California Independent
System Operator Corporation

July 30, 2009

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

Re: California Independent System Operator Corporation Compliance Filing

Docket Nos. ER09-___

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act (FPA), 16 U.S.C. § 824d, and Section 35.13 of the regulations of the Federal Energy Regulatory Commission (Commission or FERC), 18 C.F.R. § 35.13 (2007), the California Independent System Operator Corporation (ISO) respectfully submits for filing an original and five copies of an amendment to the ISO's FERC Electric Tariff.[1]

The ISO is also tendering two additional copies of this filing. Please time and date stamp these two additional copies and return to the ISO in the pre-paid and self-addressed envelope provided with this filing.

The ISO submits this filing in order to implement the following three changes: (1) modify the restriction on the frequency with which a resource can modify its election of how to recover Start-Up and Minimum Load Costs from once every six months to once every thirty days, modify the cap on the amount of recoverable Start-Up Costs and Minimum Load Costs under one of the options the resources owner may elect, and modify the formula for calculating the gas price used in determining the cap amount; (2) simplify the financial settlements of congestion revenue rights (CRRs) to reflect credits and charges as they will actually be reflected in the settlement invoice by eliminating the current tracking requirement that the hourly CRR settlement charges be pro-rated to reflect a deficiency or surplus in the hourly congestion revenues; and (3) provide a rule for

[1] The ISO is also 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.

determining the locational marginal price (LMP) for an electrically disconnected pricing node (PNode). The ISO respectfully requests that these tariff changes be made effective as of August 1, 2009.

I. Background

On February 9, 2006, in Docket No. ER06-615, the ISO submitted for filing to the Commission substantial changes to the then-effective Tarff for the purposes of implementing the new LMP-based markets. On April 1, 2009, pursuant to a series of orders, compliance filings, stakeholder processes, and further enhancements and refinements of the software requirements, the ISO implemented the new market design. Following the launch of the new market design, the ISO has been working closely with stakeholders and market participants to evaluate the performance of the market as designed and implemented.

The overall market experience over the past four months has been positive. The ISO has been closely observing the market and operational results and has been in close consultation with market participants regarding their market experiences. These efforts continue as the ISO enters the fifth month of operations under the new market design.

As a result of the monitoring efforts thus far, the ISO has identified the following three sets of tariff modifications:

- Modify the restriction on the frequency with which a resource owner can modify its election of how to recover Start-Up and Minimum Load Costs from once every six months to once every thirty days and modify the cap on the amount of recoverable Start-Up and Minimum Load Costs under one of the options the resource owner may elect;

- Simplify the financial settlements of CRRs to reflect credits and charges that will actually be made in each invoice. To this end, the ISO proposes to eliminate the current tracking requirement that the hourly CRR settlement charges be pro-rated to reflect a deficiency or surplus in the hourly congestion revenues; and

- Provide a rule for determining the locational marginal price (LMP) for an electrically disconnected pricing node (PNode).

II. Discussion of Proposed Tariff Changes

A. Start Up and Minimum Load Costs

1. Proposed Tariff Changes

Under the ISO's new market, Generating Units and Resource-Specific System Resources are eligible to recover Start-Up Costs and Minimum Load Costs when the ISO commits these generation resources. The ISO's market software considers the resources' Start-Up Costs and Minimum Load Costs in its optimization. Pursuant to Section 30.4 of the ISO Tariff, Scheduling Coordinators for Generating Units and Resource-Specific System Resources may elect either of two options – the Proxy Cost option or the Registered Cost option – for specifying the Start-Up Costs and Minimum Load Costs to be used for those resources in the ISO's Markets. Currently, Section 30.4 permits Scheduling Coordinators to choose one or the other of these options "on a semi-annual basis," i.e., every six months.

Under the Proxy Cost option, the owner of a natural gas-fired resource may submit cost-based offers for its Start-Up Costs and Minimum Load Costs that are adjusted on a daily basis using a formula that depends on natural gas prices. Because this option is linked to the price of natural gas, the option gives the resource owner protection against fuel-cost risks. For all other resources, the Proxy Cost option is based on the relevant cost information of the particular resource maintained in the ISO's Master File.

Currently, under the Registered Cost option, the resource owner may submit Start-Up Costs and Minimum Load Costs at any level that does not exceed the cap specified in Section 39.6.1.6 of the ISO Tariff, which is either 200% or 400% of the resource's Projected Proxy Cost, depending on whether the resource is located in a Local Capacity Area. As set forth in Section 39.6.1.6.1 of the ISO Tariff, for natural gas-fired resources, the Projected Proxy Cost is a gas price calculated by the ISO after the twenty-first day of each month and posted on the ISO's website by the end of the month. Currently, the ISO calculates the gas price based in relevant part on daily prices for New York Mercantile Exchange ("NYMEX") futures contracts at Henry Hub and for basic swaps that are averaged over the first twenty-one days of the month for each of six monthly contracts over a forward-looking six-month period. For non-gas-fired resources, the Projected Proxy Cost is calculated using the information contained in the Master File.

Many resource owners elected the Proxy Cost option at the start of the ISO's new market. Following the implementation of its new market, the ISO's experience has been that resources that elect the Proxy Cost option often have lower Start-Up Costs and Minimum Load Costs than resources that elect the Registered Cost option. Because the ISO software commits resources in its

markets based in part on resources' Start-Up Costs and Minimum Load Costs, the lower values of those costs under the Proxy Cost option, and the many resources owners that elected the Proxy Cost option, have led the ISO frequently to commit resources that are subject to that option. Specifically, since the start of the ISO's new market, the ISO software has committed "quick-start" resources at minimum output (PMin) for a short period of time in the Real-Time Market, and then de-committed them, more frequently than occurred under the ISO's former market.

The owners of these resources have explained to the ISO that this practice makes it difficult for them to recoup their operating costs, in two respects. First, the practice causes increased wear and tear on the quick-start resources that is not accounted for under the Proxy Cost option. The resource owners have also stated that some of the quick-start resources are also subject to environmental restrictions on their annual or seasonal number of starts and that several of the quick-start resources have already used up a significant fraction of their total seasonal or annual allocation of starts. The opportunity cost of starting a resource subject to these environmental restrictions is not incorporated into the Proxy Cost option. With the benefit of hindsight, the resource owners have stated that they would rather have elected the Registered Cost option at the start of the ISO's new market.

To address these concerns, the ISO proposes, as an interim measure, pending stakeholder discussion and development of more comprehensive modifications to the ISO software, to modify Sections 30.4 and 30.4(2) of the ISO Tariff to give resource owners more flexibility in choosing whether to elect the Proxy Cost option or the Registered Cost option. Pursuant to revised Section 30.4, Scheduling Coordinators may choose between the Proxy Cost option and the Registered Cost option every thirty days rather than every six months. Further, pursuant to revised Section 30.4(2), the Start-Up Cost and Minimum Load Cost values utilized in the ISO markets will be pre-specified values that will be fixed for a minimum of thirty days (rather than being fixed for six months) in the Master File unless the resource's costs, as calculated pursuant to the Proxy Cost option, exceed the Registered Cost option, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost option for the balance of any thirty-day period. Giving Scheduling Coordinators the ability to make this more frequent choice between the Proxy Cost option and the Registered Cost option will give them more flexibility to choose the option that better represents their Start-Up and Minimum Load costs in light of the way their resources are actually being committed in the ISO's new market.

The ISO also proposes to modify Section 39.6.1.6 of the ISO Tariff to state that the maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for all resources (not just resources located within a Local Capacity Area) that elect the Registered Cost option is limited to 200% of the Projected Proxy Cost. The ISO proposes this tariff change

based largely on input provided by the Market Surveillance Committee ("MSC"). The MSC, in comments prepared during the stakeholder process that led to the submittal of this tariff amendment, expressed concern that "increas[ing] the frequency that generation units are able to adjust their SU [Start-up] and ML [Minimum Load] offers and switch to the cost-based option could significantly enhance the ability of generation unit owners to withhold capacity in order to raise wholesale prices." The MSC also found that, "particularly for units located outside of LCR [Locally Constrained Regions, or Local Capacity Areas] there is the potential that these units could exercise significant market power through their SU and ML offers with DMM [the ISO's Department of Market Monitoring] having little ability to prevent these market outcomes." The MSC stated that one possible solution to these market power issues would be to couple the thirty-day election of options discussed above with lowering the cap set forth in Section 39.6.1.6 to 200% of the Projected Proxy Cost for resources located both inside and outside a Local Capacity Area. The ISO believes that this tariff change will continue to provide resource owners with sufficient bidding flexibility, particularly since, under the tariff changes proposed herein, resource owners only have to manage thirty days of gas price risk as opposed to having to manage six months of such risk under the current ISO Tariff provisions.

The ISO also proposes changes to the calculation of the Projected Proxy Cost gas price to make that calculation consistent with the thirty-day election provisions contained in revised Sections 30.4 and 30.4(2) discussed above. In this regard, the ISO proposes to modify Section 39.6.1.6.1 of the ISO Tariff to state that the Projected Proxy Cost gas price will be based on daily prices for NYMEX futures contracts at Henry Hub and for basic swaps that are averaged for each monthly contract over the first twenty-one days of the month for only the next one-month period (rather than for a forward-looking six-month period). Further, the ISO proposes to modify the definition of "Projected Proxy Cost" contained in Appendix A to the ISO Tariff, in order to simplify the definition, and conform it to the other tariff changes discussed above.

2. Stakeholder Process and Related Issues

The issues with the options for Start-Up and Minimum Load costs discussed above arose after resource owners that elected the Proxy Cost option explained to the ISO that they found it was difficult for them to recoup their operating costs under the ISO's current resource commitment process. The ISO then developed suggested proposals for dealing with the issues and presented the proposals for stakeholder review. These suggested proposals consist of revisions to the ISO Tariff, which are being submitted in the instant filing, and possible additional solutions that the ISO is still in the process of discussing with stakeholders for a future tariff amendment.

On June 17, 2009, the ISO gave a presentation to stakeholders and the MSC on these issues and requested that stakeholders provide any written

comments by June 26. Six stakeholders provided written comments, none of which expressed opposition to the changes proposed herein. The ISO requested authorization from the ISO Governing Board ("Board") to prepare and file the tariff changes discussed above at the Board meeting held on July 20. On July 21, the ISO posted on its website draft tariff changes for stakeholder review. On July 27, the ISO held a stakeholder meeting at which no stakeholder raised any objection to the proposed tariff changes.

The ISO's Department of Market Monitoring ("DMM") also supports the proposed tariff changes as a reasonable interim measure that balances the ISO's desire to promptly address the concerns of generation operators with the need for continued mitigation of potential market power. DMM notes that while allowing generating unit owners to modify their Start-Up and Minimum Load costs under the Registered Cost option on a 30-day basis may increase the number of owners that select this option, the proposal should avoid extremely high costs under the Registered Cost option in two ways. First, as previously noted, Registered Cost bids would be limited to 200% of the Projected Proxy Cost for all units, including those outside of Local Capacity Areas. In addition, DMM notes that under the tariff modifications the gas futures prices used in determining Projected Proxy Costs will be based on gas futures prices for only one month in advance, rather than being set by the maximum monthly gas futures price over the next six-month period. This will reduce cases where the Projected Proxy Costs for a month may be significantly higher than actual costs that month due to a spike in gas futures prices during a different month of the forward-looking six-month period used in determining Projected Proxy Costs. Finally, DMM also supports the proposed tariff changes due to the fact that they are explicitly being proposed as an interim measure, pending stakeholder discussion and development of more comprehensive modifications to the ISO software.

B. CRR Hourly Settlement

1. Proposed Tariff Changes

The ISO Tariff currently requires that CRRs, which are settled hourly, be fully funded through the clearing of the monthly CRR balancing account. The CRR balancing account is funded through the hourly net congestion revenue received from the Integrated Forward Market (IFM) congestion revenues and the net revenues from the CRR annual and monthly auctions for any given month. In an effort to track whether sufficient net congestion revenue is recovered in each hour of the IFM to cover the CRR holdings for that hour, the ISO Tariff requires the ISO to pro-rate CRR payments and charges for each hourly settlement during which an inadequate amount of integrated forward market net congestion revenue is collected, exclusive of any supplementation from the CRR auction revenues, to cover the CRR entitlements for that hour. The tariff then requires a subsequent monthly true-up of both CRR Payments and CRR Charges in the

clearing of the CRR Balancing Account, including the use of the CRR auction revenues as needed to ensure full funding of the CRR entitlements.

Based on its experience thus far with the new market, the ISO has determined that the hourly pro-ration, which is ultimately reversed in the monthly clearing of the CRR balancing account, is causing unnecessary accounting issues and is creating the misperception that CRR Holders either will not be paid in full for their CRRs or will be charged for any shortages of the hourly settlement account. As noted above, the hourly pro-ration is only an accounting device and has no impact on the final dollar amounts paid or charged to CRR holders in the monthly settlement invoice. The ISO's full funding requirement, which is reflected in Sections 36.2.8 and 11.2.4.4.1 of the ISO Tariff, ensure full funding of CRR holdings regardless of any hourly insufficiencies in IFM revenue adequacy that may be experienced. Moreover, elimination of the pro-ration mechanism will not in any way compromise the completeness or transparency of information available to market participants regarding hourly CRR revenue adequacy. The ISO tracks revenue adequacy separately and provides this information to market participants in two forms. First, its Day-Ahead Daily Market Watch provides hourly data on CRR revenue adequacy, and daily and cumulative data on congestion rents in the Day-Ahead Market, CRR payments, CRR revenue adequacy, and the ratio between congestion rents and CRR payments (the "adequacy ratio"). Then, the monthly Market Performance Report repeats the monthly status and describes analyses of CRR revenue adequacy. In contrast, while the pro-rationing tariff provision ensures that the daily market participant settlement statements reflect the hourly adjustments to account for the hourly revenue insufficiency, it does not provide an adequate picture of the overall market revenue sufficiency. Finally, as discussed further below, the pro-rationing provision adds a needless and confusing complexity to the ongoing calculations of market participant credit requirements, which are based on each participant's daily market transactions and do not reflect the eventual reversal of the pro-rationing through the monthly clearing of the CRR balancing account. The ISO and stakeholders have therefore determined that the existing pro-rationing provision creates confusion and complexity without any offsetting benefits.

Accordingly, the ISO proposes to remove this requirement from the tariff so that in the hourly settlement, if there is a shortage of net congestion revenue in the integrated forward market, there will not be any pro-ration to the hourly settlement of CRRs. Instead, the ISO will reflect the hourly CRR payments and charges in accordance with the full funding provisions, as they will be made at the end of the month through the CRR Balancing Account.

The following example demonstrates how the removal of the hourly pro-ration of CRR entitlements will not affect the CRR settlement either for individual CRR holders or for the market as a whole through the clearing of the CRR balancing account.

Entitlement amount	Per business associate, the total entitlement amount is the sum of entitlement amounts for all its CRR holdings. This does not change regardless of what ratio the ISO uses. For the sake of simplicity, in this example assume one CRR with a total entitlement amount of 100 MWs.	
	Below, the Entitlement Amount is the CRR MW entitlement quantity multiplied by the price differential of the marginal costs of congestion (MCC) at the sink and the MCC at the source node.	
	Case 1: With pro-ration (not equal to 1)	**Case 2: Without pro-ration (or ratio set always equal to 1)**
Entitlement amount	$10,000	$10,000
Charge Code 6700 (calculated daily, total for month-end) – applies pro-ration	$7,500	$10,000
Charge Code 6728 (calculated monthly) – applies true up to entitlement due to pro-ration	$2,500	$0
Invoice at month-end (total of Charge Codes 6700 and 6728)	=$7,500 + $2,500 = $10,000	=$10,000 + $0 = $10,000

Charge Code Descriptions	
Charge Code 6700 CRR Hourly Settlement	Entitlement amount times the pro-ration.
Charge Code 6728 CRR Monthly True-Up	Difference between the entitlement amount and the settlement amount under Charge Code 6700.

This simple example shows that due to the full-funding requirement, at the end of the month, the settlement of CRR entitlements hourly settlement is not affected by the hourly pro-ration. For the sake of simplification and for illustrative purposes only, assume that the CRR Holder has one CRR for an assumed CRR entitlement of 100 MWs, which is multiplied by the delta of the MCC at the locations by which the CRR is defined, the result is total entitlements value for a given hour of $10,000. Assume there is a deficiency of IFM congestion revenues for this hour, such that the required ratio under the existing provision for pro-rationing CRR payments and charges equals 0.75 or 75%. With the application of the hourly pro-ration currently in Charge Code 6700, the hourly settlement for the CRR entitlement is $7,500. Without the pro-ration the hourly settlement is $10,000, i.e., the full value of the entitlement. Under the current tariff provision, having applied the pro-ration to this particular hour, at the end of the month the ISO then effectuates a monthly true-up of $2,500 in order to honor the full funding requirement. In Case 2, which reflects the proposed elimination of the pro-ration (or with the ratio set to 1), there is no true-up needed or performed (or

in other words, the true up value equals $0). Moreover, because CRRs are subject to the clearing of the balancing account on a monthly basis, even under the current provisions the hourly pro-rated amount is never actually paid or charged. In the end, the total entitlement of $10,000, is paid in total in both cases. Finally, because all the settlements for individual CRR holders are ultimately unaffected by the pro-rationing provision when the CRR Balancing Account is cleared, the proposed elimination of the provision has no financial impact on the final monthly balance in the CRR Balancing Account and hence no impact on the market as a whole when the account is cleared.

This change will be accomplished by setting the hourly ratio in the configuration guides to one so that there is no impact as a result of the calculation. The ISO chose to implement this change in this manner so that it may be implemented immediately and does not require significant changes to the settlements configuration and Business Practices Manuals (BPMs).

2. Stakeholder Process on the CRR Hourly Settlement and Related Issues

The need for considering the proposed change to the CRR hourly settlement first came to the ISO's attention shortly after the start of the new market system as the result of the daily credit runs and close monitoring of daily settlement outcomes that the ISO has been conducting since the start of the new market. The ISO observed that as a result of the pro-rationing, there is a disconnect between the hourly settlement of CRRs and the eventual monthly settlement of CRRs under full funding. Moreover, the ISO determined that the pro-rationing does not provide any informational (or other) benefits because the ISO is able to measure and report on CRR revenue adequacy in other more complete and transparent ways, as discussed above. On June 1, 2009, the ISO received a request for a change in the BPM for Settlements and Billing that would limit the pro-ration calculation to better reflect what the actual month-end settlement would look like for CRR holdings. The ISO rejected this request as an incomplete fix to the problem, and instead proceeded to stakeholder the current proposal that the pro-rationing mechanism simply be removed from the tariff.

On June 30, 2009, the ISO posted a proposed set of tariff changes.[2] The ISO discussed these proposed changes at the weekly Settlements and Market Clearing (SaMC) meeting held on July 8, at the CRR meeting held on July 8, and on the Market Issues conference call held on July 9. Four stakeholders submitted comments on July 10, 2009.[3] The commenting parties generally supported the proposed tariff language.

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[2] *See* http://www.caiso.com/23e5/23e599a552430.pdf.

[3] *See* http://www.caiso.com/23dd/23dda6ba6ce70.html.

With regards to the proposed tariff language, a participant requested confirmation of whether the proposed removal of the pro-ration requirement would lead to the elimination of monthly Charge Code 6728. This Charge Code is required to true-up the pro-rated entitlements in order to ensure full funding. The ISO clarified that in light of the fact that the proposed change is being implemented by setting the pro-rationing factor to one, Charge Code 6728 essentially will be moot and therefore it is immaterial whether or not this Charge Code is eliminated at this time. By setting the ratio at one, the Charge Code does not have any impact because the CRR entitlements would not have been modified in the hourly settlement. However, the ISO will remove this Charge Code through the BPM change management process as appropriate over time. The ISO recognizes that the proposed change can be implemented in the Charge Codes in a number of ways. However, the ISO chose the method that would allow for the quickest implementation. In any event, through the BPM change management process, which governs the modification of the Charge Codes because they are set forth in the BPM for Settlements, the ISO and market participants will have an opportunity to determine whether some alternative implementation methods are preferred.

A stakeholder also recommended that if the true-up is no longer needed, the first sentence of Section 11.2.4.4.1 should be removed. The ISO does not believe this change is appropriate because the first sentence of Section 11.2.4.4.1 ensures full-funding of CRRs through the clearing of the CRR balancing account and is not related to the true-up required as a result of the pro-ration.[4] While the ISO is proposing to eliminate the hourly pro-ration of CRRs, the ISO must nonetheless track the hourly payments and charges that accrue so that in the month-end settlement, it can determine CRR balancing account surplus or shortage. The responsibility for any shortage (i.e., an insufficiency of revenues to cover all CRR entitlements for that month) or the benefit of any surplus (i.e., an excess of revenues after all entitlements are paid for) in the CRR balancing account, as supplemented by the monthly share of CRR auction revenues, is distributed to measured demand as provided in Section 11.2.4.4.1. Therefore, the tracking of the payments and charges in the first sentence of Section 11.2.4.4.1 remains necessary despite the removal of the pro-ration.

Participants also requested further clarification regarding how the ISO would deal with full funding in light of mid-month settlement and invoicing anticipated under payment acceleration and the current provisions for monthly clearing of the CRR Balancing Account. The ISO agrees that, due to the future implementation of payment acceleration, it must determine how the CRR Balancing Account will be settled in light of the mid-month clearing under payment acceleration. However, that issue is beyond the scope of the

[4] The subject sentence reads as follows: “At the end of each month, all CRR Payment shortfalls for all CRR Holders shall be paid in full and all CRR Charge shortfalls shall be fully charged through the CRR Balancing Account clearing process.”

proceeding, as this tariff amendment pertains to the sole issue of removing the pro-ration requirement. The ISO will address issues related to payment acceleration separately after further consultation with stakeholders.

C. Pricing for Disconnected Pricing Nodes

1. Proposed Tariff Changes

A PNode is a location on the transmission system at which electrical injections and/or withdrawals are modeled and for which an LMP is calculated. The LMPs at the PNode are used for energy settlement and for settlement of Inter-Scheduling Coordinator Trades (ISTs).[5] In addition, the MCC of the LMP at the PNode is the basis for settlement of CRRs.[6] A PNode can become disconnected as a result of a temporary transmission facility switch setting or outage.[7] Under these circumstances, if the electrical connection to that generator is modeled as a singular connection at a location that becomes disconnected, the generator may be physically isolated and cannot be scheduled to deliver energy to the system. When this occurs, there is no relationship between the power transfer distribution factor associated with the disconnected PNode and the binding constraint. Consequently, the MCC at that location is undefined and the market clearing process does not actually yield a MCC at the affected location. Currently, the ISO inserts a "$0" value for the MCC and calculates LMPs based on the "$0" value. As discussed more fully below, the ISO proposes to amend its tariff to provide that when a PNode becomes electrically disconnected from the market model during a CAISO Market run, the ISO will use the LMP, including the system marginal energy component (SMEC), the MCC, and the marginal cost of losses component (MCL), at the closest electrically connected PNode as the LMP at the affected location.

The current practice of inserting the "$0" MCC component affects the settlement of CRRs, ISTs, and, in some instances, the energy. CRRs are settled based on the difference in the MCC between the sink and the source. For point-to-point CRRs, if either the source or sink of the CRR is a disconnected PNode, then the settlement of that CRR will either be the positive value or the negative value of the MCC of the PNode that is still connected.[8] With respect to the

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[5] *See* ISO Tariff Sections 11.2, 11.5, & 11.9.1.

[6] *See* ISO Tariff Section 11.2.4.

[7] A connectivity node (CNode) may become disconnected, i.e., isolated from the rest of the grid, when all branches emanating from that CNode are de-energized by opening the corresponding breakers. This event may be the normal outcome of switching operations and bus re-configurations, or it may be due to transmission facility outages. Although PNodes are carefully selected CNodes in a substation that are expected to be connected most of the time, occasional PNode disconnections may occur.

[8] If the disconnected PNode is the source of the CRR, then the settlement will be the positive value of the connected PNode. If the disconnected PNode is the sink, then the settlement will be the negative value of the connected PNode.

settlement of ISTs and Trading Hub CRRs, their settlement is indirectly affected by the "$0" MCC if the disconnected PNode happens to be included in the definition of the Trading Hub that is the basis for the IST or Trading Hub CRR. Because the Trading Hub price is calculated as a weighted average of LMPs, a "$0" MCC likely depresses the Trading Hub price, which in turn affects CRRs and trades that are settled based upon the Trading Hub. With respect to energy settlements, in some instances, the settlement of the supply resources is specified at a PNode reflecting the Point of Receipt (Delivery) of energy from the resource that is different from the nodal connection. In such cases, and where the PNode associated the Point of Receipt is disconnect yet the resource itself remains electrically connected to the ISO controlled gird via another other network connection other than the network that goes through the disconnected Point of Receipt PNode, the disconnected PNode may have undesirable impact on the energy settlement for such a resource because the Point of Receipt is the price at any delivered energy from the resource is settled. However, while the calculated LMP may have been deflated because of the insertion of the zero value rather than the MCC that would have resulted at that location but for the disconnected node, resources committed at such locations would have been guaranteed recovery of their bid-costs through the bid cost recovery mechanism.

Following the start of the new market, the ISO received a number of disputes for settlements in which market participants asserted that "$0" is not the correct price at which the CRR should settle. The ISO denied these disputes because the current practice, which reflects the configuration of the market software and was in place during market simulation, is not inconsistent with the tariff. Also, the "$0" MCC value reasonably reflects the true cost of congestion at that location. As a result of the disconnection of the PNode, the market model measures no actual congestion at that location. Moreover, the "$0" value appropriately reflects the fact that due to the disconnection it is possible that the value of injecting energy at that location is zero.

However, upon further consideration and consultation with stakeholders, the ISO has concluded that this may not be the best approach going forward. For example, this practice is particularly problematic in the case of the settlement of CRRs where the CRR would be settled on a $0 value MCC, but the MCC would have been calculated significantly differently at that location but for the disconnection of the PNode. This poses a problem for the settlement of CRRs because CRR holders anticipate settlement of CRRs based on the MCC at the defined location. The ISO agrees with market participants that the zero value does not reflect the expected cost of congestion at that location.

The ISO surveyed the methodologies used by other independent system operators and regional transmission organizations for pricing disconnected nodes. This survey yielded two alternatives for consideration. The first alternative is to let the price at the disconnected PNode (both the LMP and the MCC) remain undefined or a "null value." This alternative is technically simple to

implement because the price at such locations would simply be left as undefined. Upon evaluation of this methodology, the ISO determined that it would undoubtedly cause complications elsewhere in the ISO's systems and processes because the ISO could not then settle CRRs, ISTs, or energy at those locations.

The second alternative provides the ability to insert a proxy LMP, including all three components (SMEC, MCC and MCL) of the LMP, at the PNode that is the closest electrically connected PNode to the PNode that is disconnected. From the perspective of CRR settlement, this is preferable to the "$0" value because the proxy price is closer to what the LMP would have been at the affected location but for the disconnection. A number of market participants indicated that this is a preferred alternative compared to the current practice, and there was no opposition expressed against the adoption of this alternative. Settlement of ISTs would also be affected by this proxy price to the extent the affected PNode is a constituent of the affected Trading Hub.

The ISO also has developed a methodology to determine the closest electrically connected PNode which will serve as the location from which the ISO will select the LMP for the disconnected PNode. The entire LMP (including all LMP components) would be selected. The methodology includes a recursive search starting from the disconnected PNode and traversing the network along the Full Network Model branches to locate a connected PNode. The branches that emanate from the disconnected PNode are traversed in ascending priority order with respect to their admittance, which is used as a measure of electrical closeness.

The ISO has opted to pursue the second alternative and proposes the following change to Section 27.1.1 to adopt this new pricing practice when a PNode becomes disconnected.

> The LMP for Energy at any PNode is the marginal cost of serving the next increment of Demand at that PNode consistent with existing transmission facility Constraints and the performance characteristics of resources. The LMPs calculated in the IFM, the HASP for Scheduling Points, and the RTD are based on Energy Bid Curves. The LMP at any given PNode is comprised of three cost components: the System Marginal Energy Cost (SMEC); Marginal Cost of Losses (MCL); and Marginal Cost of Congestion (MCC). The IFM calculates LMPs for each Trading Hour of the next Trading Day. The HASP, which is an hourly run of the RTUC with the Time Horizon that starts at the beginning of the next Trading Hour, calculates fifteen-minute LMPs (HASP Intertie LMPs) for that Trading Hour. The simple average of the four fifteen minute LMPs for the Trading Hour computed at each Scheduling Point produces hourly LMPs for HASP Settlement of Energy at that Scheduling Point. The Real-Time Dispatch runs every five (5) minutes throughout each Trading Hour and calculates five-minute LMPs for the next Dispatch Interval. The CAISO uses the

Resource-Specific Settlement Interval LMPs for Settlements of the Real-Time Market. In the event that a Pricing Node becomes electrically disconnected from the market model during a CAISO Market run, the LMP, including the SMEC, MCC and MCL, at the closest electrically connected Pricing Node will be used as the LMP at the affected location.

2. Stakeholder Process Regarding Disconnected PNodes and Related Issues

The disconnected PNode issue was raised after the start of the market as the result of certain disputes brought forth by market participants with regards to the settlement of their CRRs. Market participants noted that in certain instances CRRs were settled based on a $0 marginal cost of congestion, when the MCC at closely situated PNodes was higher or lower. After the investigating this result, the ISO found that this settlement outcome was due to the disconnection of a PNode as described above. Although the disputes were denied, the ISO immediately began to explore alternatives with market participants that could be implemented on a prospective basis following a tariff amendment.

On July 7, 2009, the ISO posted on its website an issue paper and proposed change in practice, which included proposed tariff changes to effectuate that reflect the change in practice, now reflected in this filing. The ISO discussed the issue of the disconnected nodes at the weekly SaMC meeting held on July 8, at the CRR meeting held on July 8, and on the Market Issues conference call held on July 9. On July 13, 2009, three market participants submitted comments. The comments generally supported the proposed changes and no market participant opposed the proposed changes.[9]

III. Materials Provided in the Instant Compliance Filing

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

Attachment A — Clean MRTU Tariff sheets incorporating the red-lined changes contained in Attachment B

Attachment B — Red-lined changes to the MRTU Tariff to implement the revisions contained in this filing

IV. Effective Date and Waivers.

The ISO respectfully requests that the tariff changes contained in the instant filing be made effective as of August 1, 2009. Therefore, the ISO

[9] http://www.caiso.com/23e4/23e49cf92d5b0.html

requests waiver, pursuant to Section 35.11 of the Commission's regulations (18 C.F.R. § 35.11), of the notice requirement contained in Section 35.3 of the Commission's regulations (18 C.F.R. § 35.3), in order to permit the requested August 1 effective date.

Good cause exists for granting the requested waiver and effective date. All of the proposed tariff changes have broad support among the affected stakeholders. The changes to the Start Up and Minimum Load costs options will allow resources to manage their costs and how their resources are utilized. It is important for Scheduling Coordinators to able to do this as soon as possible fore the reasons discussed above. The CRR and PNode related changes are important changes that eliminate final settlements confusion and market participants desire to see implemented as soon as possible.

V. Communications

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

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Sidney Davies*
Assistant General Counsel – Tariff
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VI. Service

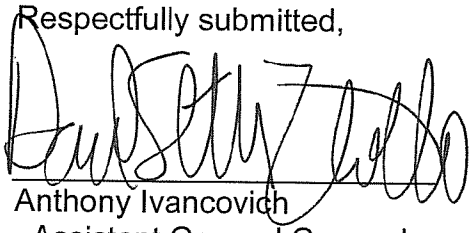
The ISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission,

and all parties with effective Scheduling Coordinator Service Agreements under the ISO Tariff. In addition, the ISO is posting this transmittal letter and all attachments on the ISO website.

VII. Conclusion

The ISO respectfully requests that the Commission accept the instant filing. Please contact the undersigned with any questions concerning this filing.

Respectfully submitted,



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Attachment A –Clean Sheets

Market Issues Amendment Filing

Fourth Replacement CAISO Tariff

July 31, 2009

11.2.3.2.1 IFM Charges for MSS Demand under Net Energy Settlement.

The CAISO shall charge Scheduling Coordinators that submit Bids for MSS Operators that have selected net Energy Settlement an amount equal to the product of the net MSS Demand in the Day-Ahead Schedule and the IFM MSS Price. The net MSS Demand is the quantity of MSS Demand that exceeds MSS Generation for the applicable MSS.

11.2.3.2.2 IFM Payments for MSS Supply Under Net Energy Settlement.

The CAISO shall pay Scheduling Coordinators that submit Bids for MSS Operators that have selected net Energy Settlement an amount equal to the product of the net MSS Supply in the Day-Ahead Schedule and the weighted average price of all IFM LMPs for all applicable PNodes within the relevant MSS. The net MSS Supply is the quantity of MSS Generation that exceeds the MSS Demand for the applicable MSS. The weights used to compute the weighted average LMPs shall be equal to MSS Generation scheduled in the Day-Ahead Schedule.

11.2.4 CRR Settlements.

CRR Holders shall be paid or charged for Congestion costs depending on the type of CRRs held by the CRR Holder, the direction of Congestion as measured through the IFM, and the LMP as calculated in the IFM. CRRs shall be funded through the revenues associated with the IFM Congestion Charge, CRR Charges, and the CRR Balancing Account. The CRR Payments and CRR Charges shall be settled first on a daily basis for each Settlement Period of the DAM. A monthly true up will then be conducted in the clearing of the CRR Balancing Account pursuant to Section 11.2.4.4.1 and 11.2.4.4.2.

11.2.4.2 Settlement Calculation for the Different CRR Types.

For the purposes of determining the CRR Payments and CRR Charges based on the various CRR Types, the CAISO shall calculate the Settlement of CRRs as described in this Section 11.2.4.2. When CRR Source or CRR Sink is a LAP, the Load Distribution Factors used in the IFM will be used to calculate the LAP Price at which CRR Payments or CRR Charges will be settled. When CRR Source or CRR Sink is a Trading Hub the weighting factors used in the IFM and the CRR Allocation and CRR Auction processes will also be used to settle CRR Payments and CRR Charges.

11.2.4.2.1 Point-to-Point CRR Options.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each Point-to-Point CRR Option held by the CRR Holder equal to the product of: 1) the MCC at the CRR Sink minus the MCC at the CRR Source; and 2) the MW quantity of the CRR; if that amount is positive. If the resulting amount is negative, the CAISO shall not assess a charge for the relevant CRR Holder for the negative amount.

11.2.4.2.2 Point-to-Point CRR Obligations.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each CRR Obligation for a Point-to-Point CRR held by the CRR Holder, equal to the product of: 1) the MCC at the CRR Sink minus the MCC at the CRR Source; and 2) the MW quantity of the CRR; if that amount is positive. If the resulting amount is negative, the CAISO shall calculate a CRR Charge for the relevant CRR Holder equal to that negative amount.

11.2.4.2.3 Multi-Point CRR.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each Multi-Point CRR held by the CRR Holder, equal to the sum of the MCCs at each CRR Sink weighted by their associated MWh quantities as specified by the CRR, minus (2) the sum of the MCCs at each CRR Source weighted by their associated MWh quantities as specified by the CRR. If the calculated amount is positive, the CAISO shall calculate a CRR Payment for the Multi-Point CRR. If the result of this calculated amount is negative, the CAISO will calculate a CRR Charge for the Multi-Point CRR.

11.2.4.3 Payments and Charges for Monthly and Annual Auctions.

The CAISO shall charge CRR Holders for the Market Clearing Price for CRRs obtained through the clearing of the CRR Auction as described in Section 36.13.6. To the extent the CRR Holder purchases a CRR through a CRR Auction that has a negative value, the CAISO shall pay the CRR Holder for taking the applicable CRR. The CAISO shall net all revenue received and payments made through this process and shall add the net remaining seasonal and monthly CRR Auction revenue amounts (either negative or positive amounts) to the CRR Balancing Account for the appropriate month. CRR Auction revenues for each season are allocated uniformly across the three monthly accounts comprising each season.

11.2.4.4 Hourly CRR Settlement.

For each Settlement Period, the IFM Congestion Funds calculated in Section 11.2.4.1.2 will be used to pay CRR Holders that are owed CRR Payments. In the hourly settlement of CRR Payments for the Settlement Period, all CRR Holders shall be paid and charged fully according to their entitlements. Any

surplus revenue for the Settlement Period after making all hourly CRR Payments will go to the CRR Balancing Account for use in the end-of-month clearing of the CRR Balancing Account processes pursuant to Section 11.2.4.4.1. Any revenue deficiency for the Settlement Period, will be tracked for further Settlement during the end-of-month clearing process as described in Section 11.2.4.4.1. The hourly Settlement of CRRs for each CRR Holder will be based on the type of CRR holdings as described in Section 11.2.4.2. The CRR Holder's hourly CRR Settlement amount will be the net of the holder's CRR Payments for CRR Options or CRR Obligations, and the holder's CRR Charges for CRR Obligations out of these holdings.

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

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

11.2.4.5 CRR Balancing Account.

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

Energy Bid Curves. The LMP at any given PNode is comprised of three cost components: the System Marginal Energy Cost (SMEC); Marginal Cost of Losses (MCL); and Marginal Cost of Congestion (MCC). The IFM calculates LMPs for each Trading Hour of the next Trading Day. The HASP, which is an hourly run of the RTUC with the Time Horizon that starts at the beginning of the next Trading Hour, calculates fifteen-minute LMPs (HASP Intertie LMPs) for that Trading Hour. The simple average of the four fifteen-minute LMPs for the Trading Hour computed at each Scheduling Point produces hourly LMPs for HASP Settlement of Energy at that Scheduling Point. The Real-Time Dispatch runs every five (5) minutes throughout each Trading Hour and calculates five-minute LMPs for the next Dispatch Interval. The CAISO uses the Resource-Specific Settlement Interval LMPs for Settlements of the Real-Time Market. In the event that a Pricing Node becomes electrically disconnected from the market model during a CAISO Market run, the LMP, including the SMEC, MCC and MCL, at the closest electrically connected Pricing Node will be used as the LMP at the affected location.

27.1.1.1 System Marginal Energy Cost.

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

27.1.1.2 Marginal Cost of Losses.

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

30.2 Bid Types.

There are three types of Bids: Energy 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, 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 or 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.

30.3 [NOT USED]

30.4 Election for Start-Up Costs and Minimum Load Costs.

Scheduling Coordinators for Generating Units and Resource-Specific System Resources may elect on a 30-day basis either of the two options provided below (the Proxy Cost option or the Registered Cost option) for specifying their Start-Up Costs and Minimum Load Costs to be used for those resources in the CAISO Markets Processes. Unless the Scheduling Coordinator has registered Start-Up Costs and Minimum Load Costs in the Master File in accordance with the Registered Cost option, the CAISO will assume the Proxy Cost option as the default option.

option shall be based on the relevant cost information of the particular resource, which will be provided to the CAISO by the Scheduling Coordinator and maintained in the Master File. In the event that the Scheduling Coordinator for a unit does not provide sufficient data for the CAISO to determine the unit's Proxy Costs, the CAISO will assume that the unit's Start-Up Costs and Minimum Load Costs are zero.

(2) **Registered Cost Option.** Under the Registered Cost option, the Scheduling Coordinator may register values of its choosing for Start-Up Costs and Minimum Load Costs in the Master File subject to the maximum limit specified in Section 39.6.1.6. For a resource to be eligible for the Registered Cost option there must be sufficient information in the Master File to calculate the Proxy Cost option. The Start-Up Cost and Minimum Load Cost values utilized in the CAISO Markets Processes will be these pre-specified values and will be fixed for a minimum of 30 days in the Master File unless (a) the resource's costs, as calculated pursuant to the Proxy Cost option, exceed the Registered Cost option, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost option for the balance of any 30-day period, or (b) the Start-Up Costs and Minimum Load Costs in the Master File exceed the maximum limit specified in Section 39.6.1.6 after this minimum 30-day period, in which case they will be lowered to the maximum limit specified in Section 39.6.1.6.

30.5 Bidding Rules.

30.5.1 General Bidding Rules.

(a) All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the DAM for the following Trading Day shall be submitted at or prior to 10:00 a.m. on the day preceding the Trading Day, but no sooner than seven (7) days prior to the Trading Day. All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the HASP for the following Trading Day shall be

39.6.1.2 Maximum RUC Availability Bid Prices

The maximum RUC Availability Bid price shall be $250/MW/h.

39.6.1.3 Maximum Ancillary Services Bid Prices

The maximum level for Ancillary Services Bid prices shall be $250/MWh.

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.

39.6.1.5 Minimum Bid Price for Ancillary and RUC Bids.

Ancillary Service Bids and RUC Availability Bids submitted into CAISO markets must have Bid prices not less than $0/MW/h.

39.6.1.6 Maximum Start-Up Cost and Minimum Load Cost Registered Cost Values.

The maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for resources that elect the Registered Cost option in accordance with Section 30.4 will be limited to 200% of the Projected Proxy Cost.

39.6.1.6.1 Gas Price Component of Projected Proxy Cost

For natural gas fired resources, the CAISO will calculate a gas price to be used in establishing maximum Start-Up Costs and Minimum Load Costs after the twenty-first day of each month and post it on the CAISO Website by the end of each calendar month. The price will be applicable for Scheduling Coordinators electing the Registered Cost option until a new gas price is calculated and posted on the CAISO Website. The gas price will be calculated as follows:

(1) Daily closing prices for monthly NYMEX Natural Gas Futures contracts at Henry Hub for the next calendar month are averaged over the first twenty-one (21) days of the month, resulting in a single average for the next calendar month.

(2) Daily prices for NYMEX futures contracts for basis swaps at identified California delivery points, are averaged over the first twenty-one (21) days of the month for the identified California delivery points as set forth in the Business Practice Manual.

(3) For each of the California delivery point, the average Henry Hub and basis swap prices are combined and will be used as the baseline gas price applicable for calculating the caps for Start-Up and Minimum Load costs for resources electing the Registered Cost option. The most geographically appropriate will apply to a particular resource.

(4) The applicable intra-state gas transportation charge as set froth in the Business Practice Manual will be added to the baseline gas price for each resource that elects the Registered Cost option to create a final gas price for calculating the caps for Start-Up and Minimum Load Costs for each such resource.

For non-gas fired resources, the Projected Proxy Costs for Start-Up Costs and Minimum Load Costs will be calculated using the information contained in the Master File used for calculating the Proxy Cost, as set forth in the Business Practice Manual.

Prior Period Change Worksheet	A worksheet prepared by the RMR Owner and submitted to the CAISO following discovery of a necessary change to an RMR Invoice after the Revised Adjusted RMR Invoice for the billing month has been issued.
Projected Proxy Cost	A calculation of a resource's Start-Up Costs and Minimum Load Costs for a prospective period used to determine the maximum Registered Cost for the resource as set forth in Section 39.6.1.6.1 for a 30-day period as set forth in Section 30.4.
Project Sponsor	A Market Participant, group of Market Participants, a Participating TO or a project developer who is not a Market Participant or Participating TO that proposes the construction of a transmission addition or upgrade in accordance with Section 24.
Proposal for Installation	A written proposal submitted by a CAISO Metered Entity to the CAISO describing a proposal for the installation of additional Metering Facilities.

Attachment B - Blacklines

Market Issues Amendment Filing

Fourth Replacement CAISO Tariff

July 31, 2009

* * *

11.2.4 CRR Settlements.

CRR Holders shall be paid or charged for Congestion costs depending on the type of CRRs held by the CRR Holder, the direction of Congestion as measured through the IFM, and the LMP as calculated in the IFM. CRRs shall be funded through the revenues associated with the IFM Congestion Charge, CRR Charges, and the CRR Balancing Account. The CRR Payments and CRR Charges shall be settled first on a daily basis for each Settlement Period of the DAM. ~~The CAISO shall pro-rate CRR Payments and CRR Charges for each Settlement Period, if there is an insufficiency of funds during that Settlement Period from the IFM Congestion Charge pursuant to Section 11.2.4.1.~~ A monthly true up will then be conducted~~, on both CRR Payments and CRR Charges~~ in the clearing of the CRR Balancing Account pursuant to Section 11.2.4.4.1 and 11.2.4.4.2.

* * *

11.2.4.2.1 Point-to-Point CRR Options.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each Point-to-Point CRR Option held by the CRR Holder equal to the product of: 1) the MCC at the CRR Sink minus the MCC at the CRR Source; and 2) the MW quantity of the CRR; if that amount is positive. If the resulting amount is negative, the CAISO shall not assess a charge for the relevant CRR Holder for the negative amount. ~~The full CRR Payment calculated pursuant to this process shall be subject to pro-ration as described in 11.2.4.4.~~

11.2.4.2.2 Point-to-Point CRR Obligations.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each CRR Obligation for a Point-to-Point CRR held by the CRR Holder, equal to the product of: 1) the MCC at the CRR Sink minus the MCC at the CRR Source; and 2) the MW quantity of the CRR; if that amount is positive. If the resulting amount is negative, the CAISO shall calculate a CRR Charge for the relevant CRR Holder equal to that negative amount. ~~The full CRR Payment or CRR Charges calculated pursuant to this process shall be pro-rated as described in 11.2.4.4.~~

11.2.4.2.3 Multi-Point CRR.

For each CRR Holder, the CAISO shall calculate a CRR Payment for each Multi-Point CRR held by the CRR Holder, equal to the sum of the MCCs at each CRR Sink weighted by their associated MWh

quantities as specified by the CRR, minus (2) the sum of the MCCs at each CRR Source weighted by their associated MWh quantities as specified by the CRR. If the calculated amount is positive, the CAISO shall calculate a CRR Payment for the Multi-Point CRR. If the result of this calculated amount is negative, the CAISO will calculate a CRR Charge for the Multi-Point CRR. ~~The full CRR Payment calculated pursuant to this process shall be subject to pro-ration as described in 11.2.4.4.~~

* * *

11.2.4.4 Hourly CRR Settlement.

For each Settlement Period, the IFM Congestion Funds calculated in Section 11.2.4.1.2 will be used to pay CRR Holders that are owed CRR Payments. ~~If the IFM Congestion Fund is sufficient to make~~ In the hourly settlement of~~required~~ CRR Payments for the Settlement Period, all CRR Holders shall be paid and charged fully according to their entitlements. ~~If the IFM Congestion Fund is insufficient to make the required CRR Payments, then CRR Payments and CRR Charges shall be pro-rated by a ratio equal to the total hourly amount of IFM Congestion Funds divided by the net of CRR Payments for that Settlement Period.~~ Any surplus revenue for the Settlement Period after making all hourly CRR Payments will go to the CRR Balancing Account for use in the end-of-month clearing of the CRR Balancing Account processes pursuant to Section 11.2.4.4.1. Any revenue deficiency ~~CRR Payment shortfalls (or amounts not fully paid) and CRR Charge shortfalls (or amounts not fully charged)~~ for the Settlement Period, will be tracked for further Settlement during the end-of-month clearing process as described in Section 11.2.4.4.1. The hourly Settlement of CRRs for each CRR Holder will be based on the type of CRR holdings as described in Section 11.2.4.2. The CRR Holder's hourly CRR Settlement amount~~, which may be subject to pro-ration if necessary as described in this Section,~~ will be the net of the holder's CRR Payments for CRR Options or CRR Obligations, and the holder's CRR Charges for CRR Obligations out of these holdings.

* * *

27.1.1 Locational Marginal Prices for Energy.

The LMP for Energy at any PNode is the marginal cost of serving the next increment of Demand at that PNode consistent with existing transmission facility Constraints and the performance characteristics of

resources. The LMPs calculated in the IFM, the HASP for Scheduling Points, and the RTD are based on Energy Bid Curves. The LMP at any given PNode is comprised of three cost components: the System Marginal Energy Cost (SMEC); Marginal Cost of Losses (MCL); and Marginal Cost of Congestion (MCC). The IFM calculates LMPs for each Trading Hour of the next Trading Day. The HASP, which is an hourly run of the RTUC with the Time Horizon that starts at the beginning of the next Trading Hour, calculates fifteen-minute LMPs (HASP Intertie LMPs) for that Trading Hour. The simple average of the four fifteen-minute LMPs for the Trading Hour computed at each Scheduling Point produces hourly LMPs for HASP Settlement of Energy at that Scheduling Point. The Real-Time Dispatch runs every five (5) minutes throughout each Trading Hour and calculates five-minute LMPs for the next Dispatch Interval. The CAISO uses the Resource-Specific Settlement Interval LMPs for Settlements of the Real-Time Market. In the event that a Pricing Node becomes electrically disconnected from the market model during a CAISO Market run, the LMP, including the SMEC, MCC and MCL, at the closest electrically connected Pricing Node will be used as the LMP at the affected location.

* * *

30.4 Election for Start-Up Costs and Minimum Load Costs.

Scheduling Coordinators for Generating Units and Resource-Specific System Resources may elect on a ~~semi-annual~~ 30-day basis either of the two options provided below (the Proxy Cost option or the Registered Cost option) for specifying their Start-Up Costs and Minimum Load Costs to be used for those resources in the CAISO Markets Processes. Unless the Scheduling Coordinator has registered Start-Up Costs and Minimum Load Costs in the Master File in accordance with the Registered Cost option, the CAISO will assume the Proxy Cost option as the default option.

(1) **Proxy Cost Option.** For natural gas fired resources, the Proxy Cost option uses fuel-cost adjusted formulas for Start-Up Costs and Minimum Load Costs based on the resource's actual unit-specific performance parameters. The Start-Up Costs and Minimum Load Costs values utilized in the CAISO Markets Processes will be these formulaic values adjusted for fuel-cost variation on a daily basis as calculated pursuant to a Business Practice Manual. Start-Up Costs also include the cost of auxiliary power calculated using the unit-specific MWh quantity of

auxiliary power used for Start-Up multiplied by a resource specific electricity price. Minimum Load Costs also includes operations and maintenance costs as provided in Section 39.7.1.1.2. For all other resources, this option shall be based on the relevant cost information of the particular resource, which will be provided to the CAISO by the Scheduling Coordinator and maintained in the Master File. In the event that the Scheduling Coordinator for a unit does not provide sufficient data for the CAISO to determine the unit's Proxy Costs, the CAISO will assume that the unit's Start-Up Costs and Minimum Load Costs are zero.

(2) **Registered Cost Option.** Under the Registered Cost option, the Scheduling Coordinator may register values of its choosing for Start-Up Costs and Minimum Load Costs in the Master File subject to the maximum limit specified in Section 39.6.1.6. For a resource to be eligible for the Registered Cost option there must be sufficient information in the Master File to calculate the Proxy Cost option. The Start-Up Cost and Minimum Load Cost values utilized in the CAISO Markets Processes will be these pre-specified values and will be fixed for ~~six months~~ a minimum of 30 days in the Master File unless (a) the resource's costs, as calculated pursuant to the Proxy Cost option, exceed the Registered Cost option, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost option for the balance of ~~the six-month~~any 30-day period, or (b) the Start-Up Costs and Minimum Load Costs in the Master File exceed the maximum limit specified in Section 39.6.1.6 after this minimum 30-day period, in which case they will be lowered to the maximum limit specified in Section 39.6.1.6.

* * *

39.6.1.6 Maximum Start-Up Cost and Minimum Load Cost Registered Cost Values.

The maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for resources ~~located within a Local Capacity Area~~ that elect the Registered Cost option in accordance with Section 30.4 will be limited to 200% of the Projected Proxy Cost. ~~The maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for~~

~~resources that are not located in Local Capacity Areas that elect the Registered Cost option in accordance with Section 30.4 will be limited to 400% of the Projected Proxy Cost.~~

39.6.1.6.1 Gas Price Component of Projected Proxy Cost

For natural gas fired resources, the CAISO will calculate a gas price to be used in establishing maximum Start-Up Costs and Minimum Load Costs after the twenty-first day of each month and post it on the CAISO Website by the end of each calendar month. The price will be applicable for Scheduling Coordinators electing the Registered Cost option until a new gas price is calculated and posted on the CAISO Website. The gas price will be calculated as follows:

(1) Daily closing prices for monthly NYMEX Natural Gas Futures contracts at Henry Hub for ~~each of~~ the next ~~six~~ calendar month~~ly contracts~~ are averaged over the first twenty-one (21) days of the month, resulting in a ~~separate~~ single average for ~~each of the six (6)~~ the next calendar month~~ly contracts~~.

(2) Daily prices for NYMEX futures contracts for basis swaps at identified California delivery points, are averaged over the first twenty-one (21) days of the month~~, resulting in separate averages for each of the six (6) monthly contracts~~ for the identified California delivery points as set forth in the Business Practice Manual.

(3) For each of the ~~six (6) monthly contracts, for any~~ California delivery point, the average Henry Hub and basis swap prices are combined~~.~~

~~(4) The maximum of these combined averages are selected~~ and will be used as the baseline gas price applicable for calculating the caps for Start-Up and Minimum Load costs for resources electing the Registered Cost option. The most geographically appropriate will apply to a particular resource.

(~~5~~4) The applicable intra-state gas transportation charge as set froth in the Business Practice Manual will be added to the baseline gas price for each resource that elects the Registered Cost option to create a final gas price for calculating the caps for Start-Up and Minimum Load Costs for each such resource.

For non-gas fired resources, the Projected Proxy Costs for Start-Up Costs and Minimum Load Costs will be calculated using the information contained in the Master File used for calculating the Proxy Cost, as set forth in the Business Practice Manual.

* * *

Appendix A

Master Definition Supplement

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Projected Proxy Cost	A calculation of a resource's Start-Up Costs and Minimum Load Costs for a prospective ~~six-month~~ period used to determine the maximum Registered Cost for the resource~~. Projected Proxy Costs will be calculated whenever a Scheduling Coordinator elects the Registered Cost option. For natural gas fired resources, the CAISO will calculate a gas price to be used in calculating maximum Start-Up Costs and Minimum Load Costs~~ as set forth in Section 39.6.1.6.1 for a 30-day period as set forth in Section 30.4.

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