California Independent
System Operator Corporation

June 23, 2011

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

Re: California Independent System Operator Corporation
Docket No. ER11-____- 000

Amendments to California ISO FERC Electric to Tariff Enable Enhancements and Clarify the Congestion Revenue Rights Processes

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d, and Part 35 of the Federal Energy Regulatory Commission's (FERC or the Commission) regulations, 18 C.F.R. Part 35, and in compliance with Order No. 714 regarding electronic filing of tariff submittals,[1] the California Independent System Operator Corporation (ISO) hereby submits for filing the attached amendments to its Fifth Replacement FERC Electric Tariff. The ISO is filing these amendments to enable the ISO to model an anticipated level of unscheduled outages in its annual congestion revenue rights (CRRs) release processes. This enhancement will enable the ISO to better manage revenue adequacy of outstanding CRRs released through the annual processes. In addition, the ISO is proposing clarifications to existing tariff provisions that do not reflect changes to the CRR release rules and requirements but eliminate uncertainty or ambiguity in the ISO tariff.

The proposal to model possible outages in the annual release processes was uncontested by stakeholders at the end of the stakeholder process preceding this filing. Therefore, as the ISO prepares for its annual release process, it is also preparing to include an anticipated level of unscheduled outages in the model to be used in the upcoming annual release of CRRs. To provide sufficient time to evaluate the impact of any Commission order and modify its assumptions accordingly, the ISO asks that the Commission provide an order no later than August 22, 2011.

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[1] *Electronic Tariff Filings*, Order No. 714, FERC Stats. & Regs. ¶ 31,276 (2008).

I. BACKGROUND

Congestion revenue rights are instruments made available to ISO market participants to manage their exposure to financial risk associated with transmission usage congestion costs in the day-ahead market. A CRR is defined by a source-sink pair,[2] a megawatt quantity, and a term consisting of a season or a month- and time-of-use (on-peak or off-peak). In the ISO's nodal locational marginal price-based market, CRRs are settled based on the difference in the marginal cost of congestion, which is a component of the locational marginal price, between two pricing nodes cleared in the ISO's day-ahead market. The quantity of CRRs available is based on a model of the ISO's electric system, which is reflected though the CRR Full Network Model (CRR FNM). The ISO conducts an annual release process through which it allocates and auctions seasonal CRRs for the upcoming year, based on the CRRs requested through nominations or bids, subject to a simultaneous feasibility test. The simultaneous feasibility test allows the ISO to determine which CRRs are feasible for release in each round of the CRR process, based on the assumptions it makes regarding the state of the system over the applicable time period. In the annual allocation process, the ISO also releases long-term CRRs that have a term of ten years. Only 75 percent of the transmission capacity is released through the annual processes. After the ISO has conducted the annual release process, the ISO conducts a monthly release process through which it allocates and auctions off CRRs for the remaining capacity.

The annual and monthly allocation processes consist of an iterative, multi-tier process in which internal and external load serving entities are entitled to nominate CRRs based on their load-serving obligations. The auctions, in contrast, are open to all registered parties wishing to obtain CRRs, irrespective of their load-serving obligations. CRRs in the auction are cleared and made available at the market clearing CRR prices.

While it is virtually impossible to release CRRs based on the same model that is used to operate the market, which will determine the congestion costs upon which the CRRs will be settled, the ISO strives to target upcoming system conditions to ensure that the revenue collected from the marginal cost of congestion in the day-ahead market during the applicable time period is sufficient to fully fund the outstanding CRRs. This requires careful consideration of what the state of the ISO system will be in the upcoming year. Any significant divergence in assumptions may result in the release of CRRs beyond what can be funded by day-ahead market revenue. In such cases, the CRR balancing account is used to fund any shortages or allocate any surplus.

The ISO's nodal market has been in operation since April 1, 2009. With over two years of CRR experience, the ISO and its stakeholders have identified a set of beneficial refinements and clarifications to the processes supporting the CRR design.

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[2] The "source" being the point of power injection to the transmission network and the "sink" being the point of power withdraw (*i.e.*, consumption). These designations denote the direction of flow on the network (*e.g.*, from source A to sink B) and the price component of the CRR payment, which is defined as the difference in the congestion component of the locational marginal price between the two locations.

All but one of these changes is a minor tariff clarification. As discussed below, the one substantive change the ISO proposes for Commission approval is to incorporate an anticipated level of unscheduled transmission outages into the transmission network model used in the annual CRR allocation and auction process. The remaining tariff clarifications described below reflect a series of clarifications discussed with stakeholders during the most recent CRR stakeholder process. While these procedural clarifications require tariff amendments, none present a substantive change in existing policy or procedures.

II. DISCUSSION OF FILING

The ISO proposes a series of tariff amendments resulting from the recent CRR stakeholder process conducted to evaluate needed CRR policy and procedural changes. While the ISO began with a longer list of issues, through the stakeholder process it was able to determine that at this time only the proposed amendments are needed. The ISO will continue to consider additional enhancements, but seeks approval now of the proposed changes to enable the ISO to proceed with its upcoming annual CRR release process.

The first proposed change involves incorporating an anticipated level of unscheduled outages in the CRR FNM used for the annual CRR release process. This change will enable the ISO to manage the annual CRR release process in a manner that minimizes revenue inadequacy issues resulting from the release of too many CRRs in the annual processes. This change will also have the likely effect of permitting more system wide capacity available to be released in the monthly processes because system wide capacity will not be over-released in the seasonal process.

The second set of changes described below consists of a series of tariff clarifications that do not constitute a change or divergence from the ISO's existing policy or practices. However, these changes are necessary to clarify certain ambiguities discovered over the past year since the ISO filed its last CRR-related tariff amendment.

A. Proposed Tariff Modification to Incorporate Modeling of Unscheduled Possible Outages in the Annual CRR Release Processes.

Congestion revenues rights are fully funded through the CRR balancing account, which is largely funded through the congestion revenues collected in the ISO's integrated forward market based on the market clearing locational marginal price at the pricing points. Proceeds from sales of CRRs in the auctions are also transferred to the applicable CRR balancing account. CRRs are settled hourly and are required to be fully funded. The ISO tracks shortages and surpluses in funding CRRs through the balancing account. Hourly settlement of CRRs can incur shortages to the extent the congestion revenue collected through the integrated forward market is less than the payments owed to CRR holders based on their entitlements.

Such CRR revenue inadequacy is funded, on a bi-monthly basis, through allocations of the shortage to load serving entities in proportion to their metered demand. Similarly, surpluses in the balancing account are distributed monthly to load serving entities in proportion to their metered demand. The balancing account deficiencies and surpluses are allocated to load serving entities because they are the primary beneficiaries of the CRRs. As explained further below, CRR revenue inadequacy is primarily due to transmission outages that are modeled in the day-ahead market but not reflected in the transmission network model used to allocate or auction the CRRs in the annual or monthly process. Since the implementation of the new LMP market structure in April 2009 the total revenue deficiency through May 2010 has been approximately $48.5 million. By including expected transmission outages into the CRR annual process, the capacity that will be made available for the monthly processes, which will include known planned outages, can be modeled more accurately based on information that is not available at the time the annual process was conducted.

The ISO strives to release the maximum number of CRRs that can be supported from the congestion revenue collected from the day-ahead market. Annual CRRs are released on a year-ahead basis using the most current available direct current Full Network Model (DC FNM). On a year-ahead basis, because of the inherently changing nature of the transmission system configuration, it is not possible to perfectly estimate the number of CRRs that will be fully funded through the day-ahead market. Therefore, it is not possible to guarantee sufficient revenues for every single hour, day, month, or season. If the assumptions made for the upcoming applicable time period constrain the system excessively, the ISO is likely to release fewer CRRs than desired by market participants to effectively hedge congestion in the day-ahead market. Conversely, if the transmission modeling assumptions used to allocate and auction CRRs do not sufficiently account for actual conditions that eventually occur in the day-ahead market, an excess number of CRRs may be released that will not be fully funded by the revenue collected from the day-ahead market.

In 2010, market revenues collected from the integrated forward market totaled $89.47 million, after accounting for $16.02 million for existing rights that are not assessed congestion charges.[3] Congestion revenue rights entitlements based on CRRs issued for 2010 amounted to $101.05 million. This resulted in a shortage of $11.58 million in revenue received from the integrated forward market. This shortfall was more than fully offset, however, with the application of $44.85 million of auction revenues, comprised of the $7.61 million from the 2010 monthly auctions plus $37.24 million from the 2010 annual auction that was conducted in 2009.

Shortfalls or surpluses in IFM congestion revenues relative to net payments to CRR holders typically result from variations between the underlying network model assumptions and the constraint set enforced in the IFM compared to the model and

[3] *See* Section 16 and 17 of the ISO Tariff, which exempt holders of existing transmission and transmission ownership rights, respectively, from congestion charges.

constraint set enforced in the market that awards CRRs.[4] Under the current CRR design, the CRR FNM used in the annual CRR process does not account for an anticipated level of unscheduled transmission outages and de-rates. This policy has been in place since the start of the ISO nodal market.[5] In large part, participants and the ISO agreed not to incorporate such outages in the annual modeling assumptions because at the start of the nodal market there simply was not sufficient experience with actual locational marginal prices and revenue adequacy of previously-released CRRs. Therefore, rather than speculate on what outages could arise and how the system could be impacted, the ISO assumes all lines are in service in the annual release and does not account for unscheduled outages.

The results of the past three annual processes have shown, however, that revenue adequacy could be improved through enhanced modeling of transmission capacity in the annual process to better account for the impact of unscheduled but possible transmission outages and de-rates. Through the stakeholder process preceding this filing, the ISO and stakeholders determined that modeling expected outages in the annual process will address the past issues with revenue adequacy that resulted from releasing too much capacity in the annual process. The proposed approach targets the areas where outages have historically contributed to revenue inadequacy while not impacting those areas that have not had adverse effects on revenue adequacy. By incorporating expected outages in the annual process, the ISO will be able to better manage the annual CRR release process and minimize revenue inadequacy issues resulting from the release of too many CRRs in the annual processes. Moreover, this improvement will also likely permit the release of more overall capacity in the monthly processes, which in turn will enable participants to better account for variations in congestion needs on a monthly basis within the year. Releasing more capacity in the monthly process is also likely to reduce the ISO's reliance on either the global derate factor and the newly-developed local derate factor.[6]

In creating the CRR FNM for the annual process, section 36.4 of the tariff currently indicates that the ISO begins with the most up-to-date DC FNM and adjusts it to reflect: (1) long-term scheduled Outages; (2) OTC adjusted for long-term scheduled derates; and (3) the impact of TORs and ETCs. To better promote revenue adequacy, the ISO proposes to add a fourth category of adjustment, which would reflect the anticipated level of outages and derates that are not scheduled at the time the annual process is conducted. To account for such outages and derates, the ISO will conduct a revenue adequacy breakeven point analysis. For each season and time-of-use, the ISO will separately construct a duration curve for each transmission element for each of the

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[4] In 2010, a notable variation in the constraints enforced in the CRR relative to the integrated forward market was the introduction of a new branch group in the IFM to protect against an under-frequency contingency in the Southern California area, namely the SCE_PCT_IMP branch group.

[5] *Cal. Indep. Sys. Operator Corp.*, Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade, at 27, FERC Docket No. ER06-615-000 (Feb. 9, 2006).

[6] For a description of the local derate factor, *see* 2011 CRR Enhancements Revised Draft Final Proposal , at 6-7, *available at* http://www.caiso.com/2b84/2b849f3d1a980.pdf.

three prior years.[7] The ISO will then calculate the line rating that would have produced revenue neutrality (*i.e.*, no surplus and no deficiency).

In developing the CRR FNM going forward, the ISO will begin its analysis with the full rating of each transmission element (*i.e.*, Total Transfer Capability (TTC) for interties and full thermal rating for internal lines). That full rating will then be adjusted downward to account for long-term outages and derates, TORs and ETCs, and the revenue adequacy breakeven point. For the interties, the use of TTC as a starting point marks a small change from the CRR FNM used in the 2011 Annual Process, which utilized an OTC value that was the median OTC value for each season and time of use.[8] This approach was utilized at the time to select, based on historical evidence, a single value to model a characteristic that, in reality, changes on an hourly basis. The revenue adequacy breakeven point analysis is intended to fulfill a similar function but in a way that does an even better job of creating a CRR FNM that is more reflective of how the system will actually perform. If the ISO were to begin the CRR FNM process by first adjusting the TTC downward to reflect the median OTC value and then further adjusting that OTC value downward based on the revenue adequacy breakeven point, the CRR FNM would count the impact of some historical outages twice and potentially create a model with too little capacity. Therefore, the ISO will apply only the revenue adequacy breakeven point methodology for the annual CRR process and dispense with the median value calculation that it has used previously as it is no longer necessary.

The revenue adequacy breakeven point analysis will also account for known topology changes. This is necessary because there are circumstances in which the simple historical record may not be a good indicator of the expected system characteristics. In such cases, the revenue adequacy breakeven points should reflect those circumstances. An example would be where a transmission element's capacity changed significantly at some point in the prior three years. For example, assume that a line had a thermal rating of 500 MW in years one and two and that the line's capacity in every hour over those two years were 500 MW. Further, assume that the line was then permanently rerated to 700 MW for year three and that its capacity in every hour of year three were 700 MW. Going forward, the CRR FNM would begin by modeling the line at its nominal limit of 700 MW. However, without otherwise adjusting the historical performance measures of the line, the breakeven point analysis would assume that in years 1 and 2, the line performed at roughly 70% of its nominal rating. In such circumstances the ISO needs the authority to examine such topology changes and adjust the simple mathematical outputs of the calculation so that the revenue adequacy break even points suitably reflect expected operating conditions. In the example given above, the ISO would uprate the final value mathematically. For example, the ISO

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[7] For the 2012 Annual Process conducted in 2011, the ISO intends to conduct the revenue adequacy breakeven point analysis based on the first two complete years of data in the ISO's LMP-based market (*i.e.*, April 1, 2009 through March 31, 2011).

[8] For more information on the ISO's OTC duration curve approach, *see* "Methodology for Determining OTC Values for CRR Release Process," *available at* http://www.caiso.com/27c4/27c4bc2f24b80.pdf

could adjust the megawatt values by applying a percentage adjustment; or by adjusting the historical record up by multiplying the megawatt values by 1.4, which is the percentage increase from the 500 MW limit to the 700 MW limit; or by using some other method. In the interests of transparency the ISO will release the unaltered historical values in addition to the final revenue adequacy break even values to those entities entitled to receive such information.

The implicit assumption used to develop this metric is that the megawatt quantity of CRRs released on each transmission element is independent of any other transmission element and, thus, any derate applied to a specific transmission element would not alter the number of CRRs released anywhere else in the system. Obviously, in an integrated network this assumption may not hold as the number of CRRs released throughout the system is determined simultaneously. However, for major transmission interfaces, such as interties, this assumption has greater validity as major interfaces usually are configured more radially. The advantage of deriving the break-even point in this manner is that it directly depends on the collected historical outcomes of the integrated forward market, regardless of how the elements were originally modeled in the CRRs market.

The ISO has provided illustrative results of this revenue adequacy breakeven point analysis in its "Annual Market Performance CRR Report."[9] Table 1, below, provides further information, demonstrating the percent reduction in the line rating on four major interties (by season and time of use) as a result of implementing the revenue adequacy breakeven point analysis using two years of data, from April 1, 2009 through March 31, 2011, as compared to the rating that was utilized in the CRR FNM for the 2011 Annual Process conducted in 2010.[10] The ISO will use a minimum of two years worth of data for these calculations and a maximum of three years.

Table 1

Breakeven Value as a Percentage of 2011 Median Value

Path / Constraint Name	Direction	TOU	Season 1	Season 2	Season 3	Season 4
ELDORADO	Import	Off	95.11%	82.09%	81.86%	105.50%
ELDORADO	Import	On	102.47%	80.74%	88.24%	106.83%
NOB	Import	Off	73.15%	98.04%	48.58%	69.55%
NOB	Import	On	58.27%	94.89%	77.20%	58.85%
PACI	Import	Off	59.17%	94.27%	104.02%	79.69%
PACI	Import	On	70.66%	92.63%	91.39%	79.77%
PALOVRDE	Import	Off	58.50%	64.36%	86.97%	89.11%
PALOVRDE	Import	On	68.93%	74.92%	84.23%	94.12%

[9] *Available at* http://www.caiso.com/2b44/2b44c6c4383b0.pdf.

[10] The percentage reductions will not necessarily match exactly the percentage reduction that would be utilized in the CRR FNM for the 2012 Annual Process, as the revenue adequacy breakeven point analysis that is the basis for these calculations is not adjusted to account for known topology changes.

For the reasons discussed above, the ISO proposes to modify the portions of section 36.4 describing the CRR FNM used for the Annual Process as follows:

> When the CAISO conducts its CRR Allocation and CRR Auction, the CAISO shall use the most up-to-date DC FNM which is based on the AC FNM used in the Day-Ahead Market. The Seasonal Available CRR Capacity shall be based on the DC FNM, taking into consideration the following, all of which are discussed in the applicable Business Practice Manual: (i) any long-term scheduled transmission Outages, (ii) OTC adjusted for any long-term scheduled derates, ~~and~~ (iii) a downward adjustment due to TOR or ETC as determined by the CAISO, and (iv) the impact on transmission elements used in the annual CRR Allocation and Auction of (a) transmission Outages or derates that are not scheduled at the time the CAISO conducts the Seasonal CRR Allocation or Auction determined through a methodology that calculates the breakeven point for revenue adequacy based on historical Outages and derates, and (b) known system topology changes, both as further defined in the Business Practice Manuals.

This modification will enable the ISO to account for an anticipated level of outages and derates that are not currently modeled in the CRR FNM used in the Annual Process. Accounting for such derates and outages will ensure better management of the ISO's release of CRRs and the maintenance of revenue adequacy for released CRRs.

B. Miscellaneous Tariff Clarifications

1. Accounting for Previously Released Long-Term CRRs in the Priority Nomination Process

In October 2010, a market participant highlighted a potential issue with the existing tariff language regarding the determination of upper bound for the priority nomination process. Section 36.8.3.5.1 of the ISO tariff currently states:

> Tier 1 of the annual CRR Allocation in years beyond CRR Year One will be a Priority Nomination Process through which CRR Holders may nominate some of the same CRRs that they were allocated in the immediately previous annual CRR Allocation process. As provided in Section 36.8.3.4.2, nominations by California Independent System Operator Corporation Fifth Replacement Tariff December 15, 2010
> a Qualified OBAALSE in the PNP are subject to source verification. In all annual CRR Allocations after CRR Year One, an LSE or a Qualified OBAALSE may make PNP

> nominations up to the lesser of: (1) two-thirds of its Seasonal CRR Eligible Quantity, minus the quantity of previously allocated Long Term CRRs for each season, time of use period and CRR Sink for that year; or, (2) the total quantity of Seasonal CRRs allocated to that LSE in the previous annual CRR Allocation, minus the quantity of previously allocated Long Term CRRs for each season, time of use period and CRR Sink, and minus any reduction for net loss of Load or plus any increase for net gain of Load through retail Load Migration as described in Section 36.8.5.1. . . .

The market participant noted that under criteria (1), the phrase "minus the quantity of previously allocated Long Term CRRs" could be interpreted to refer to all long term CRRs rather than only the long-term CRRs awarded in the prior year. The former interpretation would count the impact of long term CRRs twice by including them in both criteria for the PNP upper bound. The ISO clarified with stakeholders in the stakeholder process preceding this filing that this reading of the tariff is contrary to the intent of that provision and offered to clarify its tariff so that it is clear that only the long-term CRRs from the prior year would be accounted for in this first criterion. Accordingly, the ISO proposes to clarify Section 35.8.3.5.1 so that it clearly states that only incremental long-term CRRs awarded in the previous year's long term allocation process will be included in this criterion.

2. Reconfiguration of Outstanding Annual CRRs

The current tariff does not specify how the ISO would reconfigure outstanding seasonal CRRs or the next year's priority nomination process eligibility in the event that changes to the ISO's controlled grid take effect during the year. Such changes could include a Participating Transmission Owner withdrawing a transmission element from the CAISO Controlled Grid. The tariff does, however, specify the procedure the ISO would follow to reconfigure long-term CRRs when grid changes take effect. Through the stakeholder process preceding this filing, the ISO established that the logical step is to apply the same approach to the annual CRRs and the priority nomination process eligibility as would apply to long-term CRRs in the event that a participating transmission owner withdraws from the ISO controlled grid as currently specified in Section 36.8.7.

Accordingly, the ISO proposes to add a new section 36.8.7.2 to specify the process it would follow to account for such topology changes taking effect within the year. This process provides for the reconfiguration of the CRRs to account for the change in topology and also, as is the case for reconfiguration of long-term CRRs, after the reconfiguration, the ISO will run simultaneous feasibility tests on the reconfigured remaining annual CRRs and if necessary, reduce some of the reconfigured annual CRRs to ensure their feasibility. Also, if the CRR Source and CRR Sink for an annual CRR both are located within a departing participating transmission owner service area, the annual CRR would expire on the effective date of the Participating TO's withdrawal.

In addition, the priority nomination process eligibility for subsequent years will be based on the MW quantity of the annual CRRs after conducting the simultaneous feasibility test and ensuring their feasibility.

3. Allow for Transfer of Congestion Revenue Rights Holdings through a Manual Secondary Registration System

The current tariff language requires that bilateral transfers of CRRs be registered with the ISO through a specific computer interface and automated process referred to as the Secondary Registration System. Appendix A of the tariff defines the Secondary Registration System as: "The computer interface through which CRR Holders and Candidate CRR Holders register any bilateral CRR transactions with the CAISO."

While the ISO has maintained the computerized interface and automated process over the past three years, market participants have not utilized the secondary registration system as often as previously expected. To date, the secondary registration system has mostly been used in cases where entities traded their entire CRR portfolio. Given the low use of the existing computerized interface, through the stakeholder process preceding this filing, the ISO established that a manual process is sufficient to manage any bilateral transactions and will avoid software maintenance costs currently being incurred to support the automated system. Therefore, the ISO proposes that the specification in the definition for Secondary Registration System not specify a particular software system to be used to manage the process of bilateral trades.

4. Auction Clearing Price Calculation

Section 36.13.6 of the ISO tariff describes how the simultaneous feasibility test clears the CRR Auction. After describing how the simultaneous feasibility test operates, section 36.13.6 then notes that "the CRR Market Clearing Price per MW for a specific CRR will equal the nodal price at the CRR Source minus the nodal price at the CRR Sink." This statement is true in nearly all circumstances. The ISO has determined, however, that in those circumstances in which either the CRR source or CRR sink is disconnected from the network in a contingency case and the non-disconnected source or sink has a non-zero shift factor associated with a binding constraint in the same contingency case, then the resulting price is not simply "the nodal price at the CRR Source minus the nodal price at the CRR Sink." In such cases, after the CRR auction is completed, the simultaneous feasibility test generates the following sets of outputs: (1) CRR cleared MW and (2) the Shadow price for each binding constraint. For each binding constraint, the CRR Market Clearing Price will be based on these two factors. It is important to note that the calculated CRR clearing price on the individual CRR participant's private market results report and settlements statement utilizes the correct clearing price calculation. The ISO thus proposes to amend section 36.13.6 to clarify that the "the CRR Market Clearing Price per MW for a specific CRR in most cases will equal the nodal price at the CRR Source minus the nodal price at the CRR Sink," but that in certain anomalous cases described in the BPMs, "the CRR Market Clearing Price

will be based on the CRR MWs cleared and the shadow price for each binding constraint at the specified location."

5. Credit Requirements for Load Migration and Bilateral Trades

The ISO identified discrepancies in Sections 36.8.5.4 and 12.6.3.1, with regards to the credit requirements for load migration. To date the ISO has not had to address the specific case where an entity did not have sufficient collateral to take on a Load Migration transfer. Section 12.6.3.1 specifies the credit requirements in cases where the ownership of a CRR is to be transferred through either the Secondary Registration System or through Load Migration.

In Section 12.6.3.1, the ISO proposes to clarify that this section only applies to CRR transfers through bilateral trades. From a CRR credit policy perspective, the concern was to prevent transfer of negatively valued CRRS to a non credit-worthy entity. Hence, no transfer should occur unless the entity covers the credit risk. CRRs that transfer due to load migration should be treated like allocated CRRs from a credit policy standpoint. CRR holders of such CRRs are still subject to the credit policy but the ISO does not require collateral in advance of the allocation (or transfer).

In Section 36.8.5.4, the ISO proposes to clarify that there will be no transfer of CRRs unless the load gaining LSE is qualified as a CRR Holder or a Candidate CRR Holder as defined in the tariff. This requirement is consistent with the tariff requirements that CRR Holders or Candidate CRR Holders can obtain CRRs. If load migration occurs and the load gaining LSE is not a CRR Holder or a Candidate CRR Holder, then the load migration CRRs will not be settled and will be absorbed within the balancing account until the end of the term of the CRR.

6. Credit Requirements Application to Portfolio of Bids

CRR auction participants generally group their bids into a series of portfolios which they then submit sequentially. They seldom submit a single bid. In referring to the credit requirements for CRR auction participants, Section 12.6.2, states that the "CRR Holder or Candidate CRR Holder that fails to satisfy this requirement shall not be permitted to participate in the relevant CRR Auction, or shall have bids exceeding its available Aggregate Credit Limit for participation in the CRR Auction, in accordance with the above formula, rejected by the CAISO on a last-in, first-out basis." The ISO proposes to add clarifying language that bid portfolios will be rejected on a last-in, first-out basis, if credit requirements are not met, which can consist of one or more bids.

7. Implementation of Sell Feature in the CRR Auctions

As part of the 2009/2010 CRR Enhancements initiative, the ISO proposed to implement a sell feature to allow market participants to liquidate CRR holdings through the auction. Since the start of the locational marginal price-based market, market participants could sell their CRR holdings through purchasing a counter-flow CRR at the

same locations of the CRRs they intend to liquidate. By purchasing the counterflow, the holder essentially holds offsetting rights and is neutral from a settlement perspective. Because the settlement systems did not receive the specific payloads that indicated the offsetting entitlements, this "sell feature" required participants to hold both the original CRR sold in the auction and the counterflow.

In July 2010, the ISO updated CRR participants on implementation discussions with the software vendor of this sell feature. The ISO completed a study with the vendor and results indicated that submitting a counter-flow bid into the auction will result in the same simultaneous feasibility test results as submitting an actual sell bid. Therefore, rather than implementing significant software code changes to implement a formal sell feature, the ISO proposed to stakeholder that participants that wish to sell a CRR in the auction simply submit a counter-flow bid into the auction. The ISO further requested the software vendor to implement an additional ownership payload change that performs a pre-process task. Prior to sending the ownership payload to Settlements the system performs a netting process by CRR type (*e.g.*, allocation CRRs are netted against each other and auction CRRs are netted against each other) when a CRR holder has two CRRs in countervailing positions. For example, if a CRR participant held a 100 MW Source A to Sink B CRR and wanted to sell 75 MW, the CRR participant would submit a bid for a 75 MW Source B to Sink A CRR. Assuming the CRR participant's counterflow CRR cleared the auction, the CRR participant would now essentially hold a 25 MW Source A to Sink B CRR and this is the value that would get financially settled.

The addition of the modification to the ownership payload that effectively nets a CRR Holder's position completes requirements for establishing a sell-feature in the ISO auction. The ISO proposes to add clarifying language in Section 36.13.4 that explains that a CRR can be sold with the offer of a counterflow position and if such position is cleared, the CRR holder is able to liquidate its CRR holdings.

III. DESCRIPTION OF STAKEHOLDER PROCESS

The stakeholder process commenced in early March 2011 to address a variety of CRR enhancements and opportunities to streamline the allocation and auction process.[11] The ISO initially proposed a variety of changes to the CRR process timeline, quantity of allocation tiers, and the capacity made available through the annual and monthly auction process. Many stakeholders expressed reservations with making significant changes to the existing CRR market design and process. Stakeholders argued that by making several major design changes concurrently, it would be difficult to track the benefits of individual market changes. Due to stakeholder input, the final proposal approved by the ISO's Board of Governors on June 8, 2011 primarily addressed the single substantive change proposed in the instant filing. By narrowing the scope of the 2011 CRR enhancements, the ISO was able to address the revenue adequacy issue while taking an incremental approach desired by the vast majority of

[11] More information on the ISO's stakeholder process is available at: http://www.caiso.com/2b37/2b379d3848210.html.

stakeholders. The changes proposed in this amendment were unopposed in the stakeholder process.

IV. EFFECTIVE DATES

The ISO respectfully requests that the tariff amendments, contained in the instant filing, be approved as of August 22, 2011.

V. COMMUNICATIONS

Communications regarding this filing should be addressed to the following individuals. The individuals identified with an asterisk are the persons whose names should be placed on the official service list established by the Secretary with respect to this submittal:

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VI. SERVICE

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

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

Attachment A Revised ISO Tariff Sheets – Clean

Attachment B Revised ISO Tariff Sheets – Blackline

Attachment C California Board of Governors Memo on CRR 2011 Enhancements

VIII. CONCLUSION

For the foregoing reasons, the ISO respectfully requests that the Commission approve this tariff revision as filed. Please contact the undersigned if you have any questions concerning this matter.

Respectfully submitted,

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Attorneys for the California Independent
System Operator Corporation

Attachment A– Clean Tariff

CRR Tariff Amendment

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

June 23, 2011

* * *

12.6.2 Credit Requirements For CRR Auctions

To establish available credit for participating in any CRR Auction, each CRR Holder or Candidate CRR Holder must have an Unsecured Credit Limit or have provided Financial Security in a form consistent with Section 12.1.2. In order to participate in an annual CRR Auction, the CRR Holder or Candidate CRR Holder must have an Aggregate Credit Limit that exceeds its Estimated Aggregate Liability by the greater of $500,000 or the sum of the maximum credit exposures of all of the CRR Holder's or Candidate CRR Holder's bids for CRRs submitted in the annual CRR Auction. In order to participate in a monthly CRR Auction, the CRR Holder or Candidate CRR Holder must have an Aggregate Credit Limit that exceeds its Estimated Aggregate Liability by the greater of $100,000 or the sum of the maximum credit exposures of all of the CRR Holder's or Candidate CRR Holder's bids for CRRs submitted in the monthly CRR Auction. The maximum credit exposure of a positively valued CRR bid is the maximum value of the CRR Holder's or Candidate CRR Holder's bid quantity (MW) multiplied by the sum of the bid price corresponding to the bid quantity and the Credit Margin of the CRR within the range of the minimum and maximum bid quantities submitted by the CRR Holder or Candidate CRR Holder. The maximum credit exposure of a negatively valued CRR bid is the maximum bid quantity (MW) submitted by the CRR Holder or Candidate CRR Holder multiplied by the Credit Margin of the CRR. A CRR Holder or Candidate CRR Holder that fails to satisfy this requirement shall not be permitted to participate in the relevant CRR Auction, or shall have the entire CRR bid portfolio, consisting of one or more CRR bids, exceeding its available Aggregate Credit Limit for participation in the CRR Auction, in accordance with the above formula, rejected by the CAISO on a last-in, first-out basis. The CAISO will retain the CRR Auction proceeds for negatively valued CRRs and will apply them to credit requirements of the applicable CRR Holder.

* * *

12.6.3.1 Credit Requirements Generally

(a) Each CRR Holder, whether it obtains CRRs through a CRR Allocation or a CRR Auction, must maintain an Aggregate Credit Limit in excess of its Estimated Aggregate Liability including the credit requirement of the CRR portfolio determined as described in this Section 12.6.3.

(b) Each CRR Holder shall be required to ensure that its Aggregate Credit Limit is sufficient to satisfy the credit requirements described in this Section 12.6.3. Except as provided in this paragraph, CRRs are evaluated on a portfolio basis as follows. If a CRR Holder owns more than one CRR, such CRR Holder shall be subject to an overall credit requirement that is equal to the sum of the individual credit requirements applicable to each of the CRRs held by such CRR Holder , which is calculated after the MW associated with any Offsetting CRRs are netted out. If this sum is positive, the amount will be added to the CRR Holder's Estimated Aggregate Liability. However, if the sum is negative, the CRR Holder's Estimated Aggregate Liability shall not be reduced. If a CRR Holder holds one or more CRRs obtained through a CRR Allocation and also holds one or more CRRs obtained through a CRR Auction, the individual credit requirements applicable to any of the CRRs obtained through a CRR Allocation may not be netted against the individual credit requirements applicable to any of the CRRs obtained through a CRR Auction in determining such CRR Holder's Estimated Aggregate Liability.

(c) The CAISO shall reevaluate the credit requirements for holding CRRs, and shall adjust the credit requirements accordingly, not less than monthly. The CAISO may adjust the credit requirements for holding CRRs with terms of one year or less at the CAISO's discretion to account for changes in the monthly auction prices for CRRs and changes in the Historical Expected Values for CRRs, or more frequently than monthly if necessary if the CAISO finds that actual or anticipated market conditions indicate that CRR credit requirements may be inadequate to cover the financial risk of the CRRs. The CAISO may also adjust

the credit requirements for holding Long Term CRRs annually to reflect the changes in auction prices of one-year CRRs in annual auctions and changes in the Historical Expected Values for CRRs, and to reflect updates to Credit Margins based on actual Locational Marginal Price data derived from market operations. Whenever the CAISO requests additional Financial Security from a Market Participant as a result of a change in CRR value that is not related to an adjustment due to the monthly CRR Auction Price or an adjustment related to Historical Expected Value, the CAISO will provide a written explanation of the reason for that request.

(d) In cases where the ownership of a CRR is to be transferred through the Secondary Registration System, the CAISO shall evaluate and adjust the credit requirements for both the current owner of the CRR and the prospective owner of the CRR as appropriate prior to the transfer. If additional Financial Security is required from either the current or prospective owner, the transfer will not be completed until such Financial Security has been provided to and accepted by the CAISO. CRRs transferred through the Secondary Registration System will be treated like auctioned CRRs for the purpose of calculating the credit requirements for holding the CRRs, regardless of whether the CRRs were originally allocated or purchased at auction or acquired through the Secondary Registration System. CRRs assigned to Load-gaining or Load-losing Load Serving Entities as a result of Load Migration will be treated like allocated CRRs for the purpose of calculating the credit requirements for holding the CRRs.

*** * ***

36.4 FNM For CRR Allocation And CRR Auction

When the CAISO conducts its CRR Allocation and CRR Auction, the CAISO shall use the most up-to-date DC FNM which is based on the AC FNM used in the Day-Ahead Market. The Seasonal Available CRR Capacity shall be based on the DC FNM, taking into consideration the following, all of which are discussed in the applicable Business Practice Manual: (i) any long-term

scheduled transmission Outages, (ii) OTC adjusted for any long-term scheduled derates, (iii) a downward adjustment due to TOR or ETC as determined by the CAISO, and (iv) the impact on transmission elements used in the annual CRR Allocation and Auction of (a) transmission Outages or derates that are not scheduled at the time the CAISO conducts the Seasonal CRR Allocation or Auction determined through a methodology that calculates the breakeven point for revenue adequacy based on historical Outages and derates, and (b) known system topology changes, both as further defined in the Business Practice Manuals. The Monthly Available CRR Capacity shall be based on the DC FNM, taking into consideration: (i) any scheduled transmission Outages known at least thirty (30) days in advance of the start of that month as submitted for approval consistent with the criteria specified in Section 36.4.3, (ii) adjustments to compensate for the expected impact of Outages that are not required to be scheduled thirty (30) days in advance, including unplanned transmission Outages, (iii) adjustments to restore Outages or derates that were applied for use in calculating Seasonal Available CRR Capacity but are not applicable for the current month, (iv) any new transmission facilities added to the CAISO Controlled Grid that were not part of the DC FNM used to determine the prior Seasonal Available CRR Capacity and that have already been placed in-service and energized at the time the CAISO starts the applicable monthly process, (v) OTC adjusted for any scheduled derates or Outages for that month, and (vi) a downward adjustment due to TOR or ETC as determined by the CAISO. For the first monthly CRR Allocation and CRR Auction for CRR Year One, to account for any planned or unplanned Outages that may occur for the first month of CRR Year One, the CAISO will derate all flow limits, including Transmission Interface limits and normal thermal limits, based on statistical factors determined as provided in the Business Practice Manuals.

* * *

36.8.3.5.1 Tier 1 – Priority Nomination Process

Tier 1 of the annual CRR Allocation in years beyond CRR Year One will be a Priority Nomination Process through which CRR Holders may nominate some of the same CRRs that they were allocated in the immediately previous annual CRR Allocation process. As provided in Section 36.8.3.4.2, nominations by a Qualified OBAALSE in the PNP are subject to source verification. In

all annual CRR Allocations after CRR Year One, an LSE or a Qualified OBAALSE may make PNP nominations up to the lesser of: (1) two-thirds of its Seasonal CRR Eligible Quantity, minus the quantity of Long Term CRRs allocated in the immediately preceding Seasonal CRR Allocation for each season, time of use period and CRR Sink for that year; or, (2) the total quantity of Seasonal CRRs allocated to that LSE in the previous annual CRR Allocation, minus the quantity of previously allocated Long Term CRRs for each season, time of use period and CRR Sink, and minus any reduction for net loss of Load or plus any increase for net gain of Load through retail Load Migration as described in Section 36.8.5.1. In addition, an LSE's or Qualified OBAALSE's nomination of any particular CRR Source-CRR Sink combination in the PNP may not exceed the MW quantity of CRRs having that CRR Source and CRR Sink that the LSE or Qualified OBAALSE was allocated in the previous annual CRR Allocation, reduced by the MW quantity of those Long-Term CRRs with the same CRR Source and CRR Sink that were awarded in the prior year's Long-Term CRR allocation, for the same season and time of use period, and in the case of an LSE, adjusted for net Load loss or gain resulting from Load Migration as described in Section 36.8.5.2.2. An LSE or a Qualified OBAALSE may nominate CRRs awarded with a CRR Source at the Trading Hubs in the PNP. CRRs whose CRR Sink is a Sub-LAP are not eligible for nomination in the PNP. A CRR whose CRR Sink is a Custom LAP or PNode is eligible for nomination in the PNP. PNP Eligible Quantities are not affected by secondary transfers of CRRs, except as performed by the CAISO to reflect Load Migration as described in Section 36.8.5. That is, with the exception of transfers to reflect Load Migration: (i) an LSE or a Qualified OBAALSE may nominate in the PNP a CRR it was allocated in the prior annual CRR Allocation even though it transferred that CRR to another party during the year, and (ii) an LSE or a Qualified OBAALSE may not nominate in the PNP a CRR that it received through a secondary transfer from another party. CRRs received through a CRR Auction are not eligible for nomination in the PNP. CRRs received as Offsetting CRRs to reflect Load Migration are not eligible for nomination in the PNP. The maximum quantity of CRRs that an LSE or a Qualified OBAALSE may nominate in the PNP is fifty (50) percent of its Adjusted Load Metric, minus any previously allocated Long Term CRRs that are valid for the term of the CRRs being nominated. The CAISO does not guarantee that all

CRR nominations in the PNP will be allocated. The CAISO will conduct an SFT to determine whether all CRR nominations in the PNP are simultaneously feasible. If the SFT determines that all priority nominations are not simultaneously feasible, the CAISO will reduce the allocated CRRs until simultaneous feasibility is achieved.

* * *

36.8.5.4 Load Migration and Compliance with CAISO Credit Requirements

To the extent that the credit requirements of an LSE as specified in Section 12 are updated by the allocation of new CRRs to reflect Load Migration, the CAISO will do the following. For new CRRs that result in net charges to the affected LSE over a Settlement period these charges will appear on the LSE's Settlement Statement irrespective whether the LSE has met the updated credit requirement. For new CRRs that result in net payments to the affected LSE over a Settlement period and that LSE has not met the updated credit requirements affected by the allocation of new CRRs to reflect Load Migration, the CAISO shall withhold payment until those updated credit requirements are met. At the end of each Settlement period, if the LSE has not met the updated credit requirements resulting from Load Migration CRR transfers, the CAISO will add any net payments that accrued to the transferred CRRs to the CRR Balancing Account to be included in the daily clearing of the CRR Balancing Account, and those net payments will no longer be recoverable by the LSE. The CAISO may place new allocated CRRs into CRR Auctions if the non-compliance with credit or applicable Financial Security requirements is persistent. In the event that the Load gaining LSE is not a CRR Holder or Candidate CRR Holder at the time the Load Migration process takes place, then the Load Migration CRRs will not be transferred to that load gaining LSE and will not be financially settled. Instead, the unclaimed Load Migration CRRs will be absorbed within the CRR Balancing Account for the duration of the term of the Load Migration CRRs. In addition, the LSEs affected by the Load Migration will not be eligible to nominate the transferred CRRs in subsequent Priority Nomination Tiers.

* * *

36.8.7 Reconfiguration of CRRs

36.8.7.1 Long Term CRRs And PTO Withdrawal From CAISO Controlled Grid

In the event a Participating TO gives the required notice and withdraws facilities or Entitlements from the CAISO Controlled Grid, the CAISO will reconfigure Long Term CRRs as necessary to reflect the CAISO Controlled Grid after the withdrawal. After reconfiguration, the CAISO will run SFTs on the reconfigured Long Term CRRs and, if necessary, reduce some of the reconfigured Long Term CRRs to ensure their feasibility. If the CRR Source and CRR Sink for an allocated Long Term CRR both are located within a departing Participating TO Service Territory, the Long Term CRR would expire on the effective date of the Participating TO's withdrawal.

36.8.7.2 Changes in Topology of the ISO Transmission Grid

In the event that the CAISO experiences changes to the CAISO Controlled Grid within the term of outstanding annual CRRs, the CAISO will reconfigure outstanding Seasonal CRRs, as necessary, to reflect the changes to the CAISO Controlled Grid. After reconfiguration, the CAISO will run SFTs on the reconfigured Seasonal CRRs and, if necessary, reduce some of the reconfigured Seasonal CRRs to ensure their feasibility. If the CRR Source and CRR Sink for an allocated Seasonal CRR both are located within a departing Participating TO Service Territory, the Seasonal CRRs would expire on the effective date of the Participating TO's withdrawal. The Priority Nomination Tier eligibility for the affected CRR Holders will be based on the MW quantity of the reconfigured Seasonal CRRs after ensuring the CAISO has conducted the Simultaneous Feasibility Test.

* * *

36.13 CRR Auction

The CAISO shall conduct CRR Auctions on an annual and monthly basis subsequent to each annual and monthly CRR Allocation process. Candidate CRR Holders may bid to purchase and may acquire CRR Obligations, and may sell CRRs, through the CAISO's annual and monthly CRR Auctions in accordance with the provisions of this Section 36.13. CRR Auction results shall be settled as provided in Section 11.2.4.3.

36.13.1 Scope Of The CRR Auctions

The CAISO will conduct a CRR Auction corresponding to and subsequent to the completion of each CRR Allocation process, and prior to the start of the period to which the auctioned CRRs will apply. Each CRR Auction will release CRRs having the same seasons, months and time of use specifications as the CRRs released in the corresponding CRR Allocation. Each CRR Auction will utilize the same DC FNM that was utilized in the corresponding CRR Allocation. For each CRR Auction, the CRRs allocated in the corresponding CRR Allocation will be modeled as fixed injections and withdrawals on the DC FNM and will not be adjusted by the SFT in the CRR Auction process. Thus the CRR Auction will release only those CRRs that are feasible given the results of the corresponding CRR Allocation. CRRs released in a CRR Auction will be indistinguishable from CRRs released in the corresponding CRR Allocation for purposes of settlement and secondary trading. The following additional provisions apply. First, participants in the CRR Auctions will have more choices regarding CRR Sources and CRR Sinks than are eligible for nomination in the CRR Allocations, as described in Section 36.13.5. Second, to the extent a Market Participant receives CRRs in both a CRR Allocation and the corresponding CRR Auction, the CRRs obtained in the CRR Auction will not be eligible for nomination in the PNP. Third, in CRR Year One the CRR Auction cannot be used by CRR Holders to offer for sale CRRs they acquired in a prior CRR Allocation, CRR Auction or through the Secondary Registration System. In the annual and monthly CRR Auction processes for years following CRR Year One, CRR Holders may offer for sale any CRRs held by such holders, subject to the limitations on sale and transfer of Long Term CRRs specified in Section 36.7.1.2. Merchant Transmission CRRs that are CRR Options may be offered for sale in the annual and monthly CRR Auctions for years following CRR Year One, subject to the same temporal limitations that apply to Long Term CRRs as specified in Section 36.7.1.2. As further described in Section 36.13.4, sales of CRRs in the CRR Auctions are accomplished through the submission of a CRR bid to procure a counterflow CRR of the CRR to be liquidated.

* * *

36.13.4 Bids In The CRR Auctions

Bids to purchase CRRs shall be submitted in accordance with the requirements set out in this Section 36.13.4 and as further specified in the applicable Business Practice Manuals. Once submitted to the CAISO, CRR bids may not be cancelled or rescinded by the Market Participant after the CRR Auction is closed. Market Participants may bid for Point-to-Point CRRs. Each bid for a Point-to-Point CRR shall specify:

(a) The associated month or season and time of use period;

(b) The associated CRR Source and CRR Sink;

(c) A monotonically non-increasing piecewise linear bid curve in quantities (denominated in thousandths of a MW) and prices ($/MW).

Bid prices in all CRR bids may be negative. Sales of CRRs in the CRR Auctions are accomplished through the submission of a CRR bid to procure a counterflow CRR of the CRR to be liquidated. If such bids for sale of CRRs are cleared through the CRR Auction, the entitlement rights of the CRR Holder that sold the CRR in this manner are effectively liquidated.

36.13.5 Eligible Sources And Sinks For CRR Auction

Allowable CRR Sources for CRRs acquired/sold in the CRR Auction will be PNodes, Scheduling Points, Trading Hubs, LAPs, MSS-LAPs and Sub-LAPs. Allowable CRR Sinks for CRRs acquired/sold in the CRR Auction will be PNodes, Scheduling Points, Trading Hubs, LAPs, MSS-LAPs and Sub-LAPs.

36.13.6 Clearing Of The CRR Auction

The SFT used to clear the CRR Auction will utilize the same DC FNM and optimization algorithm as the corresponding CRR Allocation, except that nominations to the CRR Auction will have associated price-quantity bid curves. The CRR Auction SFT will use the bid prices in determining which CRRs to award when not all nominations are simultaneously feasible, will select the set of simultaneously feasible CRRs with the highest total auction value as determined by the CRR bids, and will calculate nodal prices at each PNode of the DC FNM. In the event that there are two (2) or more identical bids for a specific combination of CRR Source and CRR Sink that affect an overloaded constraint, the CRR Auction optimization cannot distinguish these bids based on

either effectiveness or price and therefore the CRR Auction optimization will award each CRR bidder a pro rata share of the CRRs that can be awarded based on the bid MW amounts. Based on the nodal prices calculated by the CRR Auction SFT, the CRR Market Clearing Price per MW for a specific CRR in most cases will equal the nodal price at the CRR Source minus the nodal price at the CRR Sink. In certain anomalous cases as further described in the Business Practice Manuals, the CRR Market Clearing Price will be based on the CRR MWs cleared and the shadow price for each binding constraint at the specified location.

* * *

Appendix A
Master Definitions Supplement

Secondary Registration System
The system and process through which CRR Holders and Candidate CRR Holders register any bilateral CRR transactions with the CAISO.

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Attachment B– Marked Tariff

CRR Tariff Amendment

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

June 23, 2011

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12.6.2 Credit Requirements For CRR Auctions

To establish available credit for participating in any CRR Auction, each CRR Holder or Candidate CRR Holder must have an Unsecured Credit Limit or have provided Financial Security in a form consistent with Section 12.1.2. In order to participate in an annual CRR Auction, the CRR Holder or Candidate CRR Holder must have an Aggregate Credit Limit that exceeds its Estimated Aggregate Liability by the greater of $500,000 or the sum of the maximum credit exposures of all of the CRR Holder's or Candidate CRR Holder's bids for CRRs submitted in the annual CRR Auction. In order to participate in a monthly CRR Auction, the CRR Holder or Candidate CRR Holder must have an Aggregate Credit Limit that exceeds its Estimated Aggregate Liability by the greater of $100,000 or the sum of the maximum credit exposures of all of the CRR Holder's or Candidate CRR Holder's bids for CRRs submitted in the monthly CRR Auction. The maximum credit exposure of a positively valued CRR bid is the maximum value of the CRR Holder's or Candidate CRR Holder's bid quantity (MW) multiplied by the sum of the bid price corresponding to the bid quantity and the Credit Margin of the CRR within the range of the minimum and maximum bid quantities submitted by the CRR Holder or Candidate CRR Holder. The maximum credit exposure of a negatively valued CRR bid is the maximum bid quantity (MW) submitted by the CRR Holder or Candidate CRR Holder multiplied by the Credit Margin of the CRR. A CRR Holder or Candidate CRR Holder that fails to satisfy this requirement shall not be permitted to participate in the relevant CRR Auction, or shall have the entire CRR bid portfolio, consisting of one or more CRR bids, exceeding its available Aggregate Credit Limit for participation in the CRR Auction, in accordance with the above formula, rejected by the CAISO on a last-in, first-out basis. The CAISO will retain the CRR Auction proceeds for negatively valued CRRs and will apply them to credit requirements of the applicable CRR Holder.

* * *

12.6.3.1 Credit Requirements Generally

(a) Each CRR Holder, whether it obtains CRRs through a CRR Allocation or a CRR Auction, must maintain an Aggregate Credit Limit in excess of its Estimated Aggregate Liability including the credit requirement of the CRR portfolio determined as described in this Section 12.6.3.

(b) Each CRR Holder shall be required to ensure that its Aggregate Credit Limit is sufficient to satisfy the credit requirements described in this Section 12.6.3. Except as provided in this paragraph, CRRs are evaluated on a portfolio basis as follows. If a CRR Holder owns more than one CRR, such CRR Holder shall be subject to an overall credit requirement that is equal to the sum of the individual credit requirements applicable to each of the CRRs held by such CRR Holder , which is calculated after the MW associated with any Offsetting CRRs are netted out. If this sum is positive, the amount will be added to the CRR Holder's Estimated Aggregate Liability. However, if the sum is negative, the CRR Holder's Estimated Aggregate Liability shall not be reduced. If a CRR Holder holds one or more CRRs obtained through a CRR Allocation and also holds one or more CRRs obtained through a CRR Auction, the individual credit requirements applicable to any of the CRRs obtained through a CRR Allocation may not be netted against the individual credit requirements applicable to any of the CRRs obtained through a CRR Auction in determining such CRR Holder's Estimated Aggregate Liability.

(c) The CAISO shall reevaluate the credit requirements for holding CRRs, and shall adjust the credit requirements accordingly, not less than monthly. The CAISO may adjust the credit requirements for holding CRRs with terms of one year or less at the CAISO's discretion to account for changes in the monthly auction prices for CRRs and changes in the Historical Expected Values for CRRs, or more frequently than monthly if necessary if the CAISO finds that actual or anticipated market conditions indicate that CRR credit requirements may be inadequate to cover the financial risk of the CRRs. The CAISO may also adjust

the credit requirements for holding Long Term CRRs annually to reflect the changes in auction prices of one-year CRRs in annual auctions and changes in the Historical Expected Values for CRRs, and to reflect updates to Credit Margins based on actual Locational Marginal Price data derived from market operations. Whenever the CAISO requests additional Financial Security from a Market Participant as a result of a change in CRR value that is not related to an adjustment due to the monthly CRR Auction Price or an adjustment related to Historical Expected Value, the CAISO will provide a written explanation of the reason for that request.

(d) In cases where the ownership of a CRR is to be transferred through ~~either~~ the Secondary Registration System ~~or through Load Migration~~, the CAISO shall evaluate and adjust the credit requirements for both the current owner of the CRR and the prospective owner of the CRR as appropriate prior to the transfer. If additional Financial Security is required from either the current or prospective owner, the transfer will not be completed until such Financial Security has been provided to and accepted by the CAISO. CRRs transferred through the Secondary Registration System will be treated like auctioned CRRs for the purpose of calculating the credit requirements for holding the CRRs, regardless of whether the CRRs were originally allocated or purchased at auction or acquired through the Secondary Registration System. CRRs assigned to Load-gaining or Load-losing Load Serving Entities as a result of Load Migration will be treated like allocated CRRs for the purpose of calculating the credit requirements for holding the CRRs.

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36.4 FNM For CRR Allocation And CRR Auction

When the CAISO conducts its CRR Allocation and CRR Auction, the CAISO shall use the most up-to-date DC FNM which is based on the AC FNM used in the Day-Ahead Market. The Seasonal Available CRR Capacity shall be based on the DC FNM, taking into consideration the

following, all of which are discussed in the applicable Business Practice Manual: (i) any long-term scheduled transmission Outages, (ii) OTC adjusted for any long-term scheduled derates, ~~and~~ (iii) a downward adjustment due to TOR or ETC as determined by the CAISO, and (iv) the impact on transmission elements used in the annual CRR Allocation and Auction of (a) transmission Outages or derates that are not scheduled at the time the CAISO conducts the Seasonal CRR Allocation or Auction determined through a methodology that calculates the breakeven point for revenue adequacy based on ~~-~~historical Outages and derates, and (b) known system topology changes, both as further defined in the Business Practice Manuals. The Monthly Available CRR Capacity shall be based on the DC FNM, taking into consideration: (i) any scheduled transmission Outages known at least thirty (30) days in advance of the start of that month as submitted for approval consistent with the criteria specified in Section 36.4.3, (ii) adjustments to compensate for the expected impact of Outages that are not required to be scheduled thirty (30) days in advance, including unplanned transmission Outages, (iii) adjustments to restore Outages or derates that were applied for use in calculating Seasonal Available CRR Capacity but are not applicable for the current month, (iv) any new transmission facilities added to the CAISO Controlled Grid that were not part of the DC FNM used to determine the prior Seasonal Available CRR Capacity and that have already been placed in-service and energized at the time the CAISO starts the applicable monthly process, (v) OTC adjusted for any scheduled derates or Outages for that month, and (vi) a downward adjustment due to TOR or ETC as determined by the CAISO. For the first monthly CRR Allocation and CRR Auction for CRR Year One, to account for any planned or unplanned Outages that may occur for the first month of CRR Year One, the CAISO will derate all flow limits, including Transmission Interface limits and normal thermal limits, based on statistical factors determined as provided in the Business Practice Manuals.

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36.8.3.5.1 Tier 1 – Priority Nomination Process

Tier 1 of the annual CRR Allocation in years beyond CRR Year One will be a Priority Nomination Process through which CRR Holders may nominate some of the same CRRs that they were allocated in the immediately previous annual CRR Allocation process. As provided in Section

36.8.3.4.2, nominations by a Qualified OBAALSE in the PNP are subject to source verification. In all annual CRR Allocations after CRR Year One, an LSE or a Qualified OBAALSE may make PNP nominations up to the lesser of: (1) two-thirds of its Seasonal CRR Eligible Quantity, minus the quantity of ~~previously allocated~~ Long Term CRRs allocated in the immediately preceding Seasonal CRR Allocation for each season, time of use period and CRR Sink for that year; or, (2) the total quantity of Seasonal CRRs allocated to that LSE in the previous annual CRR Allocation, minus the quantity of previously allocated Long Term CRRs for each season, time of use period and CRR Sink, and minus any reduction for net loss of Load or plus any increase for net gain of Load through retail Load Migration as described in Section 36.8.5.1. In addition, an LSE's or Qualified OBAALSE's nomination of any particular CRR Source-CRR Sink combination in the PNP may not exceed the MW quantity of CRRs having that CRR Source and CRR Sink that the LSE or Qualified OBAALSE was allocated in the previous annual CRR Allocation, reduced by the MW quantity of those Long-Term CRRs with the same CRR Source and CRR Sink that were awarded in the prior year's Long-Term CRR allocation, for the same season and time of use period, and in the case of an LSE, adjusted for net Load loss or gain resulting from Load Migration as described in Section 36.8.5.2.2. An LSE or a Qualified OBAALSE may nominate CRRs awarded with a CRR Source at the Trading Hubs in the PNP. CRRs whose CRR Sink is a Sub-LAP are not eligible for nomination in the PNP. A CRR whose CRR Sink is a Custom LAP or PNode is eligible for nomination in the PNP. PNP Eligible Quantities are not affected by secondary transfers of CRRs, except as performed by the CAISO to reflect Load Migration as described in Section 36.8.5. That is, with the exception of transfers to reflect Load Migration: (i) an LSE or a Qualified OBAALSE may nominate in the PNP a CRR it was allocated in the prior annual CRR Allocation even though it transferred that CRR to another party during the year, and (ii) an LSE or a Qualified OBAALSE may not nominate in the PNP a CRR that it received through a secondary transfer from another party. CRRs received through a CRR Auction are not eligible for nomination in the PNP. CRRs received as Offsetting CRRs to reflect Load Migration are not eligible for nomination in the PNP. The maximum quantity of CRRs that an LSE or a Qualified OBAALSE may nominate in the PNP is fifty (50) percent ~~(50%)~~ of its Adjusted Load Metric, minus

any previously allocated Long Term CRRs that are valid for the term of the CRRs being nominated. The CAISO does not guarantee that all CRR nominations in the PNP will be allocated. The CAISO will conduct an SFT to determine whether all CRR nominations in the PNP are simultaneously feasible. If the SFT determines that all priority nominations are not simultaneously feasible, the CAISO will reduce the allocated CRRs until simultaneous feasibility is achieved.

* * *

36.8.5.4 Load Migration and Compliance with CAISO Credit Requirements

To the extent that the credit requirements of an LSE as specified in Section 12 are updated by the allocation of new CRRs to reflect Load Migration, the CAISO will do the following. For new CRRs that result in net charges to the affected LSE over a Settlement period these charges will appear on the LSE's Settlement Statement irrespective whether the LSE has met the updated credit requirement. For new CRRs that result in net payments to the affected LSE over a Settlement period and that LSE has not met the updated credit requirements affected by the allocation of new CRRs to reflect Load Migration, the CAISO shall withhold payment until those updated credit requirements are met. At the end of each Settlement period, if the LSE has not met the updated credit requirements resulting from Load Migration CRR transfers, the CAISO will add any net payments that accrued to the transferred CRRs to the CRR Balancing Account to be included in the daily clearing of the CRR Balancing Account, and those net payments will no longer be recoverable by the LSE. The CAISO may place new allocated CRRs into CRR Auctions if the non-compliance with credit or applicable Financial Security requirements is persistent. In the event that the Load gaining LSE is not a CRR Holder or Candidate CRR Holder at the time the Load Migration process takes place, then the -Load Migration CRRs will not be transferred to that load gaining LSE and will not be financially settled. Instead, the unclaimed Load Migration CRRs will be absorbed within the CRR Balancing Account for the duration of the term of the Load Migration CRRs. In addition, the LSEs affected by the Load Migration will not be eligible to nominate the transferred CRRs in subsequent Priority Nomination Tiers.

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36.8.7 Reconfiguration of CRRs

36.8.7.1 Long Term CRRs And PTO Withdrawal From CAISO Controlled Grid

In the event a Participating TO gives the required notice and withdraws facilities or Entitlements from the CAISO Controlled Grid, the CAISO will reconfigure Long Term CRRs as necessary to reflect the CAISO Controlled Grid after the withdrawal. After reconfiguration, the CAISO will run SFTs on the reconfigured Long Term CRRs and, if necessary, reduce some of the reconfigured Long Term CRRs to ensure their feasibility. If the CRR Source and CRR Sink for an allocated Long Term CRR both are located within a departing Participating TO Service Territory, the Long Term CRR would expire on the effective date of the Participating TO's withdrawal.

36.8.7.2 Changes in Topology of the ISO Transmission Grid

In the event that the CAISO experiences changes to the CAISO Controlled Grid within the term of outstanding annual CRRs, the CAISO will reconfigure outstanding Seasonal CRRs, as necessary, to reflect the changes to the CAISO Controlled Grid. After reconfiguration, the CAISO will run SFTs on the reconfigured Seasonal CRRs and, if necessary, reduce some of the reconfigured Seasonal CRRs to ensure their feasibility. If the CRR Source and CRR Sink for an allocated Seasonal CRR both are located within a departing Participating TO Service Territory, the Seasonal CRRs would expire on the effective date of the Participating TO's withdrawal. The Priority Nomination Tier eligibility for the affected CRR Holders will be based on the MW quantity of the reconfigured Seasonal CRRs after ensuring the CAISO has conducted the Simultaneous Feasibility Test.

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36.13 CRR Auction

The CAISO shall conduct CRR Auctions on an annual and monthly basis subsequent to each annual and monthly CRR Allocation process. Candidate CRR Holders may bid to purchase and may acquire CRR Obligations, and may sell CRRs, through the CAISO's annual and monthly CRR Auctions in accordance with the provisions of this Section 36.13. CRR Auction results shall be settled as provided in Section 11.2.4.3.

36.13.1 Scope Of The CRR Auctions

The CAISO will conduct a CRR Auction corresponding to and subsequent to the completion of each CRR Allocation process, and prior to the start of the period to which the auctioned CRRs will apply. Each CRR Auction will release CRRs having the same seasons, months and time of use specifications as the CRRs released in the corresponding CRR Allocation. Each CRR Auction will utilize the same DC FNM that was utilized in the corresponding CRR Allocation. For each CRR Auction, the CRRs allocated in the corresponding CRR Allocation will be modeled as fixed injections and withdrawals on the DC FNM and will not be adjusted by the SFT in the CRR Auction process. Thus the CRR Auction will release only those CRRs that are feasible given the results of the corresponding CRR Allocation. CRRs released in a CRR Auction will be indistinguishable from CRRs released in the corresponding CRR Allocation for purposes of settlement and secondary trading. The following additional provisions apply. First, participants in the CRR Auctions will have more choices regarding CRR Sources and CRR Sinks than are eligible for nomination in the CRR Allocations, as described in Section 36.13.5. Second, to the extent a Market Participant receives CRRs in both a CRR Allocation and the corresponding CRR Auction, the CRRs obtained in the CRR Auction will not be eligible for nomination in the PNP. Third, in CRR Year One the CRR Auction cannot be used by CRR Holders to offer for sale CRRs they acquired in a prior CRR Allocation, CRR Auction or through the Secondary Registration System. In the annual and monthly CRR Auction processes for years following CRR Year One, CRR Holders may offer for sale any CRRs held by such holders, subject to the limitations on sale and transfer of Long Term CRRs specified in Section 36.7.1.2. Merchant Transmission CRRs that are CRR Options may be offered for sale in the annual and monthly CRR Auctions for years following CRR Year One, subject to the same temporal limitations that apply to Long Term CRRs as specified in Section 36.7.1.2. As further described in Section 36.13.4, sales of CRRs in the CRR Auctions are accomplished through the submission of a CRR bid to procure a counterflow CRR of the CRR to be liquidated.

* * *

36.13.4 Bids In The CRR Auctions

Bids to purchase CRRs shall be submitted in accordance with the requirements set out in this Section 36.13.4 and as further specified in the applicable Business Practice Manuals. Once submitted to the CAISO, CRR bids may not be cancelled or rescinded by the Market Participant after the CRR Auction is closed. Market Participants may bid for Point-to-Point CRRs. Each bid for a Point-to-Point CRR shall specify:

(a) The associated month or season and time of use period;

(b) The associated CRR Source and CRR Sink;

(c) A monotonically non-increasing piecewise linear bid curve in quantities (denominated in thousandths of a MW) and prices ($/MW).

Bid prices in all CRR bids may be negative. Sales of CRRs in the CRR Auctions are accomplished through the submission of a CRR bid to procure a counterflow CRR of the CRR to be liquidated. If such bids for sale of CRRs are cleared through the CRR Auction, the entitlements rights of the CRR Holder that sold the CRR in this manner are effectively liquidated.

36.13.5 Eligible Sources And Sinks For CRR Auction

Allowable CRR Sources for CRRs acquired/sold in the CRR Auction will be PNodes, Scheduling Points, Trading Hubs, LAPs, MSS-LAPs and Sub-LAPs. Allowable CRR Sinks for CRRs acquired/sold in the CRR Auction will be PNodes, Scheduling Points, Trading Hubs, LAPs, MSS-LAPs and Sub-LAPs.

36.13.6 Clearing Of The CRR Auction

The SFT used to clear the CRR Auction will utilize the same DC FNM and optimization algorithm as the corresponding CRR Allocation, except that nominations to the CRR Auction will have associated price-quantity bid curves. The CRR Auction SFT will use the bid prices in determining which CRRs to award when not all nominations are simultaneously feasible, will select the set of simultaneously feasible CRRs with the highest total auction value as determined by the CRR bids, and will calculate nodal prices at each PNode of the DC FNM. In the event that there are two (2) or more identical bids for a specific combination of CRR Source and CRR Sink that affect an overloaded constraint, the CRR Auction optimization cannot distinguish these bids based on

either effectiveness or price and therefore the CRR Auction optimization will award each CRR bidder a pro rata share of the CRRs that can be awarded based on the bid MW amounts. Based on the nodal prices calculated by the CRR Auction SFT, the CRR Market Clearing Price per MW for a specific CRR in most cases will equal the nodal price at the CRR Source minus the nodal price at the CRR Sink. In certain anomalous cases as further described in the Business Practice Manuals, the CRR Market Clearing Price will be based on the CRR MWs cleared and the shadow price for each binding constraint at the specified location.

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Appendix A
Master Definitions Supplement

Secondary Registration System
The ~~computer interface~~system and process through which CRR Holders and Candidate CRR Holders register any bilateral CRR transactions with the CAISO.

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Attachment C– California ISO Board of Governors Memo
on CRR 2011 Enhancements
CRR Tariff Amendment
California Independent System Operator Corporation
Fifth Replacement FERC Electric Tariff
June 23, 2011

California Independent
System Operator Corporation

Memorandum

To: ISO Board of Governors

From: Keith Casey, Acting President and Chief Executive Officer and Vice President, Market & Infrastructure Development

Date: June 3, 2011

Re: **Decision on Congestion Revenue Rights Enhancements**

This memorandum requires Board action.

EXECUTIVE SUMMARY

The California Independent System Operator Corporation releases short-term and long-term congestion revenue rights (CRRs) as a feature of its new market design that has been in effect since April 1, 2009. CRRs are a financial instrument for hedging congestion cost in the day-ahead market. They are released annually and monthly through an allocation process and auction. CRRs provide payments or assess charges to holders of such rights based on the direction of congestion reflected in locational marginal prices between different defined pricing locations on the ISO grid. The receipt of revenue related to CRR holdings allows market participants to manage their exposure to congestion costs in the day-ahead market.

With over two years of CRR experience, the ISO and stakeholders have identified a set of beneficial refinements and clarifications to the processes supporting the CRR design. All but one of these changes are minor tariff clarifications that do not require Board approval and therefore are not discussed in this memo. The one substantive change for which Management is seeking Board approval is to incorporate expected transmission outages into the transmission network model used in the annual CRR allocation and auction process. This change will improve the CRR design by better ensuring the payment obligations to CRR holders can be adequately met through the congestion revenues collected in the day-ahead market, the importance of which is explained more fully in the main body of this memo.

Management believes incorporating expected transmission outages into the transmission network model for allocating and auctioning annual CRRs will address ongoing concerns with revenue adequacy resulting from releasing too many CRRs in the annual process.

Moved, that the ISO Board of Governors approves the proposal regarding congestion revenue rights enhancements, as described in the memorandum dated June 3, 2011; and

Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.

DISCUSSION AND ANALYSIS

Congestion revenue rights are financial instruments made available to ISO market participants to manage their financial risk associated with transmission usage congestion costs in the day-ahead market. A CRR is defined by a source-sink pair[1], a megawatt quantity, and a term consisting of a season or a month and a time of use (on-peak or off-peak). The ISO also makes available long-term CRRs defined on a seasonal and time-of-use basis that exceed an annual period up to ten years.

The ISO conducts an annual allocation and auction to distribute CRRs to market participants. The ISO releases seventy-five percent of the modeled transmission capacity in the annual process. On a monthly basis, the ISO conducts additional allocation and auction processes to release congestion revenue rights for the remaining twenty-five percent of modeled transmission capacity less planned outages and other capacity adjustments. Load serving entities receive the benefits of the CRR market though the allocation of CRRs and a share of the auction proceeds.

CRRs are funded through the congestion revenues collected in the ISO's day-ahead market. These congestion revenues are maintained in a CRR balancing account in which the ISO accounts for any excess or shortage of congestion revenue. Proceeds from sales of CRRs in the ISO auctions are also transferred to the applicable monthly CRR balancing account. CRRs are settled hourly and are required to be fully funded. However, the balancing account can incur shortages when the congestion revenue collected through the day-ahead market is less than the payments owed to CRR holders. Since the implementation of the new LMP market structure in April 2009 the total revenue deficiency has been approximately $48.5 million. Such CRR revenue inadequacy is funded, on a bi-monthly basis, through allocations of the shortage to load serving entities in proportion to their metered demand. Similarly, surpluses in the congestion revenue rights balancing account are distributed monthly to load serving entities in proportion to their metered demand. The balancing account deficiencies and surpluses area allocated to load serving entities because they are the primary beneficiaries of the CRRs. As explained further below, CRR revenue inadequacy is primarily due to transmission outages that are modeled in the day-ahead market but not reflected in the transmission network model used to allocate or auction the CRRs in the annual or monthly

[1] The "source" being the point of power injection to the transmission network and the "sink" being the point of power withdraw (i.e., consumption). These designations denote the direction of flow on the network (e.g., from source A to sink B) and the price component of the CRR payment, which is defined as the difference in the congestion component of the locational marginal price between the two locations.

process. By including expected transmission outages into the CRR annual process, the CRR revenue inadequacy issue can be significantly reduced.

Include Expected Outages in Modeling of Annual Transmission Capacity

The ISO strives to release the maximum number of congestion revenue rights that can be supported from the congestion revenue collected from the day-ahead market. Annual congestion revenue rights are released on a year-ahead basis using a model of the transmission system and assumptions about its expected usage. On a year-ahead basis, because of the inherently changing nature of the transmission system configuration, it is not possible to perfectly estimate the amount of congestion revenue rights that will be fully funded through the day-ahead market. Therefore, it is not possible to guarantee sufficient revenues for every single hour, day, month, or season. If the assumptions made for the upcoming applicable time period constrain the system excessively, the ISO is likely to release fewer congestion revenue rights than desired by market participants to effectively hedge congestion in the day-ahead market. Conversely, if the transmission modeling assumptions used to allocate and auction CRRs do not sufficiently account for actual conditions that eventually occur in the day-ahead market, an excess amount of CRRs may be released that will not be fully funded by the revenue collected from the day-ahead market.

Under the current CRR design, the ISO does not account for expected transmission outages and de-rates in the annual CRR process. The results of the past three annual processes has shown that revenue adequacy could be improved through enhanced modeling of transmission capacity in the annual process to better account for the impact of expected transmission outages and de-rates. The ISO and stakeholders have determined that modeling expected outages in the annual process will address the past issues with revenue adequacy that resulted from releasing too much capacity in the annual process. The proposed approach targets the areas where outages have historically contributed to revenue inadequacy while not impacting those areas that have not had adverse effects on revenue adequacy. By incorporating expected outages in the annual process, the ISO will be able to better model the transmission capacity that will be available in the actual market runs thereby reducing risks to revenue adequacy. Moreover, incorporating the expected outages in the annual process will enable the release of more capacity in the monthly CRR allocation and auction processes.

POSITIONS OF THE PARTIES

The proposed changes are either supported or conditionally supported by stakeholders as reflected in the attached stakeholder comments matrix. Three of the six parties that commented (SCE, CDWR & Six Cities) provided conditional support. SCE supports the proposal if the ISO agrees to provide information on the effectiveness of the new process. The ISO has committed to providing this information to market participants. CDWR commented that there may be other factors driving the revenue inadequacy. The ISO will continue to analyze any future drivers of revenue inadequacy but believes the primary driver is the transmission modeling issue being addressed by this proposal. Six Cities also commented that there may be other factors driving the revenue inadequacy and suggested that the ISO consider relaxing the full funding requirements for CRRs. The ISO does not believe that this

is a feasible solution as full funding requirements have been mandated by the Federal Energy Regulatory Commission in response to federal legislation.

MANAGEMENT RECOMMENDATION

Management recommends that the Board approve the congestion revenue rights enhancements as discussed in this memorandum. The improved modeling of transmission capacity in the annual process will address ongoing concerns with revenue adequacy. If approved, the ISO intends to implement the enhancements by summer 2011.