by a nonpublic Operating Procedure and desires access to that Operating Procedure shall notify the CAISO of its request for access to that Operating Procedure in accordance with the CAISO's Operating Procedure for access to Operating Procedures, and its request will be processed by the CAISO in accordance with that Operating Procedure.

**22.12 [Not Used]**

**22.13 Scheduling Responsibilities and Obligations.**

Nothing in this CAISO Tariff is intended to permit or require the violation of federal or California law concerning hydro-generation and Dispatch, including but not limited to fish release requirements, minimum and maximum dam reservoir levels for flood control purposes, and in-stream flow levels. In carrying out its functions, the CAISO will comply with and will have the necessary authority to give instructions to Participating TOs and Market Participants to enable it to comply with requirements of environmental legislation and environmental agencies having authority over the CAISO in relation to Environmental Dispatch and will expect that submitted Bids, including Self-Schedules will support compliance with the requirements of environmental legislation and environmental agencies having authority over Generators in relation to Environmental Dispatch. In contracting for Ancillary Services and Imbalance Energy the CAISO will not act as principal but as agent for and on behalf of the relevant Scheduling Coordinators.

**30.5.2.6.1 Regulation Up or Regulation Down Bid Information.**

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

**30.5.2.6.2 Spinning Reserve Capacity Bid Information.**

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

**30.5.2.6.3 Non-Spinning Reserve Capacity.**

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

**30.5.2.6.4 Additional Rules For Self-Provided Ancillary Services.**

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

assessment deems the constraint competitive. In general, a constraint may be an individual transmission line or a collection of lines that create a distinct transmission constraint. For purposes of the competitive assessment, the set of constraints that will be included in the network model are those modeled along with transmission limits to be enforced in the FNM used in clearing the CAISO Markets.

#### **39.7.2.3 Candidate Path Identification.**

The first assessment of competitive constraints will be determined prior to the effective date of this provision and will consider all interfaces to neighboring Balancing Authority Areas and all inter-zonal interfaces for zones that existed prior to the effective date of this provision to be competitive. The set of candidate constraints that will be evaluated for competitiveness in the initial assessment will be limited to intra-zonal constraints for zones that existed prior to the effective date of this provision, that were managed for Congestion in Real-Time in greater than five hundred (500) hours in the most recent twelve (12)-month period. The Congestion frequency threshold of five-hundred (500) hours for designation of competitive constraint candidates will be based on the combination of real-time intra-zonal congestion hours that pre-dated the effective date of this provision, and congestion in IFM and Real-Time markets after the effective date of this provision for the twelve (12) months of historical data. Subsequent assessments will again consider all pre-existing interfaces to neighboring Balancing Authority Areas and all inter-zonal interfaces to be competitive and will not be included in the set of candidate constraints for assessment. The set of candidate constraints will be further reduced to those remaining constraints that were congested or managed for congestion in greater than five hundred (500) hours in the prior twelve (12) months.

#### **39.7.2.4 Feasibility Index.**

The CAISO will perform a pivotal supplier test on all suppliers in the CAISO Balancing Authority Area for each path to be assessed using the Feasibility Index (FI). Suppliers will be considered in two groups: those suppliers with the largest portfolios will be considered in the preliminary simulations, and any additional suppliers who are likely to be pivotal given the competitive designations from the preliminary



**44 Temporary Suspension of CAISO Tariff.**

**44.1 Authority to Suspend Temporarily the Current Version of the CAISO Tariff and Reversion to Previously Effective ISO Tariff.**

If, during the thirty (30) days following the effective date of this section, the CAISO concludes that a hardware or software failure or other event has compromised the ability of the CAISO to reliably and accurately operate the CAISO Controlled Grid and CAISO Balancing Authority Area and settle the CAISO's markets in accordance with the currently-effective version of the CAISO Tariff and Business Practice Manuals, the CAISO may temporarily suspend the effectiveness of the currently-effective CAISO Tariff, or any part thereof, and operate under the terms and conditions of the ISO Tariff in effect on the day before the effective date of this section. In the event of such a suspension or partial suspension, the CAISO shall perform Settlements in accordance with a single version of the CAISO Tariff for the entire month in which the suspension occurred to the extent practicable. Upon restoration of the CAISO's ability to reliably and accurately operate the CAISO Controlled Grid and CAISO Balancing Authority Area and settle the CAISO's markets, the CAISO shall terminate such temporary suspension on the first of the month after a minimum of ten days' operations under the terms and conditions of the ISO Tariff in effect on the day before the effective date of this section unless Market Participants are required to change their process or systems, in which case a minimum of 30 days' operations are required.

**44.2 Notice of Effectiveness and Termination of Temporary Suspension.**

The CAISO shall issue a Market Notice announcing any temporary suspension declared under Section 44.1 and stating the reason for the suspension. The suspension shall take effect at the time and date specified by the CAISO in the Market Notice. Within five (5) Business Days after the issuance of the Market Notice announcing the temporary suspension, the CAISO shall file a report with FERC describing the reasons for the temporary suspension and the estimated time by which the suspension will be terminated. The CAISO shall issue a subsequent Market Notice announcing the time and date on which the termination of the temporary suspension will be effective.

**CAISO TARIFF APPENDIX C**  
**Locational Marginal Price**

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

**A. LMP Composition**

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

$$LMP_i = SMEC_r + MCC_i + MCL_i$$

$$LMP_r = SMEC_r$$

where:

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

- $FSP_k$  is the constraint Shadow Price on interface  $k$  and is equivalent to the reduction in system cost expressed in \$/MWh that results from an increase of 1MW of the capacity on interface  $k$ .

The Shadow Price at a given binding constraint is the value per MW of the next increment of generation that would flow across the constrained path by relaxing the binding constraint. The PTDF of a PNode with respect to a transmission path (and direction on the path) measures the change in the power flow through the path (positive or negative, with respect to the designated direction on the path) as a result of an incremental injection at the Node, balanced by incremental change of Load at the Reference Bus.

#### **D. Marginal Losses Component Calculation**

The CAISO calculates the Marginal Cost of Losses ( $MCL_i$ ) at each bus  $i$  as described in Section 27.1.1.2. The MCL component of the LMP at any bus  $i$  within the CAISO's Balancing Authority Area is calculated using the equation:

$$MCL_i = MLF_i * SMEC_r$$

Where:

- $MLF_i$  is the marginal loss factor for PNode  $i$  to the system Reference Bus, based on an AC power flow solution. The marginal loss factor at a PNode is the incremental change in the quantity (MW) of transmission losses in the network resulting when serving an increment of Load at the PNode from the Reference Bus.
  - $MLF_i$  is equal to  $1 - \partial L / \partial G_i$ , where:  $L$  is system losses,  $G_i$  is "generation injection" at PNode  $i$ ,  $\partial L / \partial G_i$  is the partial derivative of system losses with respect to generation injection at bus  $i$ , that is, the incremental change in system losses associated with an incremental change in the generation injections at bus  $i$  holding constant other injection and withdrawals at all buses other than the Reference Bus and bus  $i$ .

$SMEC_r$  is the SMEC at the Reference Bus,  $r$

- 13.5** Payment of Low Voltage Access Charge. Notwithstanding the separate accounting for the Low Voltage Access Charge specified in Section 26.1 of the CAISO Tariff and this Section 13 of this Schedule 3, if the same entity is both a Participating TO and a UDC or MSS Operator, then the monthly High Voltage Access Charge and Transition Charge amount, and any Low Voltage Access Charge amount pursuant to this Section 13 of this Schedule 3, billed by the CAISO will be the charges payable by the UDC or MSS Operator in accordance with Sections 26.1.2 and 26.1 of the CAISO Tariff less the disbursement determined in accordance with Section 10.1(d) of this Schedule 3. If this difference is negative, that amount will be paid by the CAISO to the Participating TO.
- 14. Wheeling Access Charges.**
- 14.1** CAISO Charges on Scheduling Coordinators for Wheeling. The CAISO will charge Scheduling Coordinators for a Wheeling Out or a Wheeling Through transaction the product of the Wheeling Access Charge and the total of the hourly Schedules or awards of Wheeling in MWh for each Trading Interval at each Scheduling Point associated with that transaction pursuant to Section 26.1.4 of the CAISO Tariff.
- 14.2** Wheeling Access Charge. The Wheeling Access Charge for each Participating TO shall be as specified in Section 26.1.4 of the CAISO Tariff.
- 14.3** CAISO Payments to Transmission Owners for Wheeling. The CAISO will pay all Wheeling revenues to Participating TOs on the basis of the ratio of each Participating TO's Transmission Revenue Requirement (less the TRR associated with Existing Rights) to the sum of all Participating TOs' TRRs (less the TRRs associated with Existing Rights) as specified in Section 26.1.4.3 of the CAISO Tariff and in the applicable Business Practice Manual. The Low Voltage Wheeling Access Charge shall be disbursed to the appropriate Participating TO in accordance with the applicable Business Practice Manual.
- 14.4** Weighted Average Rate for Wheeling Service. The weighted average rate payable for Wheeling over joint facilities at each Scheduling Point shall be calculated as the sum of the applicable Wheeling Access Charge rates for each applicable TAC Area or Participating TO as these rates are weighted by the ratio of the Available Transfer Capability for each Participating TO at the particular Scheduling Point to the total Available Transfer Capability for the Scheduling Point. The calculation of this rate is set forth in more detail in the applicable Business Practice Manual.

**Attachment B - Blacklines**

**4<sup>th</sup> Replacement CAISO Tariff (MRTU)**

**December 21, 2007 MRTU Tariff Filing Compliance Filing**

**January 5, 2009**

\* \* \*

#### **11.8.6 System-wide IFM, RUC and RTM Bid Cost Uplift Allocation.**

##### **11.8.6.1 Determination of IFM, RUC and RTM Bid Cost Uplift.**

For each Settlement Interval, the CAISO shall determine the IFM, RUC and RTM Bid Cost Uplift for purposes of allocating the IFM, RUC and RTM Bid Cost Uplift as described below. In determining the IFM, RUC and RTM Bid Cost Uplifts below, the Unrecovered Bid Cost Uplift Payments for MSS BCR Eligible Resources in Metered Subsystems where the MSS Operator has elected net Settlement will be included on an MSS basis and not on an individual resource basis.

- (i) The IFM Bid Cost Uplift shall be the net of the IFM Bid Cost Shortfalls and IFM Bid Cost Surpluses for a Settlement Interval of all Bid Cost Recovery Eligible Resources with Unrecovered Bid Cost Uplift Payments.
- (ii) The RUC Bid Cost Uplift shall be the net of the RUC Bid Cost Shortfalls and RUC Bid Cost Surpluses for a Settlement Interval of all Bid Cost Recovery Eligible Resources in the CAISO [Balancing Authority Control](#) Area with Unrecovered Bid Cost Uplift Payments.
- (iii) The RTM Bid Cost Uplift shall be the net of the RTM Bid Cost Shortfalls and RTM Bid Cost Surpluses for a Settlement Interval of all Bid Cost Recovery Eligible Resources with Unrecovered Bid Cost Uplift Payments.

\* \* \*

#### **20.4 Disclosure.**

Notwithstanding anything in this Section 20 to the contrary,

- (a) The CAISO: (i) shall publish individual Bids, provided that such data are published no sooner than six (6) months after the Trading Day with respect to which the Bid was submitted and in a manner that does not reveal the specific resource or the name of the Scheduling Coordinator submitting the Bid, but that allows the bidding behavior of individual, unidentified resources and Scheduling Coordinators to be tracked over time; and (ii) may publish data sets analyzed in any public report issued by the CAISO or by the Market Surveillance Committee,

provided that such data sets shall be published no sooner than six (6) months after the latest Trading Day to which data in the data set apply, and in a manner that does not reveal any specific resource or the name of any Scheduling Coordinator submitting Bids included in such data sets.

- (b) If the CAISO is required by applicable laws or regulations, or in the course of administrative or judicial proceedings, to disclose information that is otherwise required to be maintained in confidence pursuant to this Section 20, the CAISO may disclose such information; provided, however, that as soon as the CAISO learns of the disclosure requirement and prior to making such disclosure, the CAISO shall notify any affected Market Participant of the requirement and the terms thereof. The Market Participant may, at its sole discretion and own cost, direct any challenge to or defense against the disclosure requirement and the CAISO shall cooperate with such affected Market Participant to the maximum extent practicable to minimize the disclosure of the information consistent with applicable law. The CAISO shall cooperate with the affected Market Participant to obtain proprietary or confidential treatment of confidential information by the person to whom such information is disclosed prior to any such disclosure.
- (c) The CAISO may disclose confidential or commercially sensitive information, without notice to an affected Market Participant, in the following circumstances:
  - (i) If the FERC, or its staff, during the course of an investigation or otherwise, requests information that is confidential or commercially sensitive. In providing the information to FERC or its staff, the CAISO shall take action consistent with 18 C.F.R. §§ 1b.20 and 388.112, and request that the information be treated as confidential and non-public by the FERC and its staff and that the information be withheld from public disclosure. The CAISO shall provide the requested information to the FERC or its staff within the time provided for in the request for information. The CAISO shall notify an affected Market Participant within

a reasonable time after the CAISO is notified by FERC or its staff that a request for disclosure of, or decision to disclose, the confidential or commercially sensitive information has been received, at which time the CAISO and the affected Market Participant may respond before such information would be made public; or

- (ii) In order to maintain reliable operation of the CAISO [Balancing Authority Control](#) Area, the CAISO may share critical operating information, system models, and planning data with the WECC Reliability Coordinator that has executed the Western Electricity Coordinating Council Confidentiality Agreement for Electric System Data, or is subject to similar confidentiality requirements; or
- (iii) In order to maintain reliable operation of the CAISO [Balancing Authority Control](#) Area, the CAISO may share individual Generating Unit Outage information with the operations engineering and the outage coordination division(s) of other Balancing Authorities, Participating TOs, MSS Operators and other transmission system operators engaged in the operation and maintenance of the electric supply system whose system is significantly affected by the Generating Unit and who have executed the Western Electricity Coordinating Council Confidentiality Agreement for Electric System Data.

(d) Notwithstanding the provisions of Section 20.2(e), information submitted through Resource Adequacy Plans and Supply Plans in accordance with Section 40 may be provided to:

- (i) the Scheduling Coordinator(s) and/or Market Participant(s) involved in a dispute or discrepancy as to whether a resource is properly identified in a Resource Adequacy Plan or a Supply Plan only to the limited extent necessary to identify the disputed transaction and the relevant counterparty or counterparties.



- (ii) the regulatory entity, whether the CPUC, other Local Regulatory Authority, or federal agency, with jurisdiction over a Load Serving Entity involved in a dispute or discrepancy as to whether a resource is properly identified in a Resource Adequacy Plan or the Supply Plan, or otherwise identified by the CAISO as exhibiting a potential deficiency in demonstrating compliance with resource adequacy requirements adopted by the CPUC, other Local Regulatory Authority, or federal agency, as applicable. The information provided shall be limited to the particular dispute, discrepancy, or deficiency.
  - (iii) the California Energy Commission with respect to Demand Forecast information provided to the CAISO under Sections 40.2.2.3 and 40.2.3.3(b) to the extent the CAISO seeks, and the California Energy Commission grants, confidential treatment of such information pursuant to California Public Resources Code Section 25322 and related regulations.
- (e) Notwithstanding the provisions of Section 20.2(f), information submitted through the Transmission Planning Process may be disclosed as follows:
  - (i) Critical Energy Infrastructure Information may be provided to a requestor where such person is employed or designated to receive CEII by: (a) a Market Participant; (b) an electric utility regulatory agency within California; (c) an Interconnection Customer that has submitted an Interconnection Request to the CAISO under the CAISO's Large Generator Interconnection Procedure or Small Generator Interconnection Procedure (LGIP or SGIP); (d) a developer having a pending or potential proposal for development of a Generating Facility or transmission addition, upgrade or facility and that is performing studies in contemplation of filing an Interconnection Request or submitting a transmission infrastructure project through the ISO Transmission

Planning Process; or (e) a not-for-profit organization representing consumer regulatory or environmental interests before Local Regulatory Authority or federal regulatory agency. To obtain Critical Energy Infrastructure Information, the requestor must submit a statement as to the need for the CEII, and must execute and return to the CAISO the form of the non-disclosure agreement and non-disclosure statement included as part of the Business Practice Manual. The CAISO may, at its sole discretion, reject a request for CEII and upon such rejection, the requestor will be directed to utilize the FERC procedures for access to the requested CEII.

- (ii) Information that is confidential under Section 20.2(f)(i) or 20.2(f)(ii) may be disclosed to any individual designated by a Market Participant, electric utility regulatory agency within California, or other stakeholder that signs and returns to the CAISO the form of the non-disclosure agreement, nondisclosure statement and certification that the individual is a non-Market Participant, which is any person or entity not involved in a marketing, sales, or brokering function as market, sales, or brokering are defined in FERC's Standards of Conduct for Transmission Providers (18 C.F.R. § 358 et seq.), included as part of the Business Practice Manual; provided, however, that information obtained pursuant to 20.2(f)(ii) will be provided only in composite form so that information related to individual Load Serving Entities or Scheduling Coordinators will not be disclosed; and
- (iii) Data base and other transmission planning information obtained from the WECC, or its successor, may be disclosed to individuals designated by a Market Participant, electric utility regulatory agency within California, or other stakeholder in accordance with the procedures set forth in the Business Practice Manual.

Nothing in this Section 20 shall limit the ability of the CAISO to aggregate data for public release about the adequacy of supply.

\* \* \*

### **22.11.3 Requests for and Access to Nonpublic Operating Procedures**

Subject to agreed upon controls, the CAISO will make nonpublic Operating Procedures or portions thereof available to a single representative of an entity that may be affected operationally by the Operating Procedure or any proposed changes to the Operating Procedure. Such controls may include execution of a nondisclosure agreement or other measures to ensure limited access and usage of any nonpublic information. An entity that may merely be affected economically or financially by a nonpublic Operating Procedure or portion thereof is not entitled to access to that Operating Procedure pursuant to this Section 22.11.3. Any entity that believes it is affected operationally by a nonpublic Operating Procedure and desires access to that Operating Procedure shall notify the CAISO of its request for access to that Operating Procedure in accordance with the CAISO's Operating Procedure for access to Operating Procedures, and its request will be processed by the CAISO in accordance with that Operating Procedure.

\* \* \*

### **30.5.2.6.1 Regulation Up or Regulation Down Bid Information.**

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

\* \* \*

### **30.5.2.6.3 Non-Spinning Reserve Capacity.**

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

\* \* \*

### **39.7.2.3 Candidate Path Identification.**

The first assessment of competitive constraints will be determined prior to the effective date of this provision and will consider all interfaces to neighboring [Balancing Authority Control](#) Areas and all inter-zonal interfaces for zones that existed prior to the effective date of this provision to be competitive. The set of candidate constraints that will be evaluated for competitiveness in the initial assessment will be limited to intra-zonal constraints for zones that existed prior to the effective date of this provision, that were managed for Congestion in Real-Time in greater than five hundred (500) hours in the most recent twelve (12)-month period. The Congestion frequency threshold of five-hundred (500) hours for designation of competitive constraint candidates will be based on the combination of real-time intra-zonal congestion hours that pre-dated the effective date of this provision, and congestion in IFM and Real-Time

markets after the effective date of this provision for the twelve (12) months of historical data. Subsequent assessments will again consider all pre-existing interfaces to neighboring [Balancing Authority control Areas](#) and all inter-zonal interfaces to be competitive and will not be included in the set of candidate constraints for assessment. The set of candidate constraints will be further reduced to those remaining constraints that were congested or managed for congestion in greater than five hundred (500) hours in the prior twelve (12) months.

\* \* \*

#### **44 Temporary Suspension of CAISO Tariff.**

##### **44.1 Authority to Suspend Temporarily the Current Version of the CAISO Tariff and Reversion to Previously Effective ISO Tariff.**

If, during the thirty (30) days following the effective date of this section, the CAISO concludes that a hardware or software failure or other event has compromised the ability of the CAISO to reliably and accurately operate the CAISO Controlled Grid and CAISO Balancing Authority Area and settle the CAISO's markets in accordance with the currently-effective version of the CAISO Tariff and Business Practice Manuals, the CAISO may temporarily suspend the effectiveness of the currently-effective CAISO Tariff, or any part thereof, and operate under the terms and conditions of the ISO Tariff in effect on the day before the effective date of this section. In the event of such a suspension or partial suspension, the CAISO shall perform Settlements in accordance with a single version of the CAISO Tariff for the entire month in which the suspension occurred to the extent practicable. ~~The CAISO shall terminate such temporary suspension immediately u~~Upon restoration of the CAISO's ability to reliably and accurately operate the CAISO Controlled Grid and CAISO Balancing Authority Area and settle the CAISO's markets, the CAISO shall terminate such temporary suspension on the first of the month after a minimum of ten days' operations under the terms and conditions of the ISO Tariff in effect on the day before the effective date of this section unless Market Participants are required to change their process or systems, in which case a minimum of 30 days' operations are required.

\* \* \*

## **CAISO TARIFF APPENDIX C Locational Marginal Price**

\* \* \*

## A. LMP Composition

In each hour of the Day-Ahead Market for Energy, the CAISO calculates the LMP for each PNode, which is equal to the marginal cost of Energy available at the PNode in the hour, based on the Bids of sellers and buyers selected in the Day-Ahead Market for Energy as specified in the Day-Ahead Schedule. The CAISO designates a Reference Bus,  $r$ , for calculation of the System Marginal Energy Cost (SMEC $_r$ ). The CAISO uses a distributed Reference Bus to define an aggregate value of Energy for the CAISO

[Balancing AuthorityControl](#) Area. The Locational Marginal Prices are determined by resources that are not eligible to set the Locational Marginal Price, which includes resources that have constraints that prevent them from being marginal. For each bus other than the Reference Bus, the Transmission Provider determines separate components of the LMP for the marginal cost of Energy, Marginal Cost of Congestion, and Marginal Cost of Losses relative to the Reference Bus, consistent with the following equation:

$$LMP_i = SMEC_r + MCC_i + MCL_i$$

$$LMP_r = SMEC_r$$

where:

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

\* \* \*

## D. Marginal Losses Component Calculation

The CAISO calculates the Marginal Cost of Losses (MCL $_i$ ) at each bus  $i$  as described in Section 27.1.1.2.

The MCL component of the LMP at any bus  $i$  within the CAISO's [Balancing AuthorityControl](#) Area is calculated using the equation:

$$MCL_i = MLF_i * SMEC_r$$

Where:

- MLF $_i$  is the marginal loss factor for PNode  $i$  to the system Reference Bus, based on an AC power flow solution. The marginal loss factor at a PNode is the incremental change in the quantity (MW)

of transmission losses in the network resulting when serving an increment of Load at the PNode from the Reference Bus.

- $MLF_i$  is equal to  $1 - \partial L / \partial G_i$ , where:  $L$  is system losses,  $G_i$  is “generation injection” at PNode  $i$ ,  $\partial L / \partial G_i$  is the partial derivative of system losses with respect to generation injection at bus  $i$ , that is, the incremental change in system losses associated with an incremental change in the generation injections at bus  $i$  holding constant other injection and withdrawals at all buses other than the Reference Bus and bus  $i$ .
- $SMEC_r$  is the SMEC at the Reference Bus,  $r$ .
- $MCC_i$  is the LMP component representing the Marginal Cost of Congestion (also referred to as  $\rho$ ) at bus  $i$  relative to the Reference Bus.
- $MCL_i$  is the LMP component representing the Marginal Cost of Losses (also referred to as  $\gamma$ ) at bus  $i$  relative to the Reference Bus.

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**CAISO TARIFF APPENDIX F**  
**Schedule 3**  
**High Voltage Access Charge and Wheeling Access Charge**

\* \* \*

**14.4** Weighted Average Rate for Wheeling Service. The weighted average rate payable for Wheeling over joint facilities at each Scheduling Point shall be calculated as the sum of the applicable Wheeling Access Charge rates for each applicable TAC Area or Participating TO as these rates are weighted by the ratio of the Available Transfer Capability for each Participating TO at the particular Scheduling Point to the total Available Transfer Capability for the Scheduling Point. The calculation of this rate is set forth in more detail in the applicable Business Practice Manual.

\* \* \*