California Independent
System Operator Corporation

Memorandum

To: ISO Board of Governors

From: Laura Manz, Vice President, Market & Infrastructure Development

Date: July 10, 2009

Re: **Decision on Proposed New Market Tariff Modifications**

This memorandum requires Board action.

EXECUTIVE SUMMARY

While the first 90 days of operations under the new market design have been successful, the California Independent System Operator Corporation (ISO) has carefully monitored the market and its performance and has identified three modifications needed to better align operational outcomes with actual costs and avoid market or settlement distortions that arise out of existing market rules.

The proposed modifications would revise the tariff to:

- Relax 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;

- Simplify the financial settlements of congestion revenue rights (CRRs) to reflect credits and charges as they will actually be made at the end of the month. To this end, Management proposes to eliminate the current tracking requirement that the hourly CRR settlement charges be pro-rated to reflect deficiencies or surplus in the hourly congestion revenues; and

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

The need for these changes was identified through close consultation with market participants regarding their market experiences and through the ISO staff's own observation of market operations.

Motion

Moved, that the ISO Board of Governors approves the following rule modifications, as set forth in the memorandum dated July 10, 2009:

- ***relaxing the rule regarding the frequency with which market participants may modify their election regarding recovery of start-up and minimum load costs from once every six months to once every thirty days***;

- ***modifying settlements to represent the hourly payments and charges for congestion revenue rights consistent with the actual settlement and without pro-ration of hourly amounts to reflect deficiencies or surplus in the hourly congestion revenues; and***

- ***selecting locational marginal price for an electrically disconnected pricing node based on the closest electrically connected node.***

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

DISCUSSION AND ANALYSIS

Following the new market launch, ISO staff has conducted extensive review and analysis of market operations and market results to ensure the market is functioning as intended. Management held discussions with market participants, daily at first and weekly since the end of April, to address various areas that affect operations, transmission and settlements of market transactions. The proposed changes that were formulated through these discussions will enhance the market outcomes and better facilitate participation in the new market. The three rule changes proposed are as follows:

- Relaxing the limitations on selecting a method or value for recovery of start-up and minimum load costs;

- Simplifying hourly settlement of congestion revenue rights; and

- Establishing prices for electrically disconnected nodes.

In order to implement these changes sooner, Management anticipates asking FERC to waive the usual requirement of 60-days advance notice. This would enable the ISO to implement the changes upon filing with FERC.

Relaxing restrictions on electing recovery of start-up and minimum load costs

In committing generating units, the new market considers start-up and minimum load costs. Market participants have raised the issue that being committed based on their start-up and minimum load costs contributes to the frequency with which the ISO commits their units. In particular, some suppliers have found that certain units are being turned off and on more frequently than they were under the former market, causing extra wear and tear on the generating units and consuming the fixed number of unit starts and emissions allowances. In addition, the design of the cost-based mechanism does not cover other operating costs that generators incur with the frequent cycling of their units.

Generation owners must choose one of two methods for recovery of start-up and minimum load costs: either a cost-based option or a registered-cost option. This election is currently fixed for six months. The cost-based option is linked to the price of natural gas, and thus provides protection from fuel-price risk. The registered cost option enables generation owners to submit a bid for start-up and minimum load so long as that bid-in value is less than or equal to 400% of heat rate-based generic start-up and minimum load cost.

Many generation owners have chosen the fuel cost-based option. This has led to the unanticipated result of more frequent commitment of the units to minimum operating levels than the generators had experienced in the legacy system because the low costs to the market reflected in the cost-based values contained in the master file are "attractive" to the market optimization, which results in the commitment of such resources to the minimum level. The current tariff limits the frequency that costs can be adjusted to once very six months, so generation owners cannot respond to the cost impacts as quickly as they would like.

Frequent cycling of generating units is leading to excessive wear and tear, trouble recouping costs, and pre-summer consumption of annual fixed numbers of starts and emissions allowances. Market experience has provided market participants with insight that will enable them to submit start-up and minimum load costs that more accurately reflect the costs associated with frequent dispatches.

As an initial, short-term measure, Management proposes that the restriction on changing start-up and minimum load cost values be relaxed to permit an owner to change every thirty days its election between the cost-based option and the registered-cost option. The new rule will enable participants to supply the ISO with values that better represent their costs given the way their units are being committed in the new markets. Currently the cap on the registered cost option for start-up and minimum load costs is 200% of the cost-based option if the unit is in a local capacity area, and 400% of the cost-based option otherwise. In response to concerns expressed by the Market Surveillance Committee (MSC), Management proposes that the cap be changed to be 200% of the cost based option for all units. In addition to providing a further safeguard against potential market power issues, Management believes this change should still provide unit owners with sufficient bidding flexibility, particularly since under this proposal, unit owners only have to manage 30-days of gas price risk as opposed to 6-months under the current rules. The draft MSC Opinion, which will be finalized and presented for adoption at the July 16 meeting, is attached to this memo as **Attachment A**.

In the longer term, ISO staff will continue to discuss these issues with market participants and evaluate how the bidding software may be modified to accept start-up and minimum load values on a daily or hourly basis, and how a fixed "operations and maintenance" value might be added to the cost-based option. This second phase is still being developed and evaluated, and will come to the Board for decision at a later date.

In addition the ISO will continue to monitor and review the conditions and commitment results to identify opportunities to improve the real-time commitment decision process. In June, we also observed reduced frequency of real-time unit commitment at minimum load as the price volatility improved, which we believe also contributed to the increased frequency in commitment initially observed.

Simplifying hourly settlement of congestion revenue rights

The ISO settles CRR payments and charges based on the revenues obtained from the congestion component of LMPs and through the clearing of the CRR balancing account at the end of each month. For each trading hour, the ISO also tracks whether in that hour the ISO has assessed sufficient congestion charges to settle all CRR entitlements for that hour. If congestion charges in the hour are insufficient, the tariff currently requires the ISO to pro-rate CRR payments and charges for that hour and requires that this be reflected in the hourly settlement. At the end of each month, however, all entitlements are fully funded through the clearing of the CRR balancing account. Any excess revenue or shortage of revenue for funding all CRR entitlements for the month is allocated to ISO demand. This ensures that CRR holders receive the full value of their CRRs. Therefore, the hourly pro-ration has no financial meaning. Moreover, the pro-ration causes unnecessary accounting issues and creates the misperception that CRR holders will not be paid in full for their CRRs or will be charged for any shortages of the hourly settlement account. The ISO retained this requirement even after it adopted the policy of fully funding CRRs in order to provide an indication to CRR holders of the revenue inadequacy in the hourly settlement of CRRs. Despite original intentions, the rule of hourly pro-ration does not provide an adequate picture of the overall market revenue sufficiency.

To resolve the concern of information transparency, the ISO provides more complete information regarding CRR revenue adequacy to market participants by tracking the revenue inadequacy in its *Day-Ahead Daily Market Watch* and in the monthly *Market Performance Report*. The *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"). The monthly *Market Performance Report* subsequently repeats the daily status for the month and describes analyses of CRR revenue adequacy.

Simplifying the CRR settlements to reflect payments and charges as they will be made at the end of the month will eliminate this source of confusion to market participants. This is easily accomplished by eliminating the current settlement rule requiring the hourly pro-ration. The existing daily and monthly reports provide better information than the pro-rationing was intended to achieve.

Pricing electrically disconnected nodes

A pricing node (PNode) is a location on the transmission system at which electrical injections and/or withdrawals are modeled and for which an LMP is calculated. A PNode can become disconnected due to a temporary transmission facility switch or outages. Under these circumstances, the generator may be physically isolated and cannot delivery energy to the system. Because there is no electrical flow to or from a node that becomes disconnected, the software cannot calculate a cost of congestion for that PNode for the applicable market. In any case, when this occurs, there is no relationship between the power transfer distribution factor associated with the disconnected PNode and the binding constraint. The current ISO practice is to insert a "$0" value for the marginal cost of congestion (MCC).[1]

The "$0" price component does, however, affect the settlement of CRRs because they are settled based on the difference in the MCC between two locations. There have been instances when this "$0" price was used to settle CRRs that designate a disconnected PNode as the source or sink. Additionally, the "$0" MCC indirectly impacts inter-Scheduling Coordinator trades and CRRs that are referenced to a trading hub. These CRRs and trades settle based on the existing zone generation trading hub (trading hub) prices. The trading hub price is calculated as a weighted average of LMPs. A "$0" MCC likely depresses the trading hub price thus affecting CRRs and trades that are settled based upon it.

Posting a "$0" MCC also has impacted the settlement of the supply resources at the disconnected PNode. 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 their bid-costs through the bid cost recovery mechanism.

The ISO has received a number of disputes for such settlements in which market participants assert that "$0" is not the correct price at which the CRR should settle. While the tariff does not specify the price under such circumstances, the current practice does not violate any tariff provisions. The insertion of a zero value to fill the price at a PNode associated with a disconnected node is, however, at odds with how the MCC would have been calculated at that location but for the disconnection of the PNode. This poses a problem for settlements of CRRs especially, because CRR holders anticipate settlement of CRRs based on the MCC at the defined location. Management 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 ISOs and regional transmission organizations for pricing disconnected nodes. This survey yielded two alternatives for consideration. First, it is possible that instead of inserting a zero price value for the MCC, the ISO could instead simply let the price at that PNode (both the LMP and the MCC) remain undefined or a "null value." Upon evaluation of this methodology, it was determined that it would undoubtedly cause complications elsewhere in the ISO's systems and processes

[1] This practice was noted and validated in the LECG Final Report Analysis Track Testing of CAISO MRTU Pricing and Dispatch and was used in the many months of market simulation.

because the ISO could not then settle CRRs, inter-SC trades or energy at those locations. Accordingly, Management recommends that the ISO adopt an alternative practice used by most other ISOs and regional transmission organizations, which is to insert the MCC price of the closest electrically connected PNode. This alternative is favored over both the current practice to insert a “$0” value for the MCC and the alternative of leaving the price undefined. It will enable the ISO to settle CRRs and inter-SC trades at a price that is derived more closely to what the price would have been but for the disconnection of the PNode.

POSITIONS OF THE PARTIES

Modification of Registered Start-up and Minimum Load Cost

The ISO received comments from numerous stakeholders, including investor-owned utilities and generation owners. Although several market participants expressed eagerness to expedite implementation of components of the planned second phase of this design change, all comments received from stakeholders were supportive of the first phase of the proposed design.

The Market Surveillance Committee (MSC) has reviewed the ISO’s proposed tariff change and has raised concerns that the change may result in little improvement of the frequency of real-time commitments and may lead to higher uplift costs. In response to the MSC’s concerns, Management incorporated the recommendation that the bid cap on start-up and minimum load costs be lowered to 200% for all units. Also in response to MSC and stakeholder feedback, the longer term solution for this issue will include a methodology for better accounting of “operations and maintenance” costs.

Simplification of CRR Hourly Settlement

The proposed tariff simplification responds to stakeholder requests that the current pro-rationing in the credit and initial settlement statements be eliminated. There is no known opposition to this proposal at this time.

Methodology for pricing electrically disconnected nodes

The proposed tariff modification is responsive to stakeholder comments and has support from numerous stakeholders. There is no known opposition to this proposal at this time.

MANAGEMENT RECOMMENDATION

Management recommends approval of these three modifications to the tariff to better align operational outcomes with actual costs and avoid market or settlement distortions that arise out of existing market rules.